

TEST REPORT

ACCORDING TO: FCC 47CFR part 15 subpart C § 15.247 and subpart B

FOR:

Telematics Wireless Ltd.

Water reader

Model: ETMW Universal

This report is in conformity with ISO/IEC 17025. The A2LA logo endorsement applies only to the test methods and the standards that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.

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1 Applicant information

Client name: Telematics Wireless Ltd.
Address: 26 Hamelaha, POB 1911, Holon, 58117, Israel
Telephone: +972 3557 5767
Fax: +972 3557 5753
E-mail: slavas@tadiran-telematics.com
Contact name: Mr. Slava Snitkovsky

2 Equipment under test attributes

Product name: Water reader
Product type: Transceiver
Operating frequency range: 905.43 – 923.55 MHz
Model(s): ETMW Universal
Receipt date 10/3/2005

3 Manufacturer information

Manufacturer name: Telematics Wireless Ltd.
Address: 26 Hamelaha, POB 1911, Holon, 58117, Israel
Telephone: +972 3557 5767
Fax: +972 3557 5753
E-Mail: slavas@tadiran-telematics.com
Contact name: Mr. Slava Snitkovsky

4 Test details




Project ID: 16716
Location: Hermon Laboratories Ltd. P.O.Box 23, Binyamina 30500, Israel
Test started: 10/3/2005
Test completed: 11/2/2005
Test specification(s): FCC 47CFR part 15: 2004, subpart C §§15.247, 15.209, subpart B § 15.109
Test suite: FCC_15.247_DTS_without_RF_connector (5/3/2004 5:43:35 PM, modified)

5 Tests summary

| Test | Status |
|---|---|
| Transmitter characteristics | |
| Section 15.247(a)2, 6 dB bandwidth | Pass |
| Section 15.247(b)3, Peak output power | Pass |
| Section 15.247(d), Radiated spurious emissions | Pass |
| Section 15.247(e), Peak power density | Pass |
| Section 15.247(i), RF exposure | Pass, the exhibit to the application of certification is provided |
| Section 15.207(a), Conducted emission | Not required |
| Unintentional emissions | |
| Section 15.107, Conducted emission at AC power port | Not required |
| Section 15.109, Radiated emission | Pass |

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested.
The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

This test report replaces the previously issued test report identified by Doc. ID: TELRAD_FCC.16716_rev1

| | Name and Title | Date | Signature |
|---------------------|---|-------------------|---|
| Tested by: | Mr. A. Adelberg, test engineer | November 2, 2005 |  |
| Reviewed by: | Mrs. M. Cherniavsky, certification engineer | November 28, 2005 |  |
| Approved by: | Mr. M. Nikishin, EMC and Radio group leader | November 28, 2005 |  |

6 EUT description

6.1 General information

The EUT, ETMW-Universal, is actually a water odometer, offering Automatic Meter Reading – AMR. The device is a 2-Way RF communicator built-in water meter. The RF capabilities enable the transmission of the meter reading and some extra information to a collecting unit. In addition specific parameters can be programmed via the RF link.

The ETMW- Universal consists of the following units: RF transmitter & receiver with integral antenna and a microcontroller plus simple digital logic and interface (to external reed switches).

The EUT is powered from 3.6 VDC supplied by two lithium internal batteries.

6.2 Ports and lines

| Port type | Port description | Connected | | Connector type | Qty. | Cable type | Cable length |
|-----------|------------------|-----------|--------------|----------------|------|------------|--------------|
| | | From | To | | | | |
| Signal | 8 signal ports | EUT | Open circuit | Terminal block | 1 | unshielded | 1 m |

6.3 Changes made in the EUT

No changes were implemented.

6.4 EUT view



6.5 Transmitter characteristics

| | | | | | | | |
|---|--|--|-----------------------------------|---------------------|----------|-----------------------------|-----------------------------------|
| Type of equipment | | | | | | | |
| | Stand-alone (Equipment with or without its own control provisions) | | | | | | |
| X | Combined equipment (Equipment where the radio part is fully integrated within another type of equipment) | | | | | | |
| | Plug-in card (Equipment intended for a variety of host systems) | | | | | | |
| Intended use | | Condition of use | | | | | |
| | fixed | Always at a distance more than 2 m from all people | | | | | |
| X | mobile | Always at a distance more than 20 cm from all people | | | | | |
| | portable | May operate at a distance closer than 20 cm to human body | | | | | |
| Assigned frequency range | | 902 - 928 MHz | | | | | |
| Operating frequency range | | 905.43 – 923.55 MHz | | | | | |
| RF channel spacing | | 3.62 MHz | | | | | |
| Maximum rated output power | | At transmitter 50 Ω RF output connector | | | | | dBm |
| | | Equivalent isotropically radiated power (for equipment with no RF connector) | | | | | 21.72 dBm (FSK) 26.6 dBm (PSK) |
| Is transmitter output power variable? | | X | No | | | | |
| | | | Yes | | | | |
| | | | continuous variable | | | | |
| | | | stepped variable with stepsize | | | | |
| | | minimum RF power | | | | | dBm |
| | | maximum RF power | | | | | dBm |
| Antenna connection | | | | | | | |
| | unique coupling | | standard connector | X | integral | with temporary RF connector | |
| | | | | | | X | without temporary RF connector |
| Antenna/s technical characteristics | | | | | | | |
| Type | Manufacturer | | Model number | | Gain | | |
| Integral | Telematics Wireless | | Printed inverted F antenna | | 5 dBi | | |
| Transmitter aggregate data rate/s | | 60 kbps (PSK modulated), 120 kbps (FSK modulated) | | | | | |
| Transmitter aggregate symbol (baud) rate/s | | 0.9 Msymbols (Mbaud) per second (FSK modulated) | | | | | |
| Type of modulation | | PSK, FSK | | | | | |
| Modulating test signal (baseband) | | PRBS | | | | | |
| Maximum transmitter duty cycle in normal use | | 0.12 % | | | | | |
| Transmitter duty cycle supplied for test | | 5.69 % (PSK) | | Tx ON time | 4.5 ms | Period | 79 ms (PSK) |
| | | 1.27 % (FSK) | | | 1.0 ms | | 78.5 ms (FSK) |
| Transmitter power source | | | | | | | |
| X | Battery | Nominal rated voltage | 3.6 VDC | Battery type | Lithium | | |
| | DC | Nominal rated voltage | VDC | | | | |
| | AC mains | Nominal rated voltage | VAC | Frequency | Hz | | |
| Common power source for transmitter and receiver | | | | X | yes | no | |
| Spread spectrum technique used | | Frequency hopping (FHSS) | | | | | |
| | | X | Digital transmission system (DTS) | | | | |
| | | Hybrid | | | | | |
| Spread spectrum parameters for transmitters tested per FCC 15.247 only | | | | | | | |
| DSSS | Chip sequence length | | 15 bits | | | | |
| | Spectrum width | | 2 MHz | | | | |

| | | | |
|----------------------------|---|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(a)2, 6 dB bandwidth | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(a)2 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

7 Transmitter tests according to 47CFR part 15 subpart C requirements

7.1 Minimum 6 dB bandwidth

7.1.1 General

This test was performed to measure 6 dB bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.1.1.

Table 7.1.1 6 dB bandwidth limits

| Assigned frequency, MHz | Modulation envelope reference points*, dBc | Minimum bandwidth, kHz |
|-------------------------|--|------------------------|
| 902.0 – 928.0 | 6.0 | 500.0 |

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2 The EUT was set to transmit modulated carrier.

7.1.2.3 The transmitter minimum 6 dB bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

Figure 7.1.1 The 6 dB bandwidth test setup



| | | | |
|----------------------------|-------------------------------|---|-------------------------------|
| Test specification: | | Section 15.247(a)2, 6 dB bandwidth | |
| Test procedure: | | FR Vol.62, page 26243, Section 15.247(a)2 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Table 7.1.2 The 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 902 - 928 MHz
DETECTOR USED: Peak
SWEEP MODE: Single
SWEEP TIME: Auto
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATION ENVELOPE REFERENCE POINTS: 6.0 dBc

MODULATION: PSK
MODULATING SIGNAL: PRBS
BIT RATE: 60 kbps

| Carrier frequency, MHz | 6 dB bandwidth, kHz | Limit, kHz | Margin, kHz | Verdict |
|------------------------|---------------------|------------|-------------|---------|
| Low frequency | | | | |
| 905.428 | 975 | 500.0 | 475 | Pass |
| Mid frequency | | | | |
| 916.293 | 983 | 500.0 | 483 | Pass |
| High frequency | | | | |
| 923.523 | 975 | 500.0 | 475 | Pass |

MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 120 kbps

| Carrier frequency, MHz | 6 dB bandwidth, kHz | Limit, kHz | Margin, kHz | Verdict |
|------------------------|---------------------|------------|-------------|---------|
| Low frequency | | | | |
| 905.493 | 935 | 500.0 | 435 | Pass |
| Mid frequency | | | | |
| 916.350 | 840 | 500.0 | 340 | Pass |
| High frequency | | | | |
| 923.555 | 880 | 500.0 | 380 | Pass |

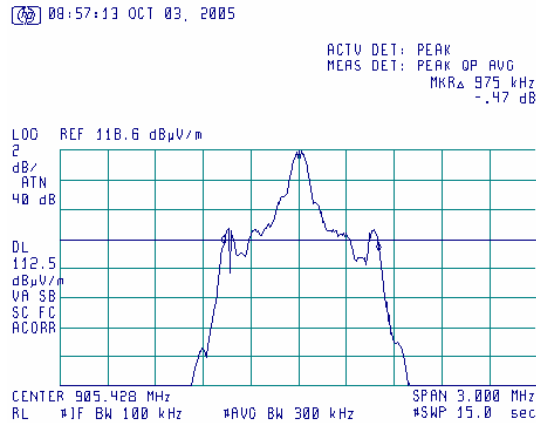
Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|---------|---------|--|--|--|--|
| HL 0521 | HL 0589 | HL 0604 | HL 2009 | | | | |
|---------|---------|---------|---------|--|--|--|--|

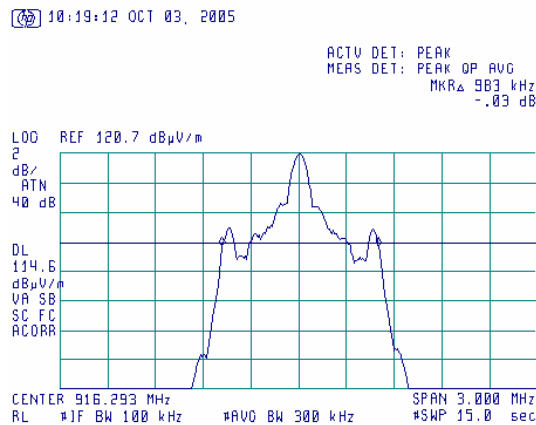
Full description is given in Appendix A.

| | | | |
|----------------------------|---|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(a)2, 6 dB bandwidth | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(a)2 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.1.1 The 6 dB bandwidth test result at low frequency, PSK modulation



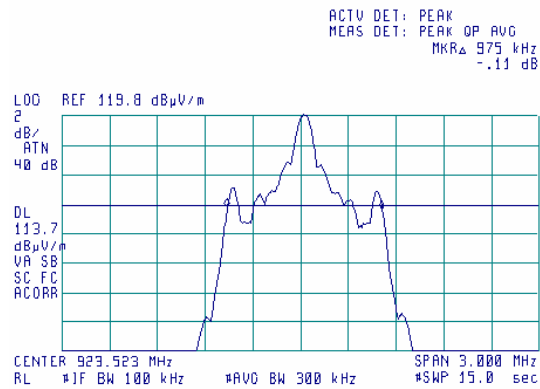
Plot 7.1.2 The dB bandwidth test result at mid frequency, PSK modulation



| | | | |
|----------------------------|---|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(a)2, 6 dB bandwidth | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(a)2 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

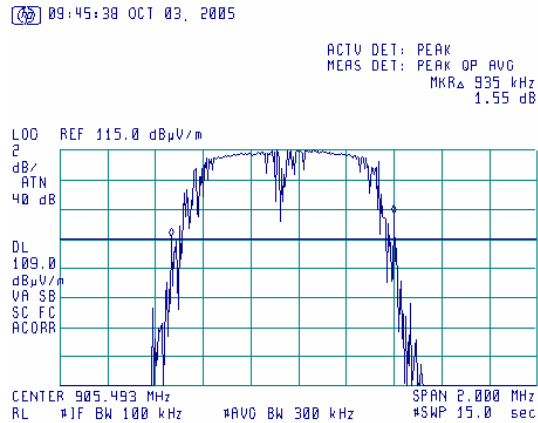
Plot 7.1.3 The 6 dB bandwidth test result at high frequency, PSK modulation

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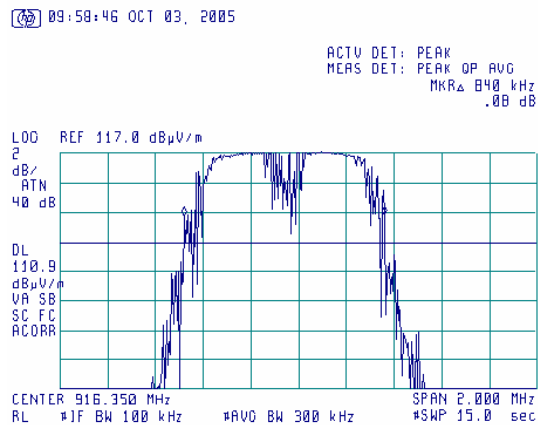


| | | | |
|----------------------------|---|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(a)2, 6 dB bandwidth | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(a)2 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.1.4 The 6 dB bandwidth test result at low frequency, FSK modulation



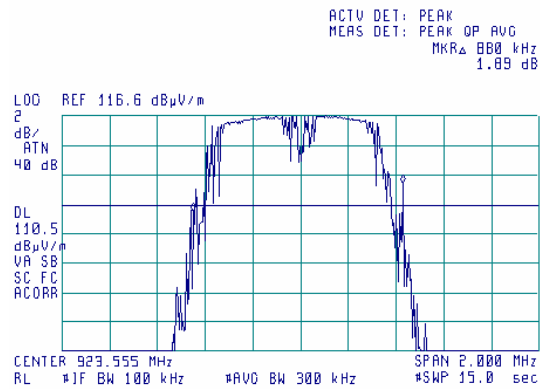
Plot 7.1.5 The 6 dB bandwidth test result at mid frequency, FSK modulation



| | | | |
|----------------------------|---|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(a)2, 6 dB bandwidth | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(a)2 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 1:08:40 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.1.6 The 6 dB bandwidth test result at high frequency, FSK modulation

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| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(b)3, Peak output power | |
| Test procedure: | | FR Vol.62, page 26243, Section 15.247(b) | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

7.2 Peak output power

7.2.1 General

This test was performed to measure the maximum peak output power radiated by transmitter. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak output power limits

| Assigned frequency range, MHz | Maximum antenna gain, dBi | Peak output power* | | Equivalent field strength limit @ 3m, dB(μV/m)** |
|-------------------------------|---------------------------|--------------------|------|--|
| | | W | dBm | |
| 902.0 – 928.0 | 5.0 | 1.0 | 30.0 | 131.2 |

*- The limit is provided in terms of conducted RF power at the antenna connector. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power limit shall be reduced below the stated value as follows:

- by 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point-to-point transmitters operate in 2400-2483.5 MHz band;
- without any corresponding reduction for fixed point-to-point transmitters operate in 5725-5850 MHz band;
- by the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

** - Equivalent field strength limit was calculated from the peak output power as follows: $E = \sqrt{30 \times P \times G} / r$, where P is peak output power in Watts, r is antenna to EUT distance in meters and G is transmitter antenna gain in dBi.

7.2.2 Test procedure

7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

7.2.2.2 The EUT was adjusted to produce maximum available to end user RF output power.

7.2.2.3 The resolution bandwidth of spectrum analyzer was set wider than 6 dB bandwidth of the EUT and the field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna height was swept in both vertical and horizontal polarizations.

7.2.2.4 The maximum field strength of the EUT carrier frequency was measured as provided in Table 7.2.2 and associated plots.

7.2.2.5 The maximum peak output power was calculated from the field strength of carrier as follows:

$$P = (E \times d)^2 / (30 \times G),$$

where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.

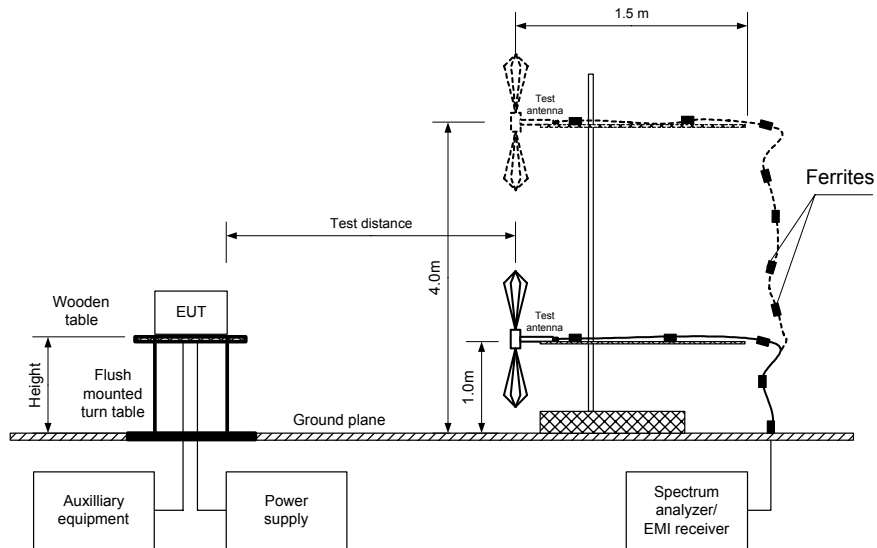
The above equation was converted in logarithmic units for 3 m test distance:

$$\text{Peak output power in dBm} = \text{Field strength in dB}(\mu\text{V/m}) - \text{Transmitter antenna gain in dBi} - 95.2 \text{ dB}$$

7.2.2.6 The worst test results (the lowest margins) were recorded in Table 7.2.2.

| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(b)3, Peak output power | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(b) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Figure 7.2.1 Setup for carrier field strength measurements



| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(b)3, Peak output power | |
| Test procedure: | | FR Vol.62, page 26243, Section 15.247(b) | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY: 902 - 928 MHz
 TEST DISTANCE: 3 m
 TEST SITE: Semi anechoic chamber
 EUT HEIGHT: 0.8 m
 DETECTOR USED: Peak
 TEST ANTENNA TYPE: Biconilog (30 MHz – 1000 MHz)
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 3.0 MHz
 VIDEO BANDWIDTH: 3.0 MHz

EUT 6 dB BANDWIDTH: 1.0 MHz
 MODULATION: PSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 60 kBps

| Frequency, MHz | Field strength, dB(μV/m) | Antenna polarization | Antenna height, m | Azimuth, degrees* | EUT antenna gain, dBi | Peak output power, dBm** | Limit, dBm | Margin, dB*** | Verdict |
|----------------|--------------------------|----------------------|-------------------|-------------------|-----------------------|--------------------------|------------|---------------|---------|
| 906.00 | 120.65 | Vertical | 1.0 | 55 | 5 | 20.42 | 30 | -9.58 | Pass |
| 916.60 | 121.25 | Vertical | 1.0 | 51 | 5 | 21.02 | 30 | -8.92 | Pass |
| 923.83 | 121.83 | Vertical | 1.0 | 52 | 5 | 21.60 | 30 | -8.40 | Pass |

EUT 6 dB BANDWIDTH: 1.0 MHz
 MODULATION: FSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 120 kBps

| Frequency, MHz | Field strength, dB(μV/m) | Antenna polarization | Antenna height, m | Azimuth, degrees* | EUT antenna gain, dBi | Peak output power, dBm** | Limit, dBm | Margin, dB*** | Verdict |
|----------------|--------------------------|----------------------|-------------------|-------------------|-----------------------|--------------------------|------------|---------------|---------|
| 905.94 | 115.34 | Vertical | 1.0 | 55 | 5 | 15.11 | 30 | -14.89 | Pass |
| 916.67 | 116.05 | Vertical | 1.0 | 51 | 5 | 15.82 | 30 | -14.18 | Pass |
| 924.09 | 116.95 | Vertical | 1.0 | 52 | 5 | 16.72 | 30 | -13.28 | Pass |

*- EUT front panel refer to 0 degrees position of turntable.

** - Peak output power was calculated from the field strength of carrier as follows: $P = (E \times d)^2 / (30 \times G)$, where P is the peak output power in W, E is the field strength in V/m, d is the test distance in meters and G is the transmitter numeric antenna gain over an isotropic radiator. The above equation was converted in logarithmic units for 3 m test distance: *Peak output power in dBm = Field strength in dB(μV/m) - Transmitter antenna gain in dBi - 95.2 dB*

*** - Margin = Peak output power – specification limit.

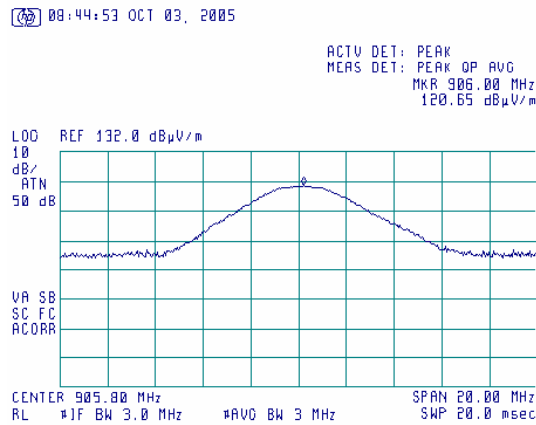
Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|---------|---------|--|--|--|--|
| HL 0521 | HL 0589 | HL 0604 | HL 2009 | | | | |
|---------|---------|---------|---------|--|--|--|--|

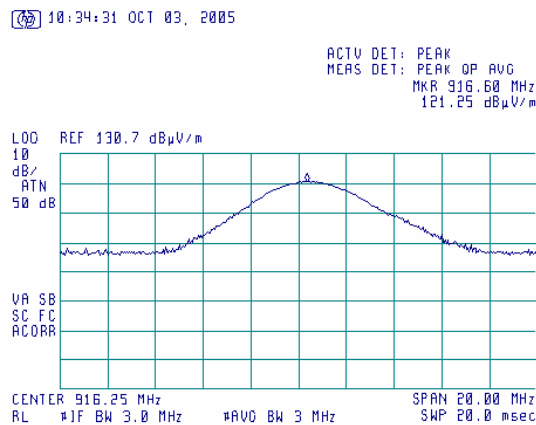
Full description is given in Appendix A.

| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(b)3, Peak output power | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(b) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.2.1 Field strength of carrier at low frequency, PSK modulation



Plot 7.2.2 Field strength of carrier at mid frequency, PSK modulation

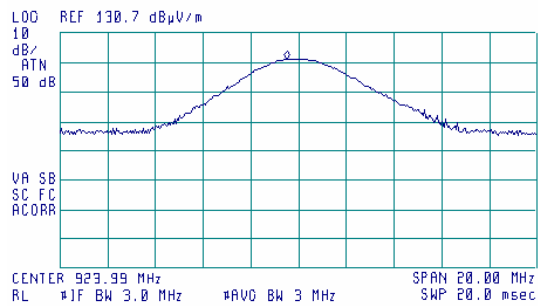


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(b)3, Peak output power | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(b) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.2.3 Field strength of carrier at high frequency, PSK modulation

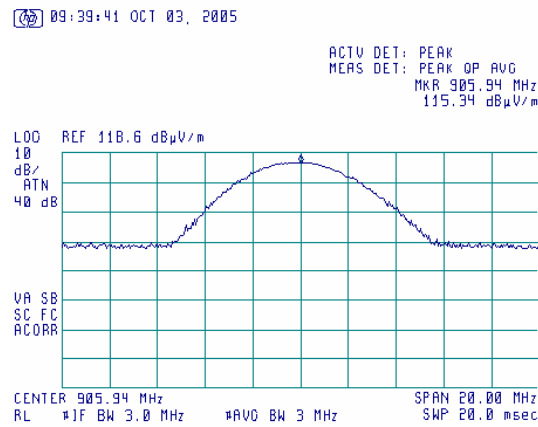
10:46:21 OCT 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR: 923.49 MHz
121.83 dBµV/m

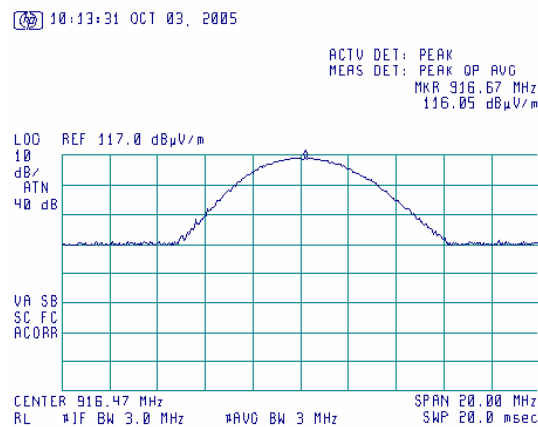


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(b)3, Peak output power | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(b) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.2.4 Field strength of carrier at low frequency, FSK modulation



Plot 7.2.5 Field strength of carrier at mid frequency, FSK modulation

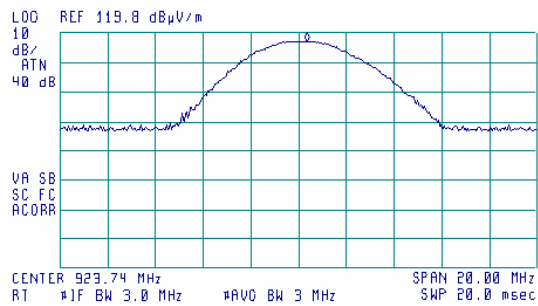


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(b)3, Peak output power | | |
| Test procedure: | FR Vol.62, page 26243, Section 15.247(b) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/3/2005 12:44:56 PM | | |
| Temperature: 24 °C | Air Pressure: 1010 hPa | Relative Humidity: 48 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.2.6 Field strength of carrier at high frequency, FSK modulation

11:00:40 OCT 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR: 924.09 MHz
116.95 dBµV/m



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

7.3 Field strength of spurious emissions

7.3.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Radiated spurious emissions limits

| Frequency, MHz | Field strength at 3 m within restricted bands, dB(μV/m)*** | | | Attenuation of field strength of spurious versus carrier outside restricted bands, dBc*** |
|----------------|--|----------------|---------|---|
| | Peak | Quasi Peak | Average | |
| 0.009 – 0.490* | NA | 128.5 – 93.8** | NA | 20.0 |
| 0.490 – 1.705* | | 73.8 – 63.0** | | |
| 1.705 – 30.0* | | 69.5** | | |
| 30 – 88 | | 40.0 | | |
| 88 – 216 | | 43.5 | | |
| 216 – 960 | | 46.0 | | |
| 960 - 1000 | | 54.0 | | |
| Above 1000 | | 74.0 | | |

* - The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$\text{Lims}_2 = \text{Lims}_1 + 40 \log(S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.

** - The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.3.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and the performance check was conducted.

7.3.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna was rotated around its vertical axis.

7.3.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.3.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.3.3.1 The EUT was set up as shown in Figure 7.3.2, energized and the performance check was conducted.

7.3.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.3.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

| | | | |
|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Figure 7.3.1 Setup for spurious emission field strength measurements below 30 MHz

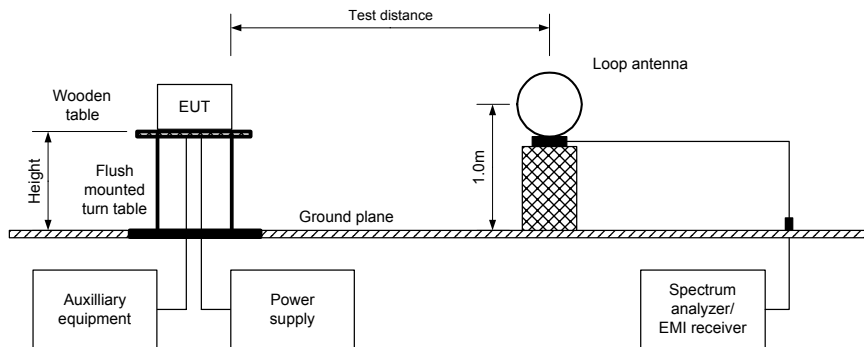
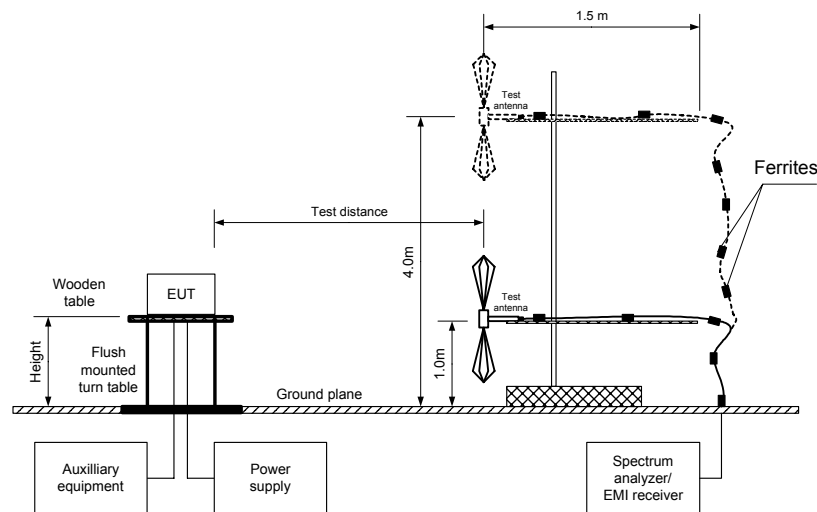


Figure 7.3.2 Setup for spurious emission field strength measurements above 30 MHz



| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Table 7.3.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY RANGE: 902 - 928 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 - 9500 MHz
 TEST DISTANCE: 3 m
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 100 kHz
 VIDEO BANDWIDTH: 300 kHz
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)
 Double ridged guide (above 1000 MHz)

MODULATION: PSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 60 kbps
 DUTY CYCLE: 5.69 %
 TRANSMITTER OUTPUT POWER: 20.42 dBm at low carrier frequency
 21.02 dBm at mid carrier frequency
 21.60 dBm at high carrier frequency

| Frequency, MHz | Field strength of spurious, dB(µV/m) | Antenna polarization | Antenna height, m | Azimuth, degrees* | Field strength of carrier, dB(µV/m) | Attenuation below carrier, dBc | Limit, dBc | Margin, dB** | Verdict |
|-------------------------------|--------------------------------------|----------------------|-------------------|-------------------|-------------------------------------|--------------------------------|------------|--------------|---------|
| Low carrier frequency | | | | | | | | | |
| 1810.85 | 69.91 | Horizontal | 1.2 | 54 | 117.60 | 47.69 | 20.00 | -27.69 | Pass |
| 6337.83 | 58.17 | Vertical | 1.1 | 30 | | 59.43 | | -39.43 | |
| 7243.47 | 50.83 | Vertical | 1.0 | 44 | | 66.77 | | -46.77 | |
| Mid carrier frequency | | | | | | | | | |
| 1832.58 | 68.68 | Horizontal | 1.2 | 0 | 119.10 | 50.42 | 20.00 | -30.42 | Pass |
| 5497.83 | 53.00 | Vertical | 1.2 | 54 | | 66.10 | | -46.10 | |
| 6414.18 | 56.83 | Vertical | 1.1 | 55 | | 62.27 | | -42.27 | |
| High carrier frequency | | | | | | | | | |
| 1847.06 | 71.13 | Horizontal | 2.1 | 60 | 119.78 | 48.65 | 20.00 | -28.65 | Pass |
| 5541.28 | 53.83 | Vertical | 2.0 | 22 | | 65.95 | | -45.95 | |
| 6464.85 | 56.83 | Vertical | 1.0 | 18 | | 62.95 | | -42.95 | |
| 9235.44 | 49.50 | Vertical | 1.1 | 27 | | 70.28 | | -50.28 | |

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Attenuation below carrier – specification limit.

| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

MODULATION: FSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 120 kBps
 DUTY CYCLE: 1.27 %
 TRANSMITTER OUTPUT POWER: 15.11 dBm at low carrier frequency
 15.82 dBm at mid carrier frequency
 16.72 dBm at high carrier frequency

| Frequency, MHz | Field strength of spurious, dB(μV/m) | Antenna polarization | Antenna height, m | Azimuth, degrees* | Field strength of carrier, dB(μV/m) | Attenuation below carrier, dBc | Limit, dBc | Margin, dB** | Verdict |
|-------------------------------|--------------------------------------|----------------------|-------------------|-------------------|-------------------------------------|--------------------------------|------------|--------------|---------|
| Low carrier frequency | | | | | | | | | |
| 1810.35 | 64.63 | Horizontal | 1.2 | 54 | 112.19 | 47.56 | 20.00 | -27.56 | Pass |
| 6336.62 | 54.50 | Vertical | 1.1 | 30 | | 57.69 | | -37.69 | |
| 7245.10 | 36.50 | Vertical | 1.0 | 44 | | 75.69 | | -55.69 | |
| Mid carrier frequency | | | | | | | | | |
| 1832.59 | 69.25 | Horizontal | 1.8 | 228 | 115.36 | 46.11 | 20.00 | -26.11 | Pass |
| 5496.57 | 49.33 | Vertical | 1.2 | 54 | | 66.03 | | -46.03 | |
| 6412.60 | 50.00 | Vertical | 1.1 | 55 | | 65.36 | | -45.36 | |
| High carrier frequency | | | | | | | | | |
| 1846.8 | 66.87 | Horizontal | 1.9 | 230 | 115.74 | 48.87 | 20.00 | -28.87 | Pass |
| 5540.05 | 53.50 | Vertical | 2.0 | 22 | | 62.24 | | -42.24 | |
| 6463.32 | 51.00 | Vertical | 1.0 | 18 | | 64.74 | | -44.74 | |
| 9233.09 | 41.00 | Vertical | 1.1 | 27 | | 74.74 | | -54.74 | |

*- EUT front panel refers to 0 degrees position of turntable.

** - Margin = Attenuation below carrier – specification limit.

| | | | | | |
|----------------------------|-------------------------------|--|-------------------------------|-------------|--|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: | Compliance | Verdict: | | PASS | |
| Date & Time: | 10/10/2005 12:50:22 PM | | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC | | |
| Remarks: | | | | | |

Table 7.3.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE: 902 – 928 MHz
 INVESTIGATED FREQUENCY RANGE: 1000 - 9500 MHz
 TEST DISTANCE: 3 m
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 1000 kHz
 TEST ANTENNA TYPE: Double ridged guide

MODULATION: PSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 60 kbps
 DUTY CYCLE: 5.69 %
 TRANSMITTER OUTPUT POWER: 20.42 dBm at low carrier frequency
 21.02 dBm at mid carrier frequency
 21.60 dBm at high carrier frequency

| Frequency, MHz | Antenna | | Azimuth, degrees* | Peak field strength(VBW=3 MHz) | | | Average field strength(VBW=300 Hz) | | | | Verdict |
|-------------------------------|--------------|-----------|-------------------|--------------------------------|-----------------|--------------|------------------------------------|----------------------|-----------------|---------------|---------|
| | Polarization | Height, m | | Measured, dB(μV/m) | Limit, dB(μV/m) | Margin, dB** | Measured, dB(μV/m) | Calculated, dB(μV/m) | Limit, dB(μV/m) | Margin, dB*** | |
| Low carrier frequency | | | | | | | | | | | |
| 2716.25 | Vertical | 1.2 | 24 | 68.67 | 74.00 | -5.33 | 60.35 | 35.45 | 54.00 | -24.55 | Pass |
| 3621.65 | Vertical | 1.3 | 17 | 69.33 | | -4.67 | 59.50 | 34.60 | | -19.40 | |
| 4527.10 | Vertical | 1.0 | 32 | 63.83 | | -10.17 | 58.33 | 33.43 | | -20.57 | |
| 5432.58 | Vertical | 2.0 | 65 | 60.83 | | -13.17 | 40.50 | 15.60 | | -38.40 | |
| 8148.62 | Vertical | 1.8 | 11 | 55.83 | | -18.17 | 43.33 | 18.43 | | -35.57 | |
| 9054.17 | Vertical | 1.1 | 110 | 61.00 | | -13.00 | 41.83 | 16.93 | | -37.07 | |
| Mid carrier frequency | | | | | | | | | | | |
| 2748.83 | Vertical | 1.0 | 35 | 73.58 | 74.00 | -0.42 | 65.74 | 40.84 | 54.00 | -13.16 | Pass |
| 3665.13 | Vertical | 1.1 | 27 | 67.67 | | -6.33 | 57.67 | 32.77 | | -21.23 | |
| 4581.40 | Vertical | 1.8 | 67 | 61.00 | | -13.00 | 53.67 | 28.77 | | -25.23 | |
| 7330.32 | Vertical | 1.2 | 15 | 67.00 | | -7.00 | 55.17 | 30.27 | | -23.73 | |
| 8246.77 | Vertical | 1.0 | 19 | 57.00 | | -17.00 | 47.83 | 22.93 | | -31.07 | |
| 9161.22 | Vertical | 1.0 | 90 | 56.67 | | -17.33 | 40.67 | 15.77 | | -38.23 | |
| High carrier frequency | | | | | | | | | | | |
| 2769.99 | Vertical | 1.2 | 40 | 66.17 | 74.00 | -7.83 | 47.67 | 22.77 | 54.00 | -31.23 | Pass |
| 3694.20 | Vertical | 1.4 | 28 | 67.67 | | -6.33 | 58.33 | 33.43 | | -20.57 | |
| 4617.63 | Vertical | 1.3 | 22 | 61.00 | | -13.00 | 54.67 | 29.77 | | -24.23 | |
| 7388.21 | Vertical | 1.2 | 25 | 65.33 | | -8.67 | 54.50 | 29.60 | | -24.40 | |
| 8311.70 | Vertical | 1.0 | 99 | 57.17 | | -16.83 | 46.83 | 21.93 | | -32.07 | |

*- EUT front panel refers to 0 degrees position of turntable.
 **- Margin = Measured field strength - specification limit.
 ***- Margin = Calculated field strength - specification limit,
 where Calculated field strength = Measured field strength + average factor.

| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

| | |
|---------------------------|---|
| MODULATION: | FSK |
| MODULATING SIGNAL: | PRBS |
| BIT RATE: | 120 kBps |
| DUTY CYCLE: | 1.27 % |
| TRANSMITTER OUTPUT POWER: | 15.11 dBm at low carrier frequency 15.82 dBm at mid carrier frequency 16.72 dBm at high carrier frequency |

| Frequency, MHz | Antenna | | Azimuth, degrees | Peak field strength(VBW=3 MHz) | | | Average field strength(VBW=1 kHz) | | | | | Verd. |
|-------------------------------|--------------|-----------|------------------|--------------------------------|-----------------|--------------|-----------------------------------|--------------------|-------------------------|-----------------|---------------|-------|
| | Polarization | Height, m | | Measured, dB(μV/m) | Limit, dB(μV/m) | Margin, dB** | Measured, dB(μV/m) | Average factor, dB | Calculated, dB(μV/m)*** | Limit, dB(μV/m) | Margin, dB*** | |
| Low carrier frequency | | | | | | | | | | | | |
| 2715.96 | Vertical | 1.2 | 24 | 68.27 | 74.00 | -5.73 | 61.71 | -37.9 | 23.81 | 54.00 | -30.19 | Pass |
| 3620.73 | Vertical | 1.3 | 17 | 62.00 | | -12.00 | 51.83 | -37.9 | 13.93 | | -40.07 | |
| 4526.22 | Vertical | 1.0 | 32 | 58.33 | | -15.67 | 46.67 | -37.9 | 8.77 | | -45.23 | |
| 5431.57 | Vertical | 2.0 | 65 | 58.00 | | -16.00 | 41.00 | -37.9 | 3.10 | | -50.90 | |
| 8147.08 | Vertical | 1.8 | 11 | 56.83 | | -17.17 | 40.83 | -37.9 | 2.93 | | -51.07 | |
| 9051.38 | Vertical | 1.1 | 110 | 56.67 | | -17.33 | 38.50 | -37.9 | 0.60 | | -53.40 | |
| Mid carrier frequency | | | | | | | | | | | | |
| 2748.17 | Vertical | 1.0 | 35 | 68.46 | 74.00 | -5.54 | 62.07 | -37.9 | 24.17 | 54.00 | -29.83 | Pass |
| 3664.47 | Vertical | 1.1 | 27 | 60.83 | | -13.17 | 53.67 | -37.9 | 15.77 | | -38.23 | |
| 4580.35 | Vertical | 1.8 | 67 | 57.00 | | -17.00 | 47.67 | -37.9 | 9.77 | | -44.23 | |
| 7328.84 | Vertical | 1.2 | 15 | 60.00 | | -14.00 | 49.50 | -37.9 | 11.60 | | -42.40 | |
| 8244.90 | Vertical | 1.0 | 19 | 57.33 | | -16.67 | 39.00 | -37.9 | 1.10 | | -52.90 | |
| 9160.82 | Vertical | 1.0 | 90 | 54.00 | | -20.00 | 37.17 | -37.9 | -0.73 | | -54.73 | |
| High carrier frequency | | | | | | | | | | | | |
| 2770.09 | Vertical | 1.2 | 48 | 58.50 | 74.00 | -15.50 | 54.00 | -37.9 | 16.10 | 54.00 | -37.90 | Pass |
| 3694.77 | Vertical | 1.4 | 28 | 62.00 | | -12.00 | 54.50 | -37.9 | 16.60 | | -37.40 | |
| 4616.77 | Vertical | 1.3 | 22 | 56.50 | | -17.50 | 47.33 | -37.9 | 9.43 | | -44.57 | |
| 7386.44 | Vertical | 1.2 | 25 | 57.33 | | -16.67 | 46.67 | -37.9 | 8.77 | | -45.23 | |
| 8310.00 | Vertical | 1.0 | 99 | 51.83 | | -22.17 | 39.33 | -37.9 | 1.43 | | -52.57 | |

*- EUT front panel refers to 0 degrees position of turntable.
 **- Margin = Measured field strength - specification limit.
 ***- Margin = Calculated field strength - specification limit,
 where Calculated field strength = Measured field strength + average factor;
 ****- Calculated average field strength = Measured average field strength + average factor.

| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Table 7.3.4 Average factor calculation

| Transmission pulse | | Average factor, dB |
|-----------------------------|------------|--------------------|
| Duration, ms | Period, ms | |
| PSK modulated signal | | |
| 4.500 | 79.000 | -24.9 |
| FSK modulated signal | | |
| 1.000 | 78.500 | -37.9 |

*- Average factor was calculated as follows

for pulse train shorter than 100 ms:
$$\text{Average factor} = 20 \times \log_{10} \left(\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{Burst duration}}{\text{Train duration}} \times \text{Number of bursts within pulse train} \right)$$

for pulse train longer than 100 ms:
$$\text{Average factor} = 20 \times \log_{10} \left(\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{Burst duration}}{100 \text{ ms}} \times \text{Number of bursts within 100 ms} \right)$$

| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Table 7.3.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE: 902 – 928 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz
 TEST DISTANCE: 3 m
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 RESOLUTION BANDWIDTH: 0.2 kHz (9 kHz – 150 kHz)
 9.0 kHz (150 kHz – 30 MHz)
 120 kHz (30 MHz – 1000 MHz)
 VIDEO BANDWIDTH: > Resolution bandwidth
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)
 MODULATION: PSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 60 kbps
 DUTY CYCLE: 5.99 %
 TRANSMITTER OUTPUT POWER: 20.42 dBm at low carrier frequency
 21.02 dBm at mid carrier frequency
 21.60 dBm at high carrier frequency

| Frequency, MHz | Peak emission, dB(μV/m) | Quasi-peak | | | Antenna polarization | Antenna height, m | Turn-table position**, degrees | Verdict |
|-----------------------------------|-------------------------|-----------------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|---------|
| | | Measured emission, dB(μV/m) | Limit, dB(μV/m) | Margin, dB* | | | | |
| Low carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |
| Mid carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |
| High carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |

MODULATION: FSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 120 kbps
 DUTY CYCLE: 1.27 %
 TRANSMITTER OUTPUT POWER: 15.11 dBm at low carrier frequency
 15.82 dBm at mid carrier frequency
 16.72 dBm at high carrier frequency

| Frequency, MHz | Peak emission, dB(μV/m) | Quasi-peak | | | Antenna polarization | Antenna height, m | Turn-table position**, degrees | Verdict |
|-----------------------------------|-------------------------|-----------------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|---------|
| | | Measured emission, dB(μV/m) | Limit, dB(μV/m) | Margin, dB* | | | | |
| Low carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |
| Mid carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |
| High carrier frequency | | | | | | | | |
| No spurious emissions were found. | | | | | | | | Pass |

*- Margin = Measured emission - specification limit.

** - EUT front panel refer to 0 degrees position of turntable.

Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|
| HL 0287 | HL 0410 | HL 0446 | HL 0465 | HL 0521 | HL 0589 | HL 0593 | HL 0594 |
| HL 0604 | HL 0813 | HL 1004 | HL 1200 | HL 1424 | HL 1430 | HL 1552 | HL 1848 |
| HL 1941 | HL 1947 | HL 1984 | HL 2009 | HL 2254 | HL 2259 | HL 2387 | HL 2499 |

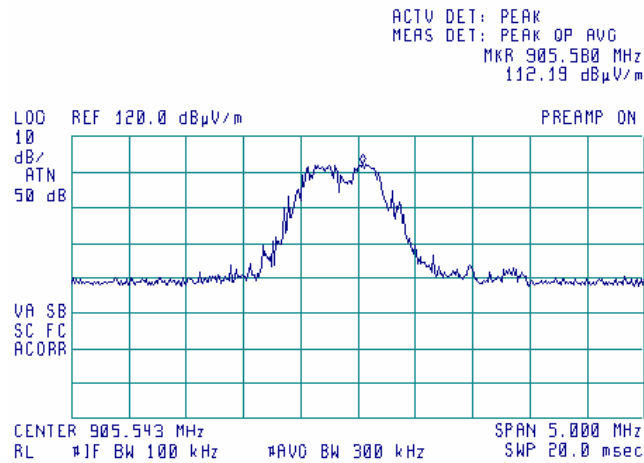
Full description is given in Appendix A.

| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.1 Field strength measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

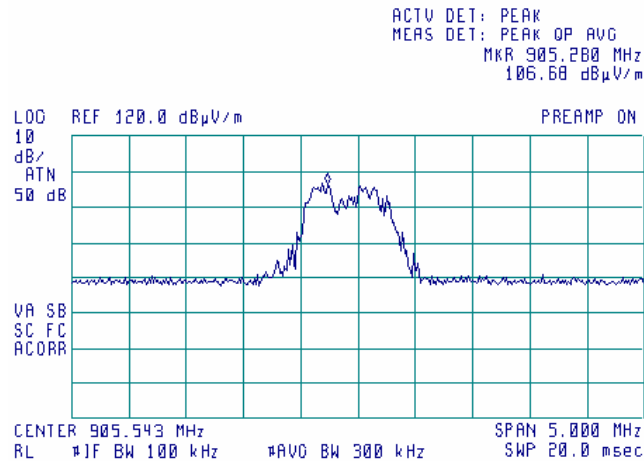
09:23:36 OCT 06, 2005



Plot 7.3.2 Field strength measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: FSK

09:26:18 OCT 06, 2005

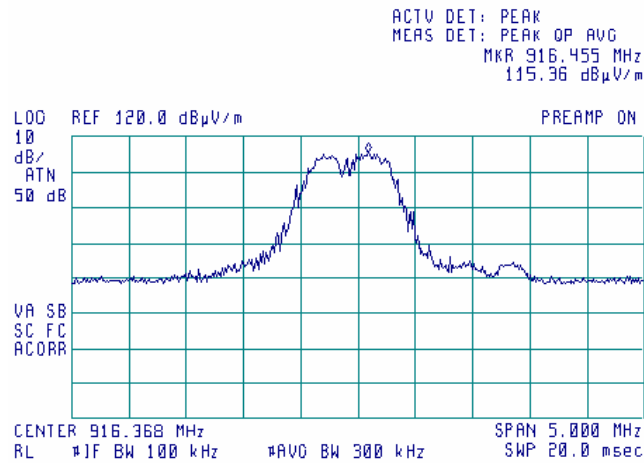


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.3 Field strength measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

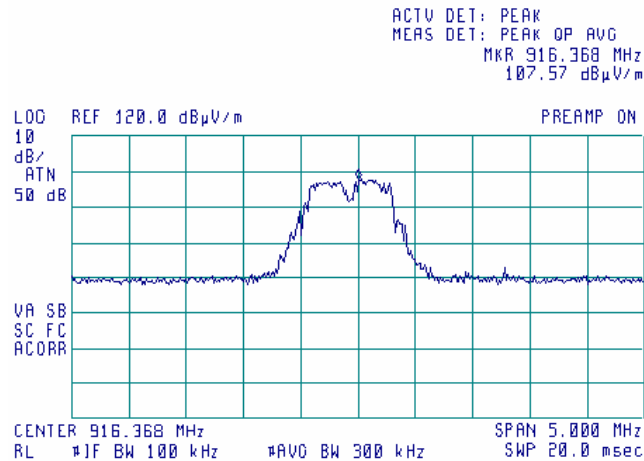
09:37:19 OCT 06, 2005



Plot 7.3.4 Field strength measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: FSK

09:33:05 OCT 06, 2005

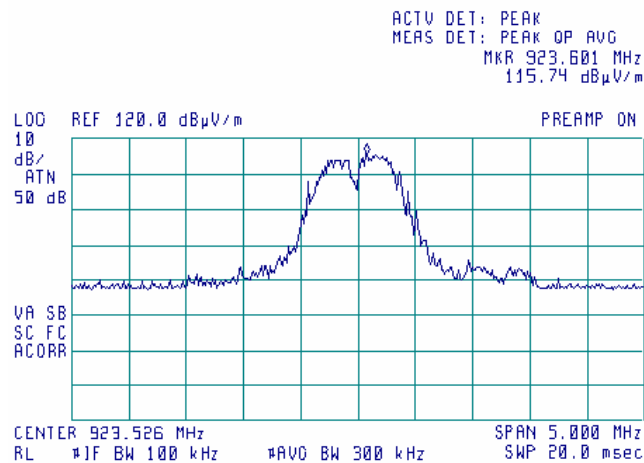


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.5 Field strength measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

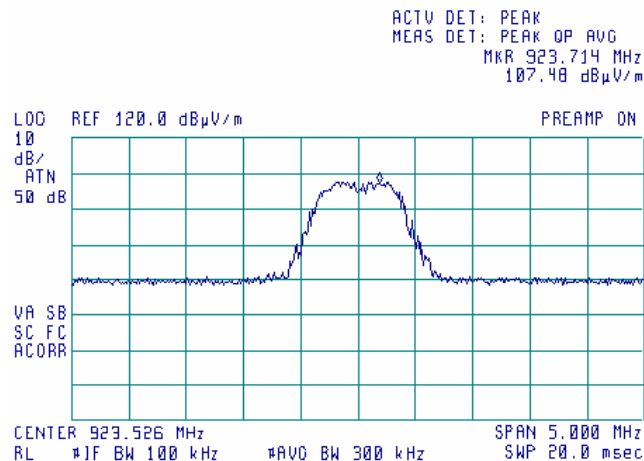
09:58:38 OCT 06, 2005



Plot 7.3.6 Field strength measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: FSK

10:04:47 OCT 06, 2005

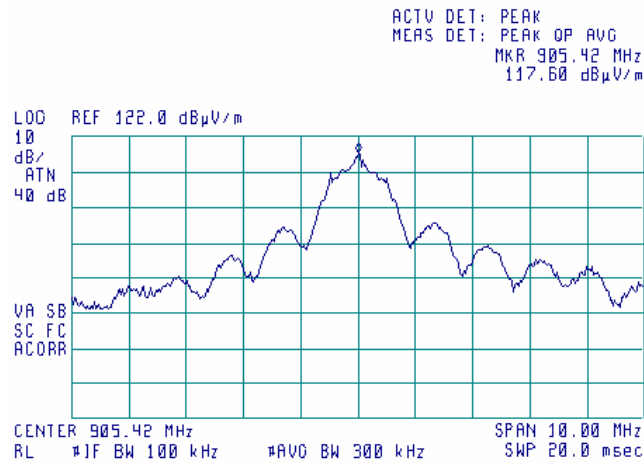


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|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.7 Field strength measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

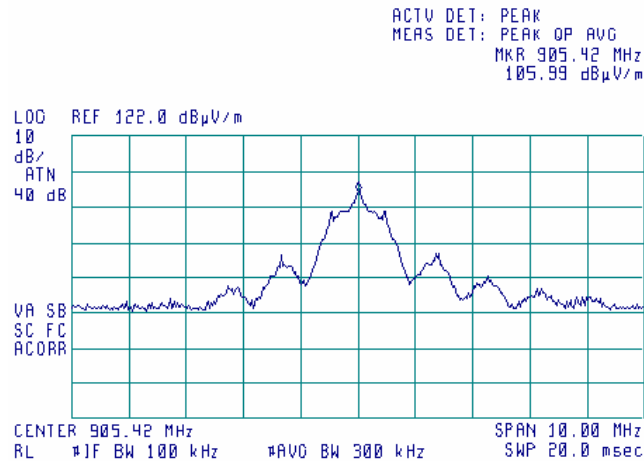
11:40:36 OCT 03, 2005



Plot 7.3.8 Field strength measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: PSK

11:42:35 OCT 03, 2005

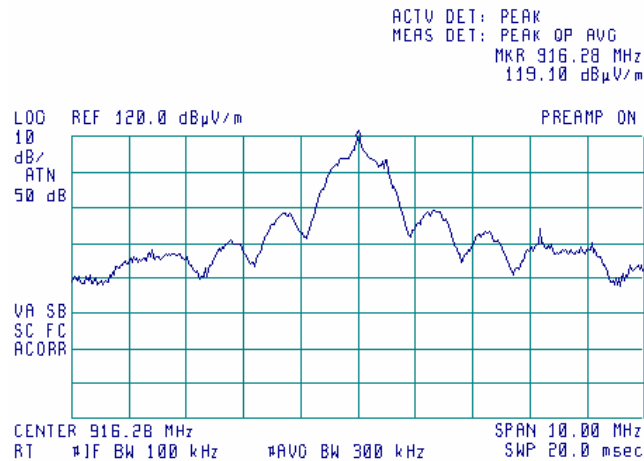


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.9 Field strength measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

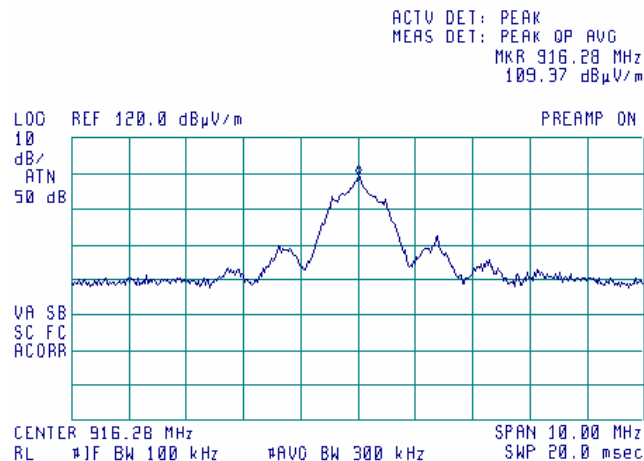
11:27:39 OCT 03, 2005



Plot 7.3.10 Field strength measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: PSK

11:30:19 OCT 03, 2005

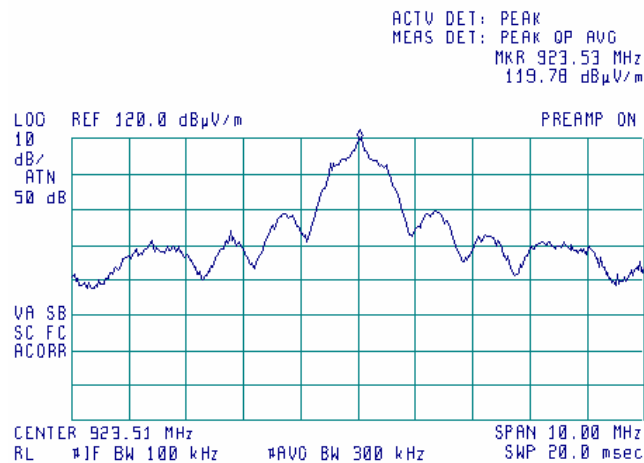


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.11 Field strength measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

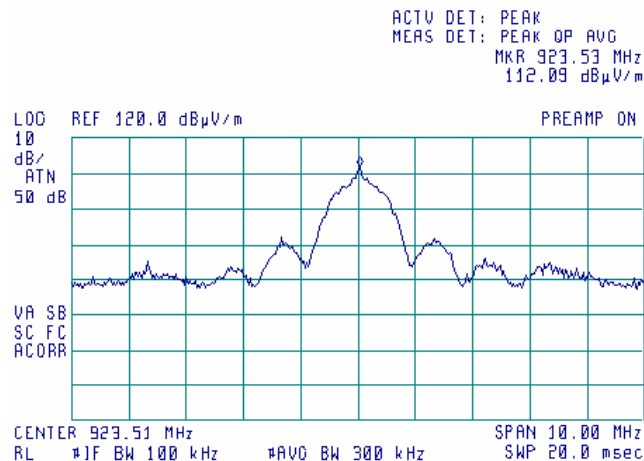
11:24:23 OCT 03, 2005



Plot 7.3.12 Field strength measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
MODULATION: PSK

11:22:45 OCT 03, 2005

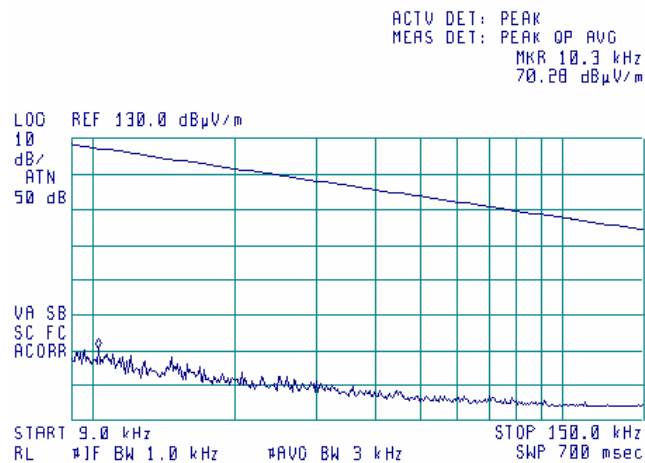


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.13 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical
 MODULATION: PSK

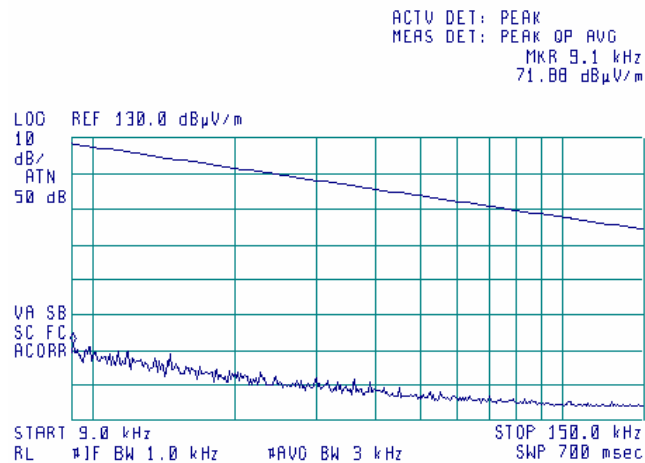
15:51:33 OCT 06, 2005



Plot 7.3.14 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical
 MODULATION: FSK

15:59:28 OCT 06, 2005



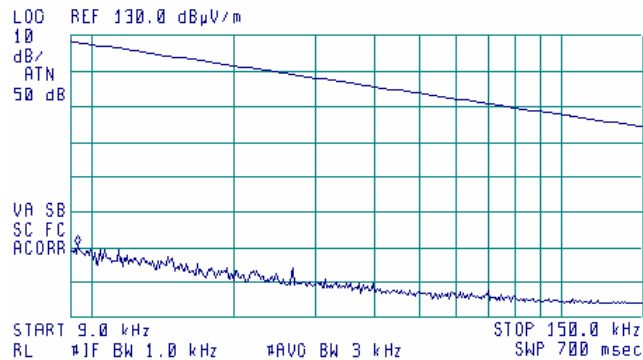
| | | | |
|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.15 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

15:53:14 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 9.4 kHz
70.40 dBµV/m

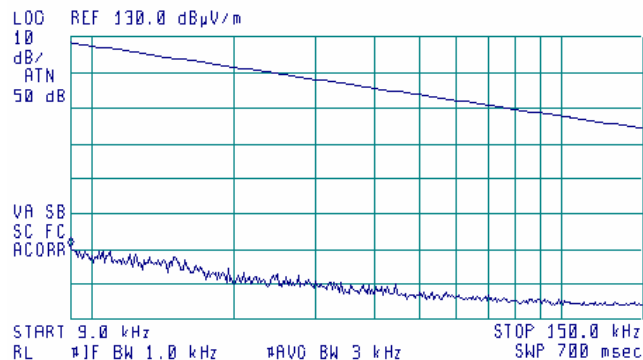


Plot 7.3.16 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

16:01:15 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 9.0 kHz
70.29 dBµV/m



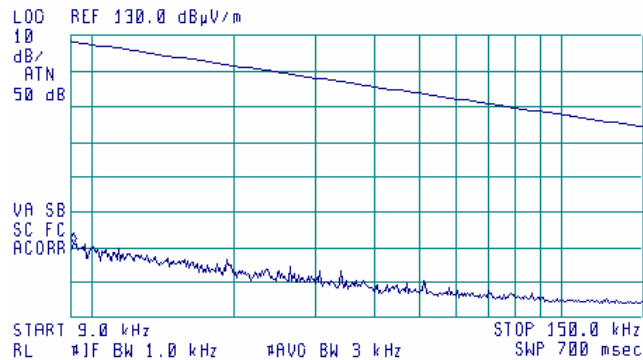
| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.17 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

15:58:09 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 9.2 kHz
71.25 dB μ V/m

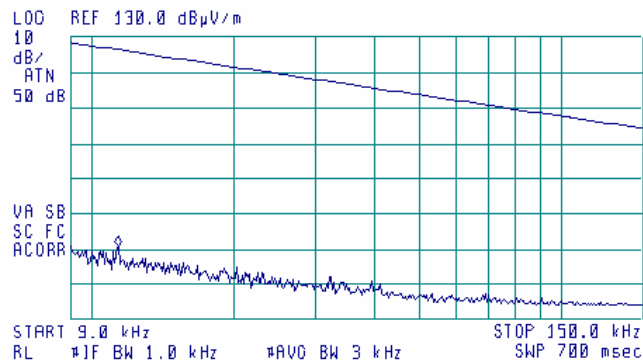


Plot 7.3.18 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

16:02:31 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 11.5 kHz
70.09 dB μ V/m



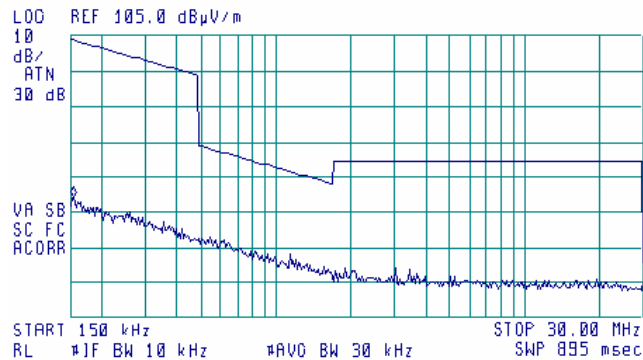
| | | | |
|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.19 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical
 MODULATION: PSK

15:43:40 OCT 06, 2005

ACTV DET: PEAK
 MEAS DET: PEAK OP AVG
 MKR 150 kHz
 59.25 dBµV/m

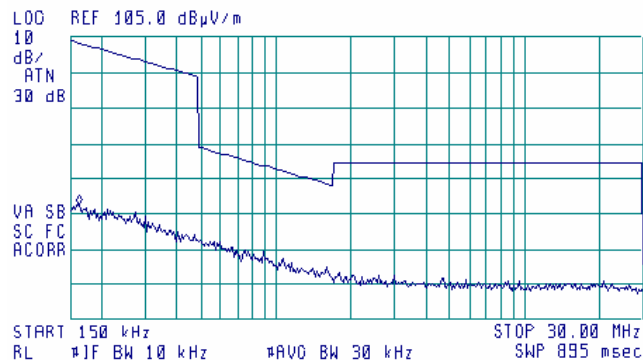


Plot 7.3.20 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical
 MODULATION: FSK

15:46:26 OCT 06, 2005

ACTV DET: PEAK
 MEAS DET: PEAK OP AVG
 MKR 160 kHz
 57.49 dBµV/m

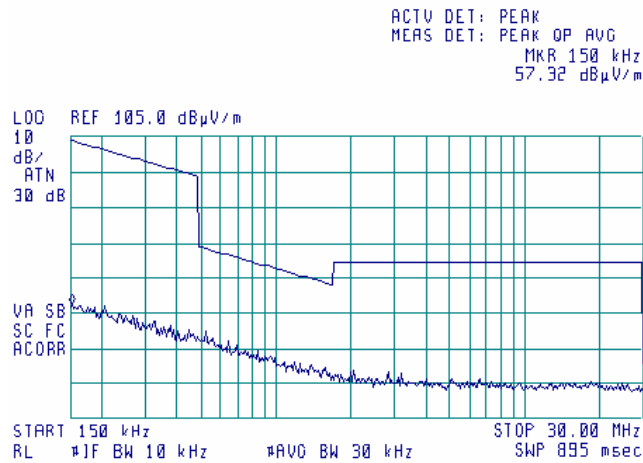


| | | | |
|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.21 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

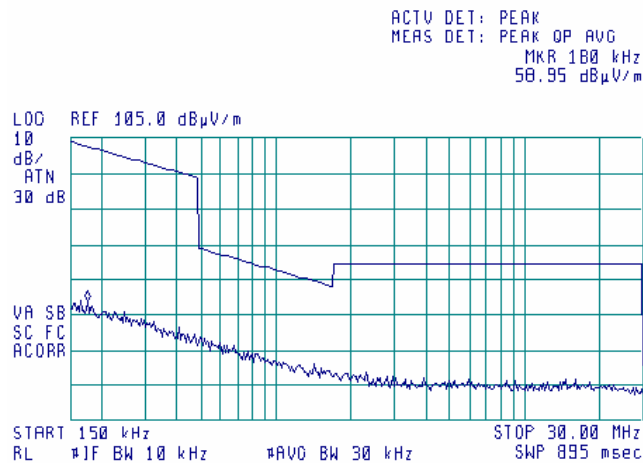
15:44:48 OCT 06, 2005



Plot 7.3.22 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

15:47:22 OCT 06, 2005



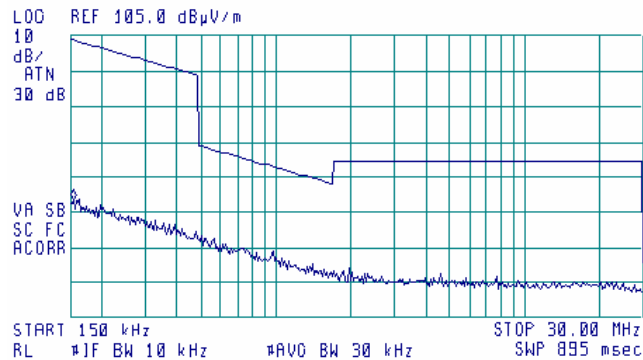
| | | | |
|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.23 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK

15:45:38 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 150 kHz
58.66 dBµV/m

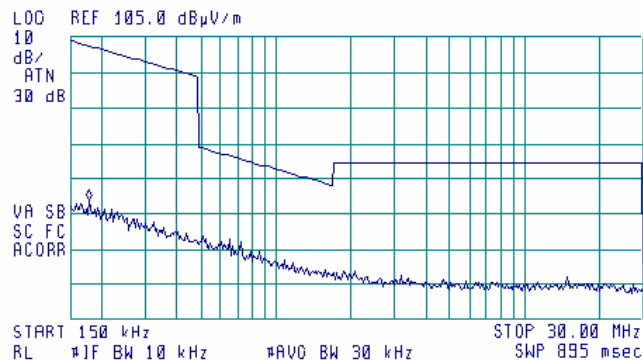


Plot 7.3.24 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: FSK

15:48:16 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKR 100 kHz
58.93 dBµV/m

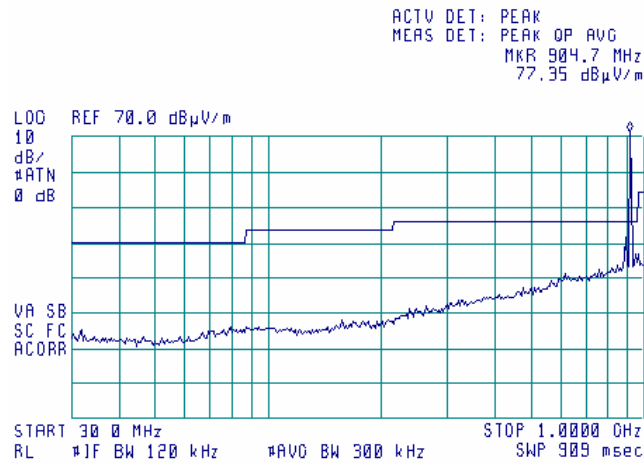


| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.25 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK

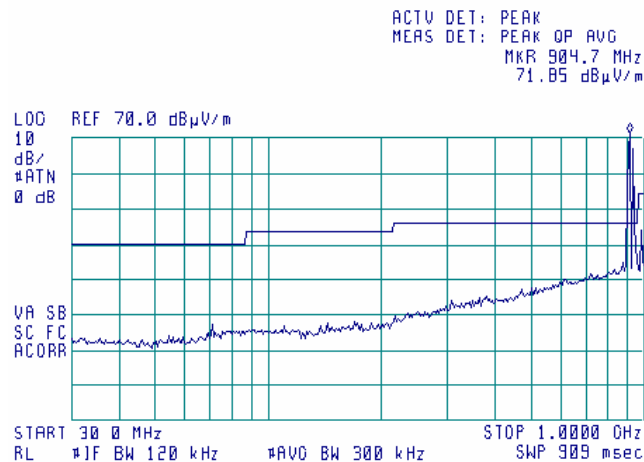
11:37:33 OCT 03, 2005



Plot 7.3.26 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK

11:33:43 OCT 03, 2005

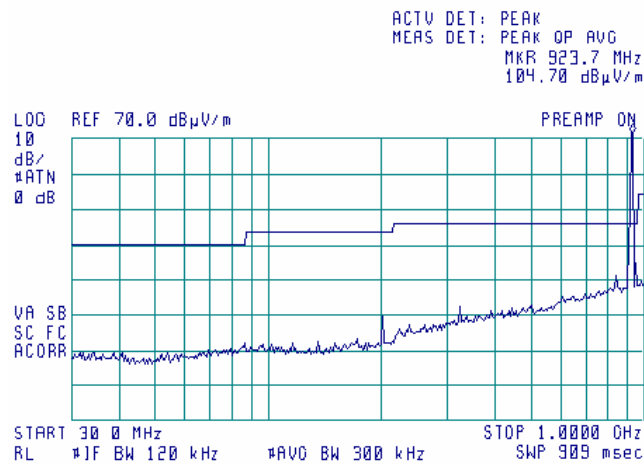


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.27 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

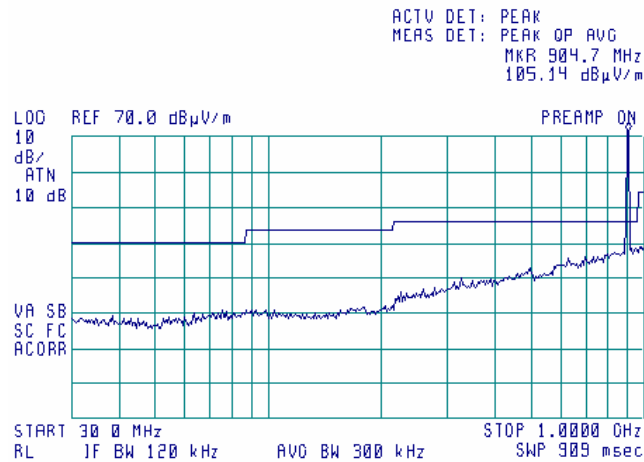
11:18:04 OCT 03, 2005



Plot 7.3.28 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

09:16:45 OCT 06, 2005

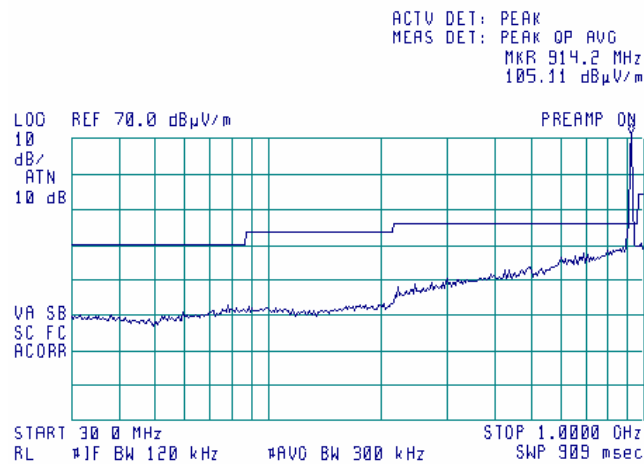


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.29 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

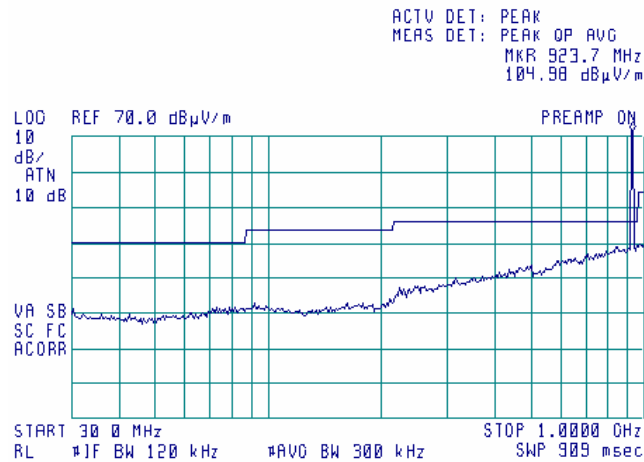
09:43:10 OCT 06, 2005



Plot 7.3.30 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

10:06:46 OCT 06, 2005

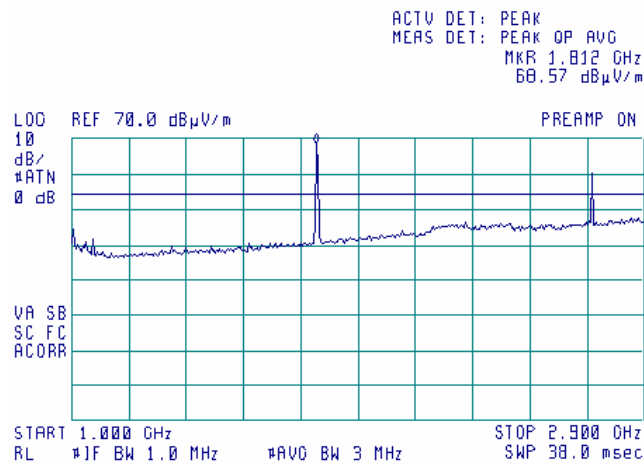


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.31 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

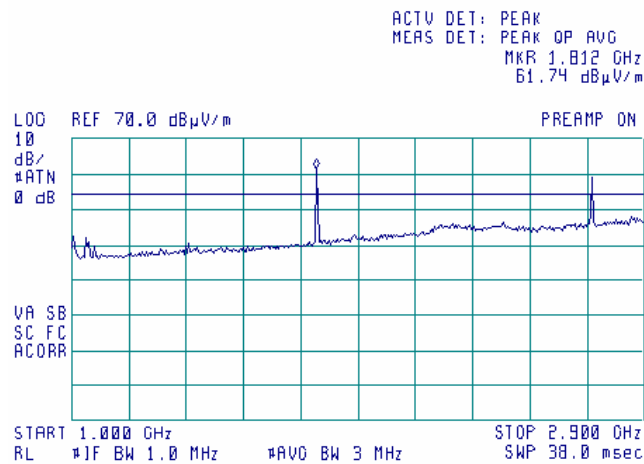
10:19:10 OCT 06, 2005



Plot 7.3.32 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

13:21:08 OCT 06, 2005

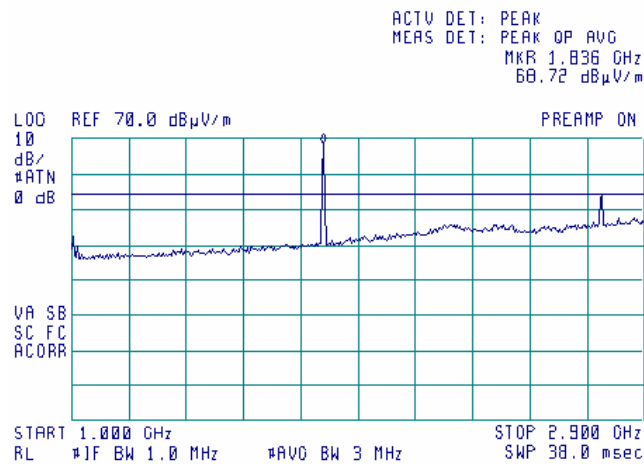


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.33 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

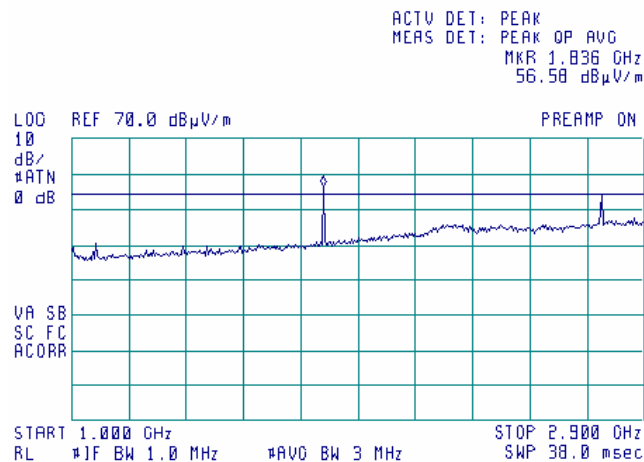
13:49:44 OCT 06, 2005



Plot 7.3.34 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

13:42:41 OCT 06, 2005

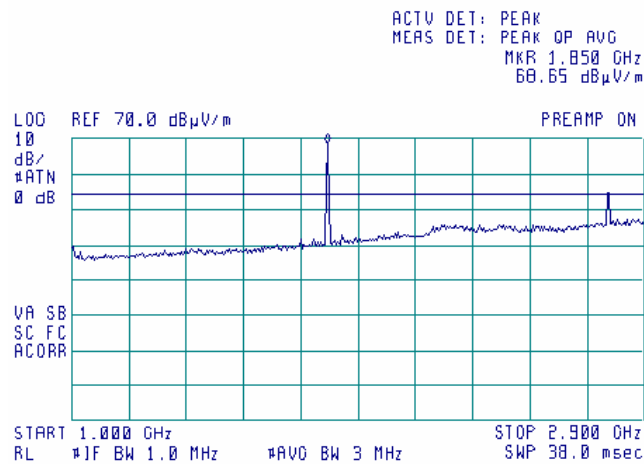


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.35 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

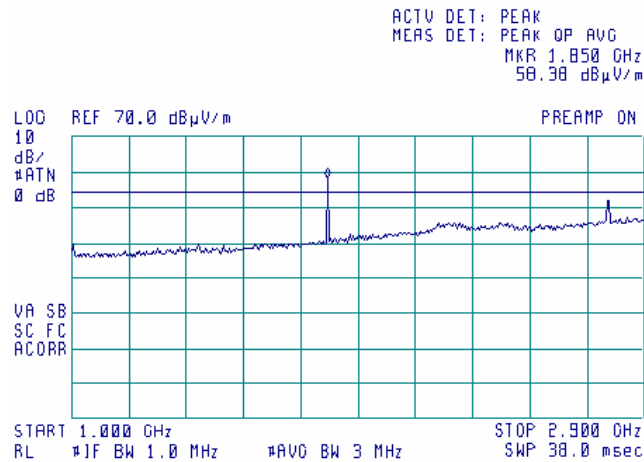
13:54:38 OCT 06, 2005



Plot 7.3.36 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

13:40:17 OCT 06, 2005

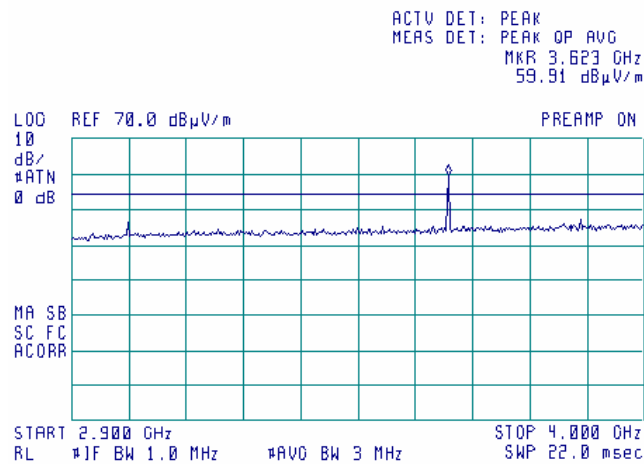


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.37 Radiated emission measurements from 2900 to 4000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

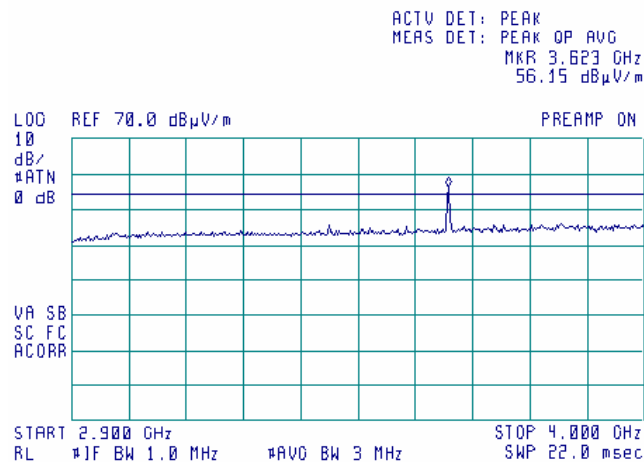
11:53:28 OCT 06, 2005



Plot 7.3.38 Radiated emission measurements from 2900 to 4000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

12:05:57 OCT 06, 2005

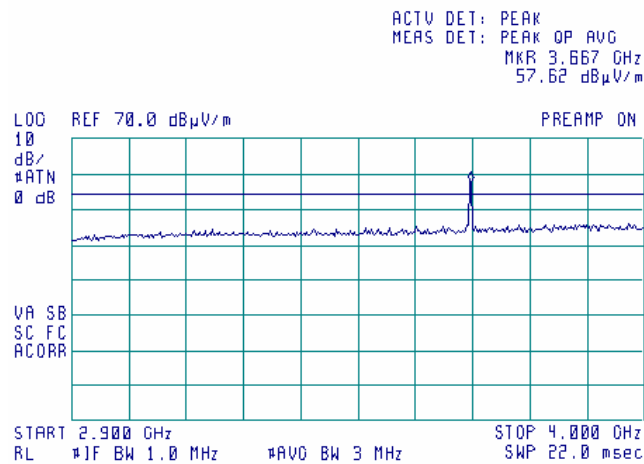


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.39 Radiated emission measurements from 2900 to 4000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

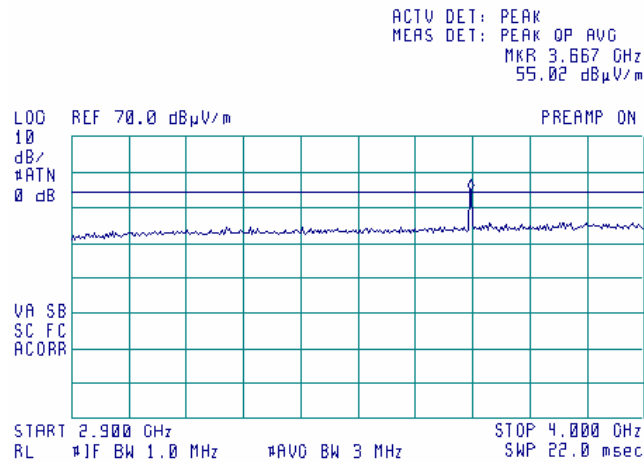
11:58:30 OCT 06, 2005



Plot 7.3.40 Radiated emission measurements from 2900 to 4000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

12:08:41 OCT 06, 2005

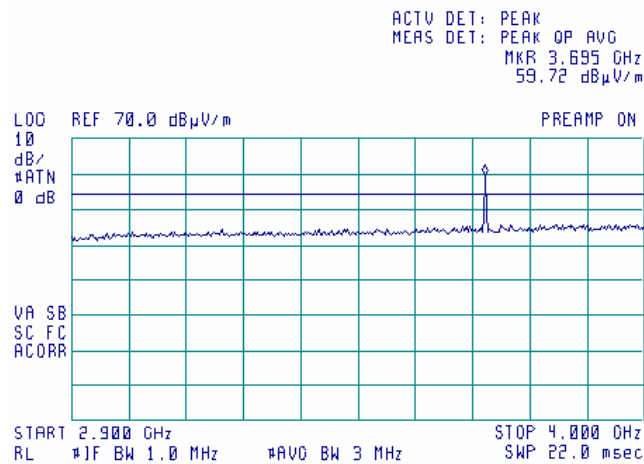


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.41 Radiated emission measurements from 2900 to 4000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

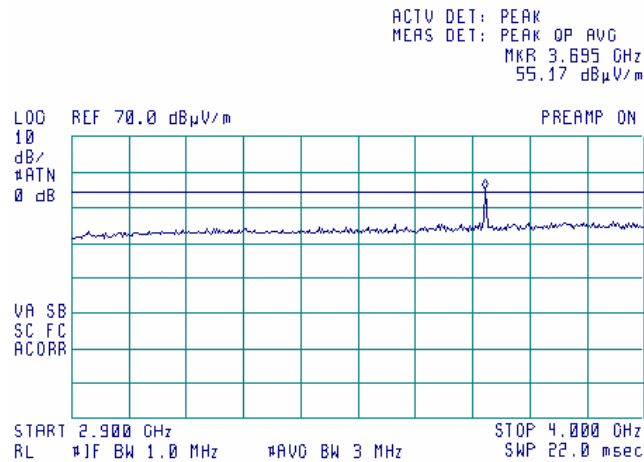
12:01:56 OCT 06, 2005



Plot 7.3.42 Radiated emission measurements from 2900 to 4000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

12:11:40 OCT 06, 2005

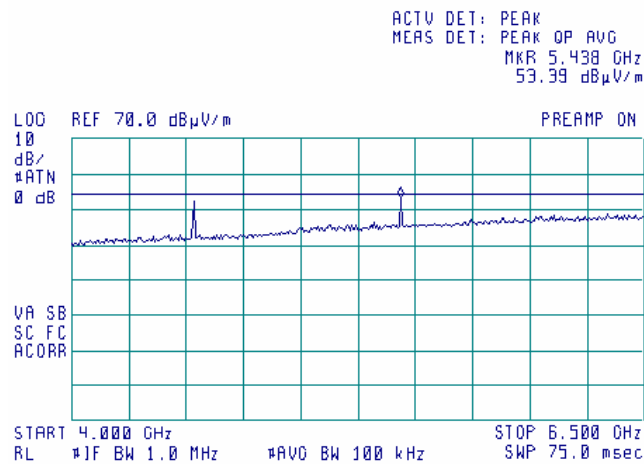


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.43 Radiated emission measurements from 4000 to 6500 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

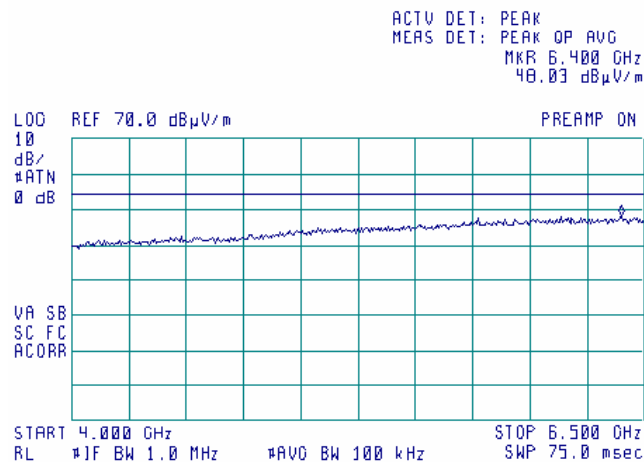
12:25:38 OCT 06, 2005



Plot 7.3.44 Radiated emission measurements from 4000 to 6500 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

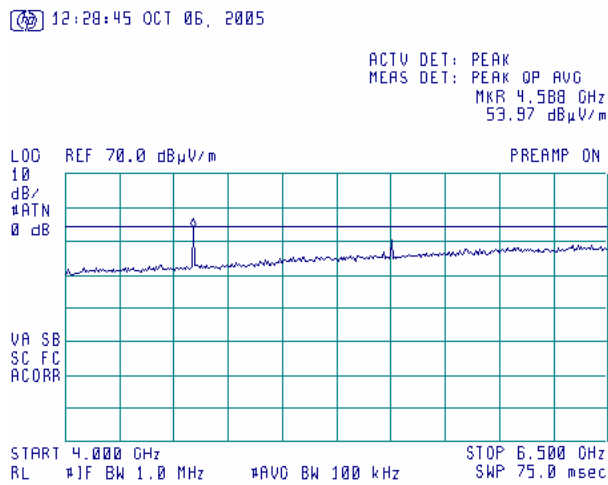
12:20:48 OCT 06, 2005



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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

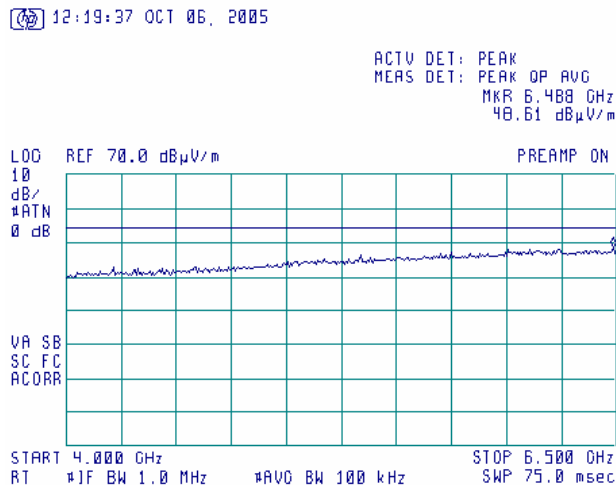
Plot 7.3.45 Radiated emission measurements from 4000 to 6500 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.46 Radiated emission measurements from 4000 to 6500 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK

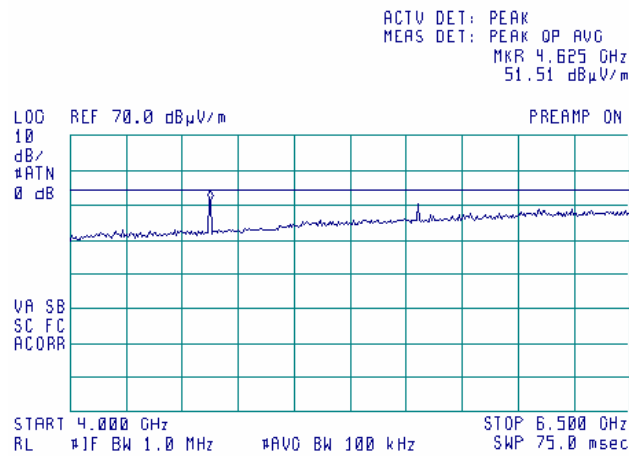


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|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.47 Radiated emission measurements from 4000 to 6500 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

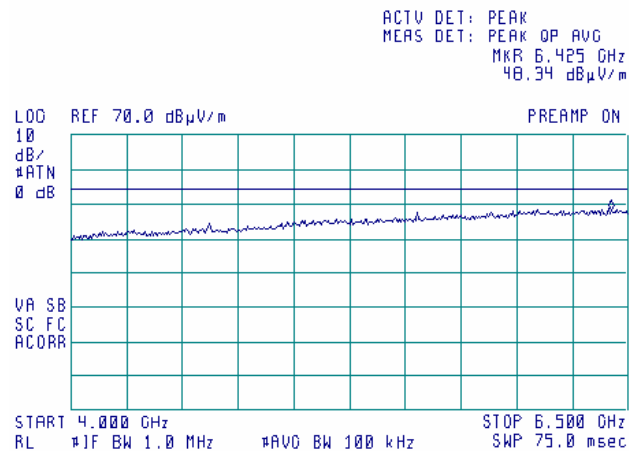
12:32:14 OCT 06, 2005



Plot 7.3.48 Radiated emission measurements from 4000 to 6500 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

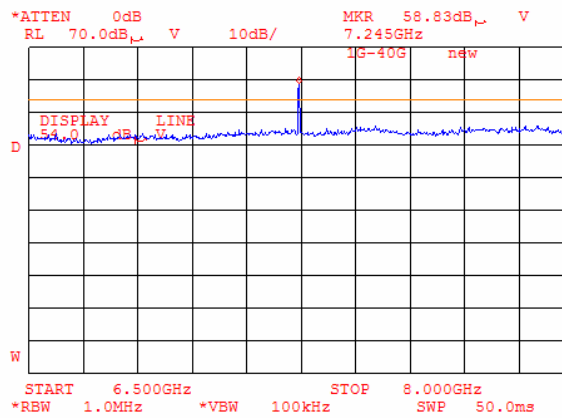
12:16:01 OCT 06, 2005



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

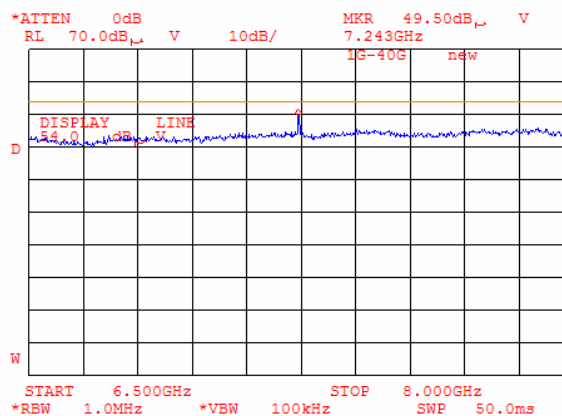
Plot 7.3.49 Radiated emission measurements from 6500 to 8000 MHz at the low carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.50 Radiated emission measurements from 6500 to 8000 MHz at the low carrier frequency

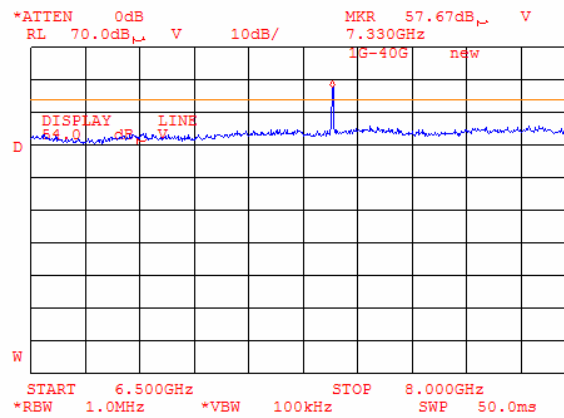
TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

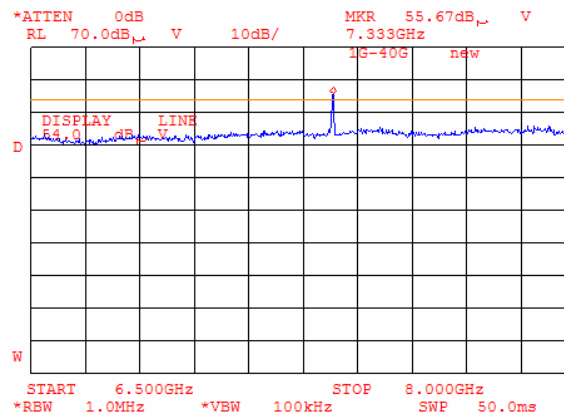
Plot 7.3.51 Radiated emission measurements from 6500 to 8000 MHz at the mid carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.52 Radiated emission measurements from 6500 to 8000 MHz at the mid carrier frequency

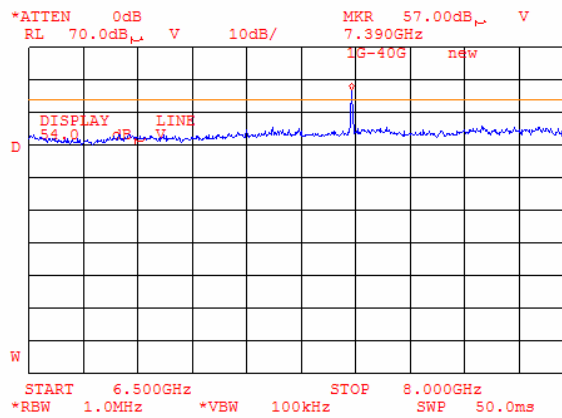
TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

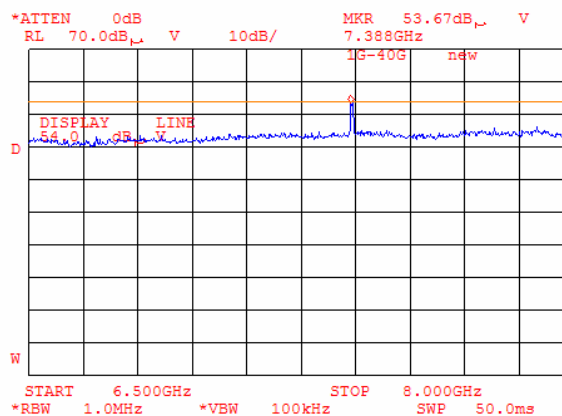
Plot 7.3.53 Radiated emission measurements from 6500 to 8000 MHz at the high carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.54 Radiated emission measurements from 6500 to 8000 MHz at the high carrier frequency

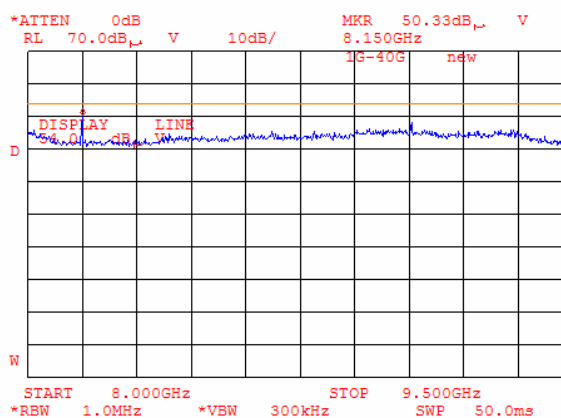
TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

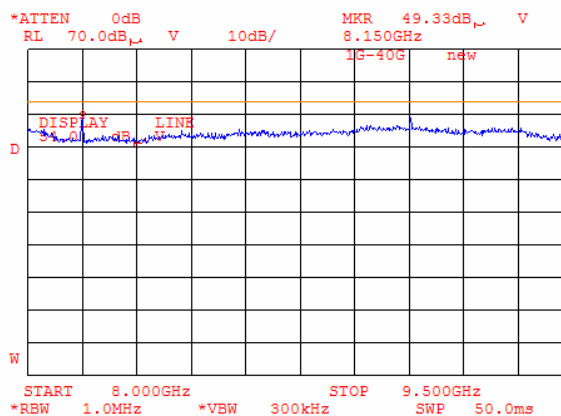
Plot 7.3.55 Radiated emission measurements from 8000 to 9500 MHz at the low carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.56 Radiated emission measurements from 8000 to 9500 MHz at the low carrier frequency

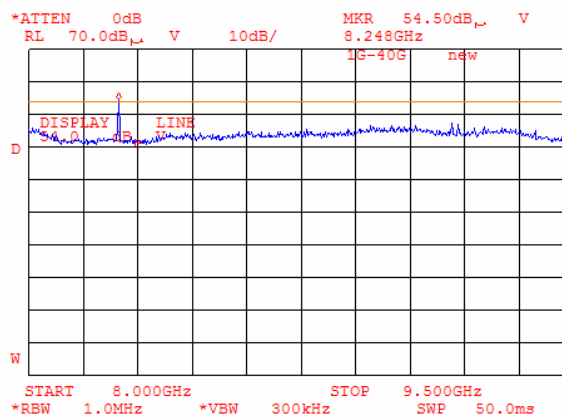
TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: PASS | |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

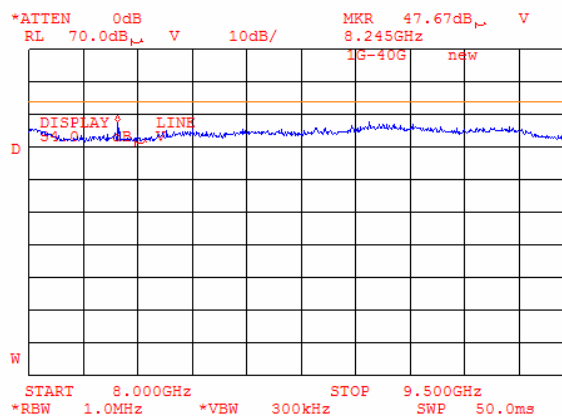
Plot 7.3.57 Radiated emission measurements from 8000 to 9500 MHz at the mid carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.58 Radiated emission measurements from 8000 to 9500 MHz at the mid carrier frequency

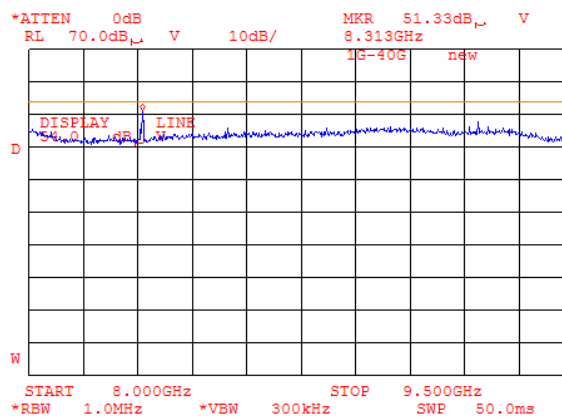
TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

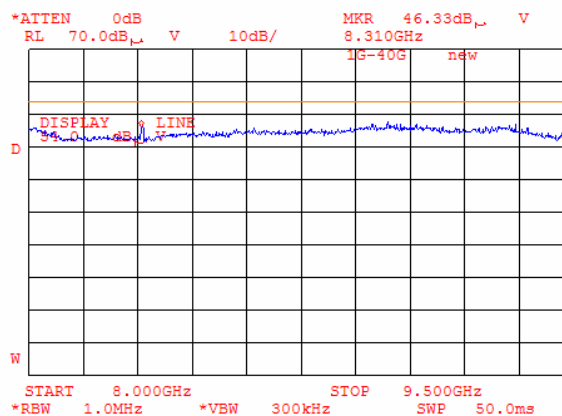
Plot 7.3.59 Radiated emission measurements from 8000 to 9500 MHz at the high carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: PSK



Plot 7.3.60 Radiated emission measurements from 8000 to 9500 MHz at the high carrier frequency

TEST SITE: OATS
 TEST DISTANCE: 3 m
 ANTENNA POLARIZATION: Vertical and Horizontal
 MODULATION: FSK

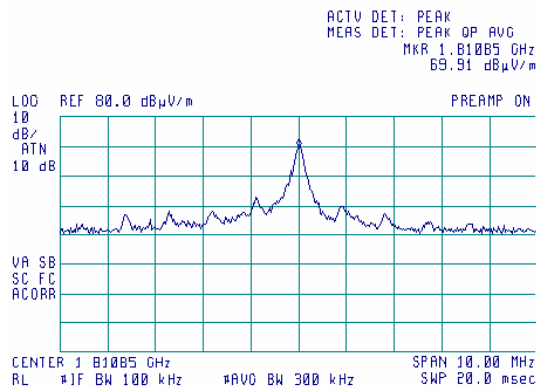


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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.61 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK

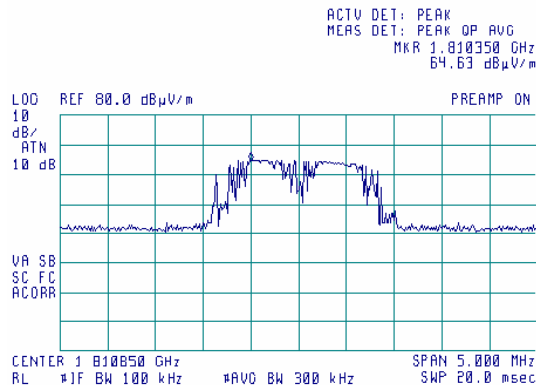
14:18:53 OCT 06, 2005



Plot 7.3.62 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK

14:30:02 OCT 06, 2005

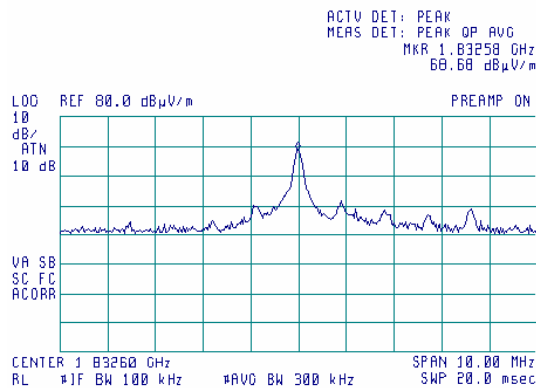


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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.63 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK

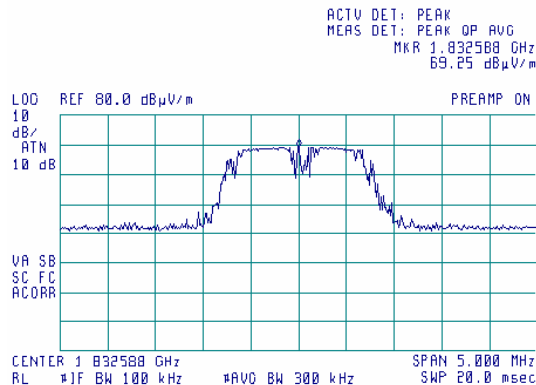
14:14:28 OCT 06, 2005



Plot 7.3.64 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK

14:41:29 OCT 06, 2005

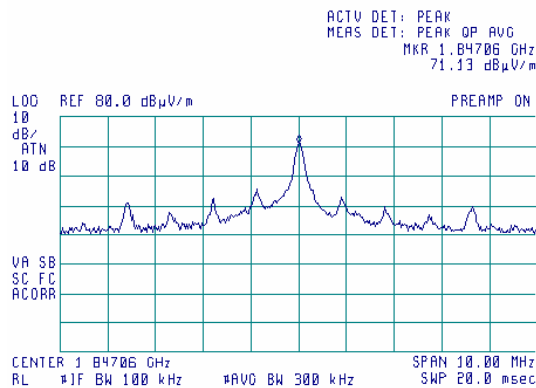


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.65 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK

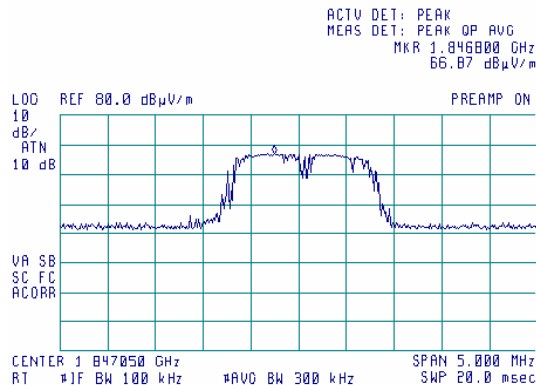
14:00:27 OCT 06, 2005



Plot 7.3.66 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK

14:49:43 OCT 06, 2005

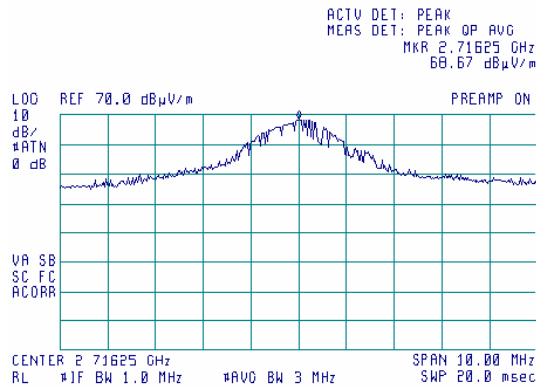


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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.67 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK

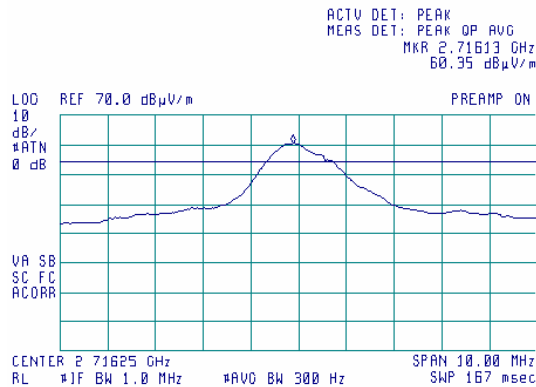
10:55:13 OCT 06, 2005



Plot 7.3.68 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK

10:57:02 OCT 06, 2005

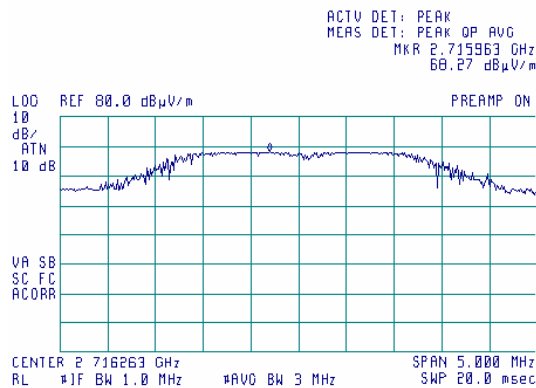


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.69 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 VIDEO BANDWIDTH: 3 MHz
 MODULATION: FSK

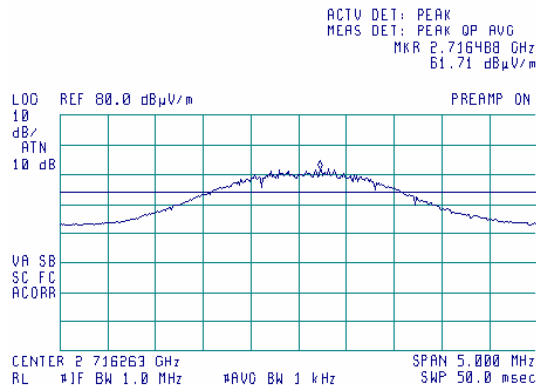
11:17:24 OCT 10, 2005



Plot 7.3.70 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
 TEST DISTANCE: 3 m
 VIDEO BANDWIDTH: 1000 Hz
 MODULATION: FSK

11:19:53 OCT 10, 2005

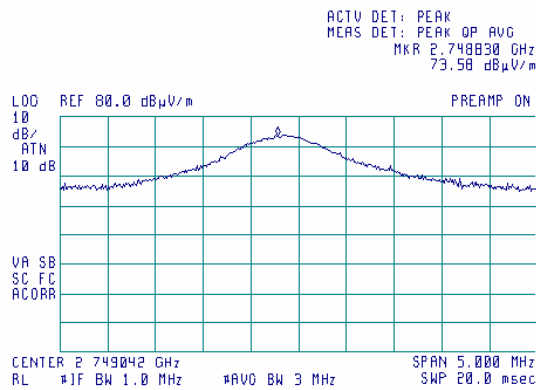


| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.71 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK

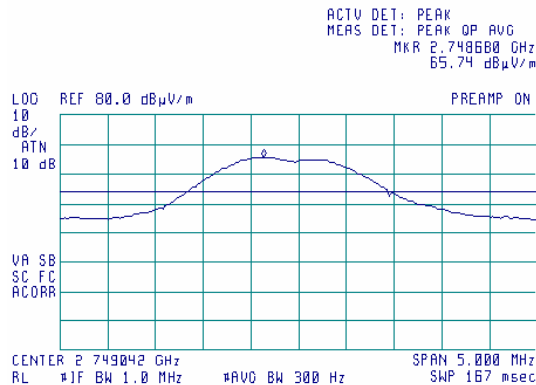
11:33:04 OCT 10, 2005



Plot 7.3.72 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK

11:34:04 OCT 10, 2005

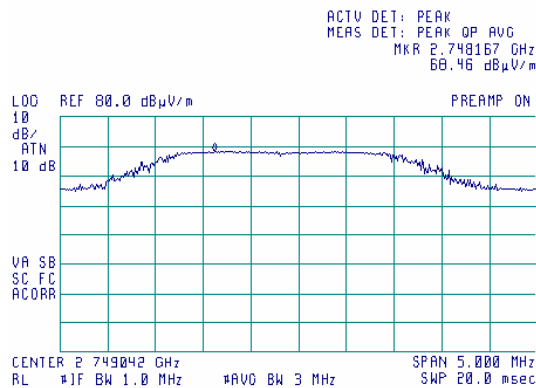


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.73 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK

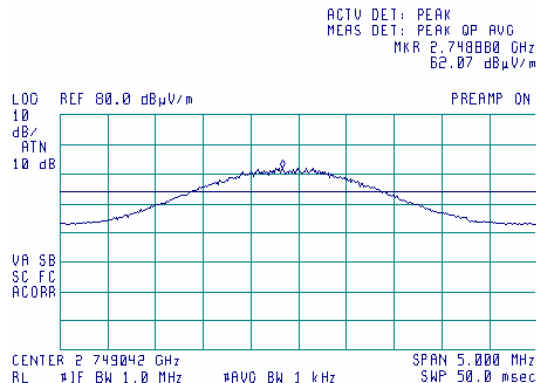
11:27:55 OCT 10, 2005



Plot 7.3.74 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK

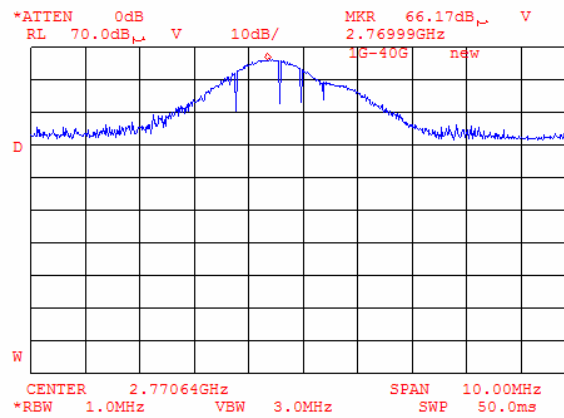
11:25:41 OCT 10, 2005



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

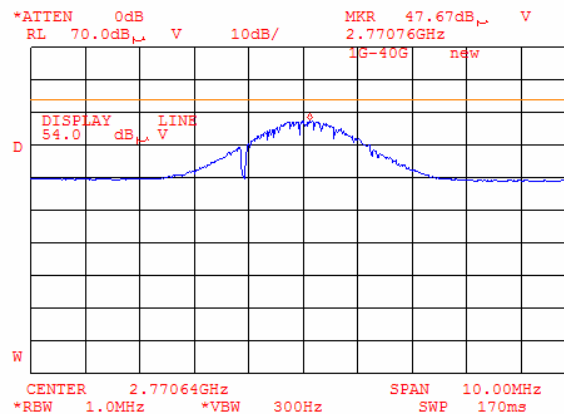
Plot 7.3.75 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.76 Radiated emission measurements at the third harmonic of high carrier frequency

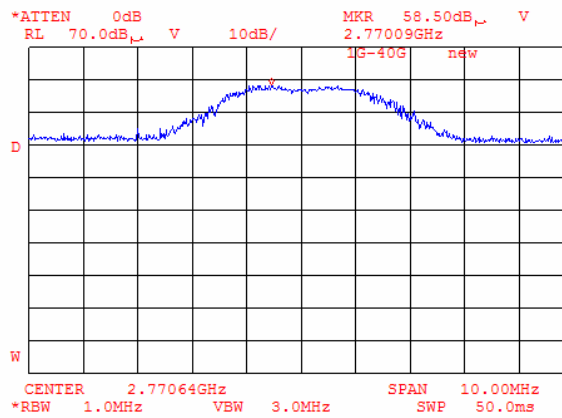
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

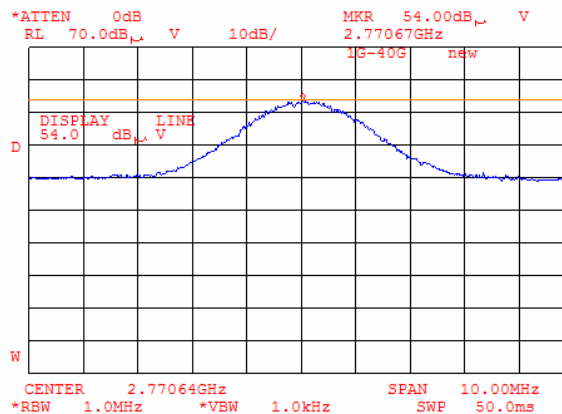
Plot 7.3.77 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.78 Radiated emission measurements at the third harmonic of high carrier frequency

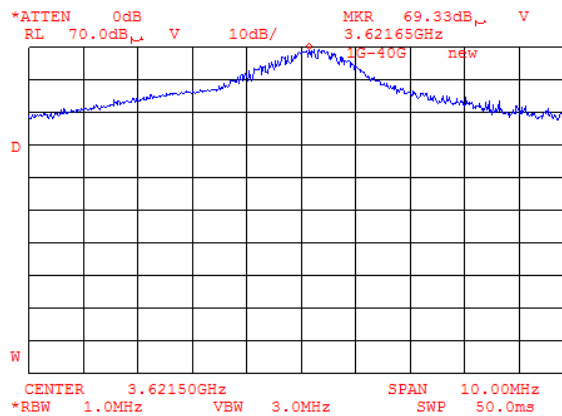
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

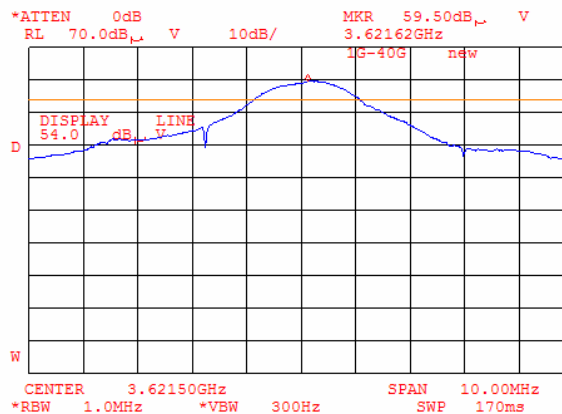
Plot 7.3.79 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.80 Radiated emission measurements at the fourth harmonic of low carrier frequency

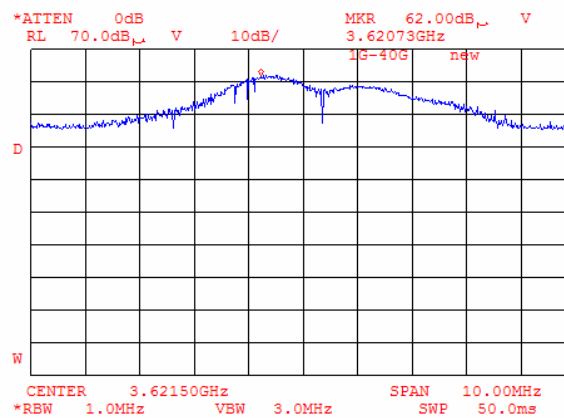
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

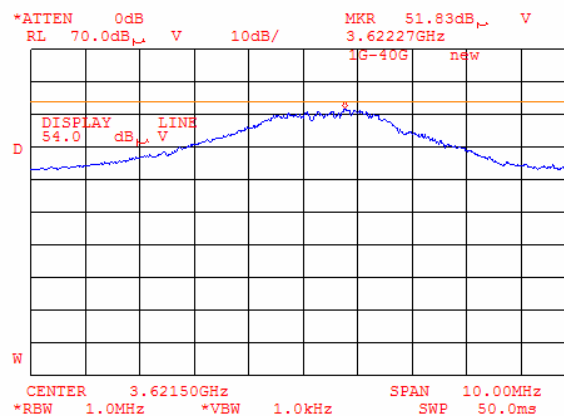
Plot 7.3.81 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.82 Radiated emission measurements at the fourth harmonic of low carrier frequency

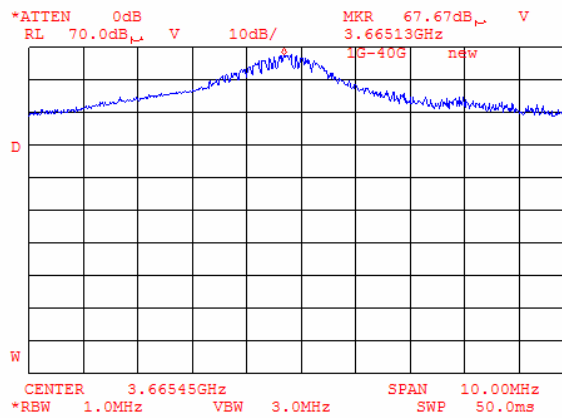
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

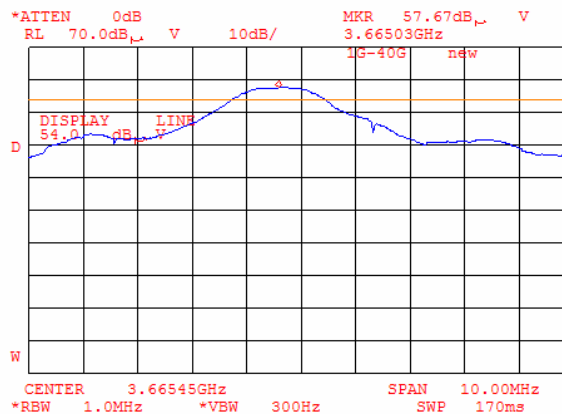
Plot 7.3.83 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.84 Radiated emission measurements at the fourth harmonic of mid carrier frequency

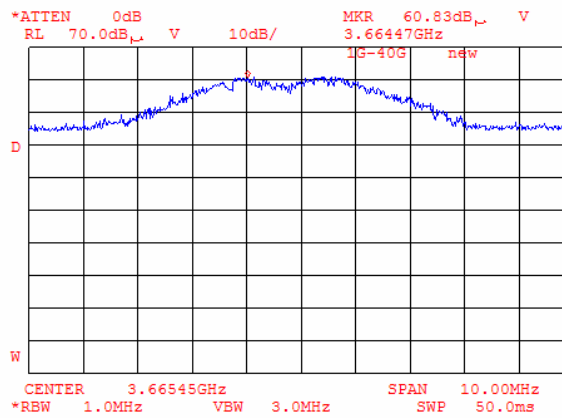
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: PASS | |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

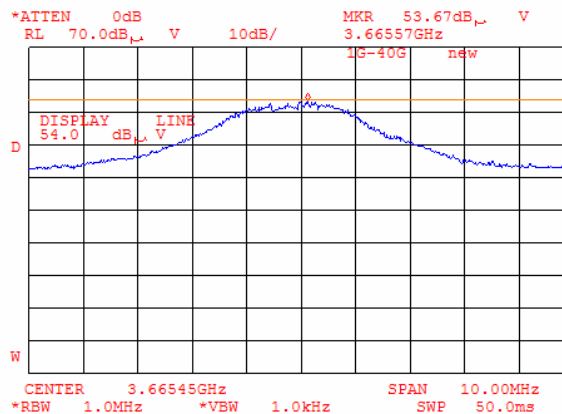
Plot 7.3.85 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.86 Radiated emission measurements at the fourth harmonic of mid carrier frequency

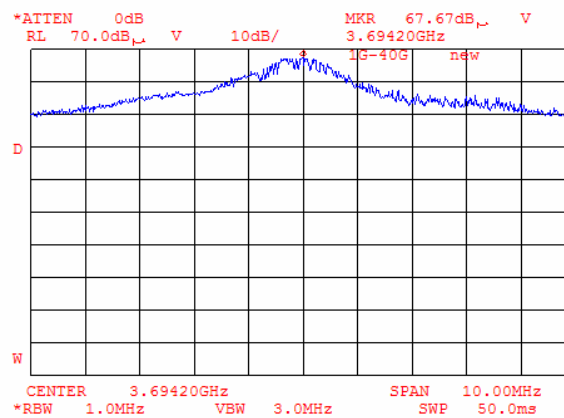
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|---|-------------------------------|--------------------------------|-------------------------------|
| Test specification: Section 15.247(d), Radiated spurious emissions | | | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/10/2005 12:50:22 PM | | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

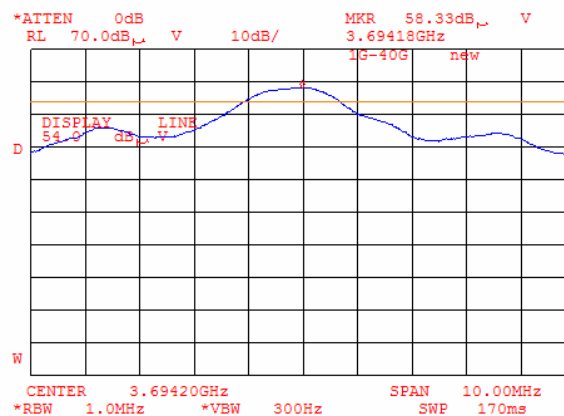
Plot 7.3.87 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.88 Radiated emission measurements at the fourth harmonic of high carrier frequency

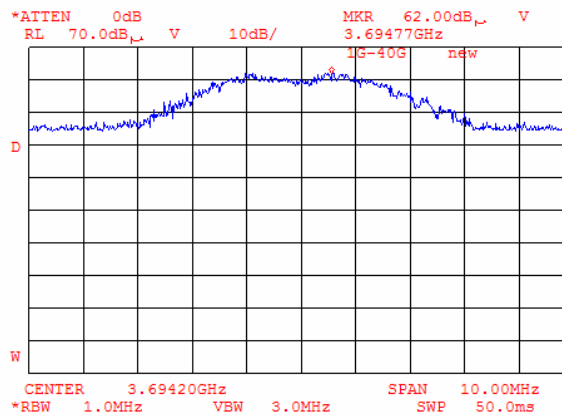
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

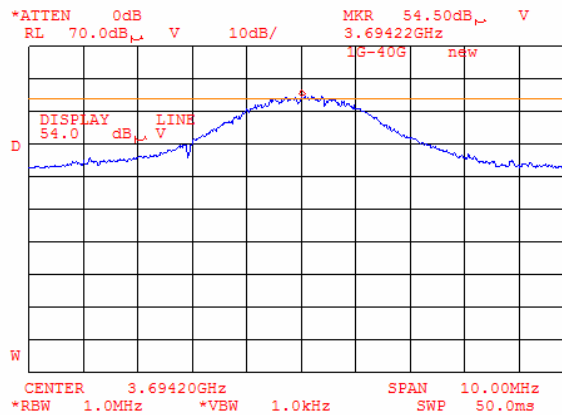
Plot 7.3.89 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.90 Radiated emission measurements at the fourth harmonic of high carrier frequency

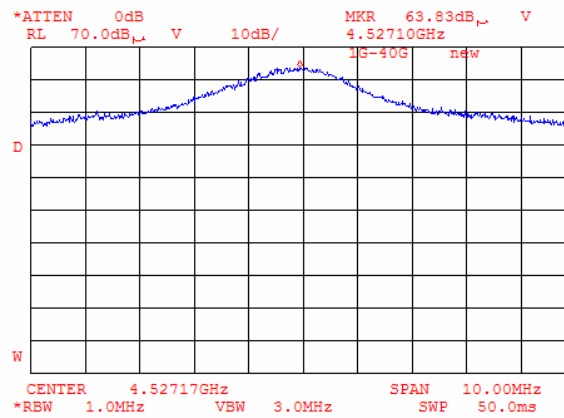
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

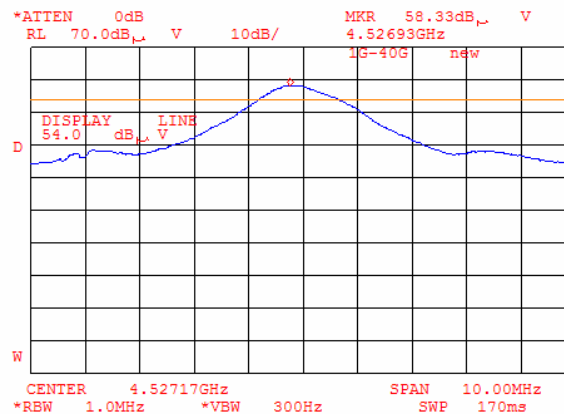
Plot 7.3.91 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.92 Radiated emission measurements at the fifth harmonic of low carrier frequency

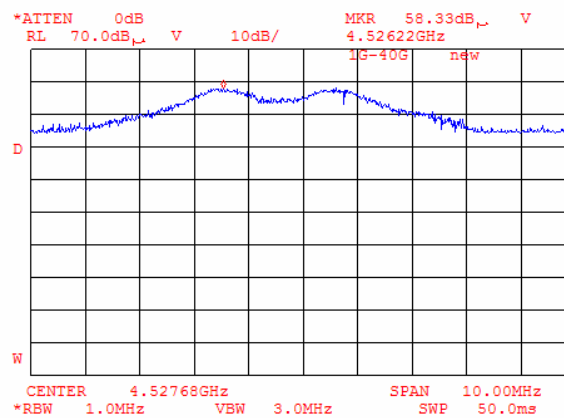
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

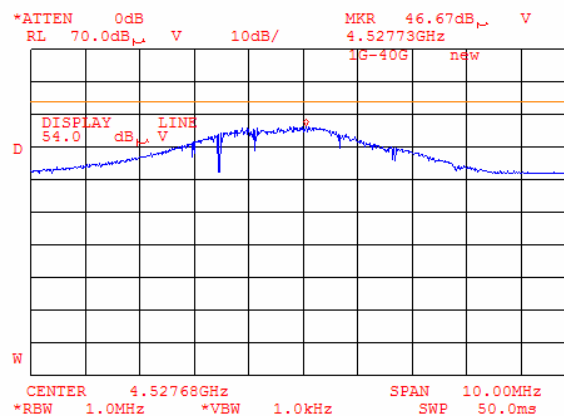
Plot 7.3.93 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.94 Radiated emission measurements at the fifth harmonic of low carrier frequency

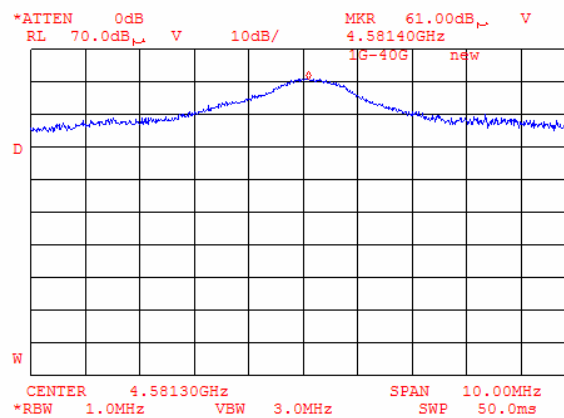
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

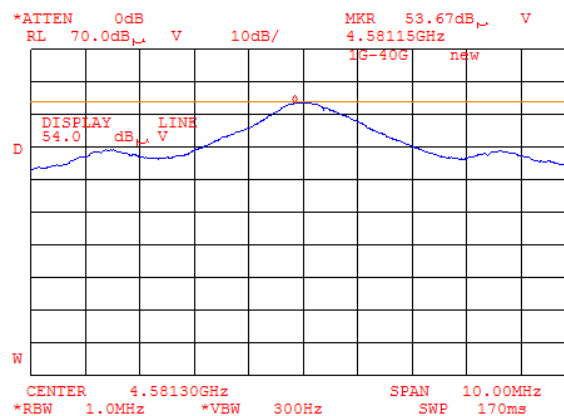
Plot 7.3.95 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.96 Radiated emission measurements at the fifth harmonic of mid carrier frequency

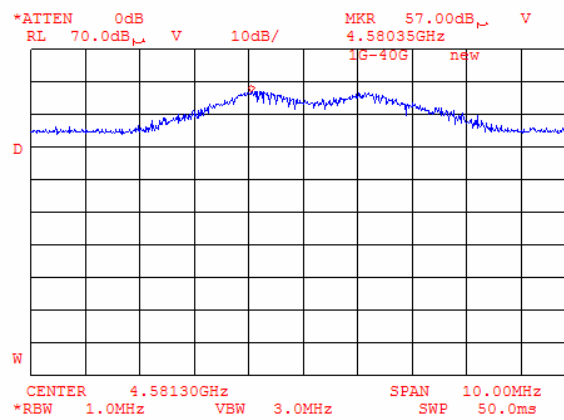
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

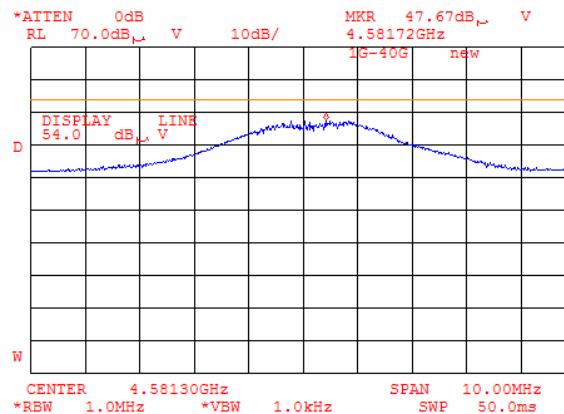
Plot 7.3.97 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.98 Radiated emission measurements at the fifth harmonic of mid carrier frequency

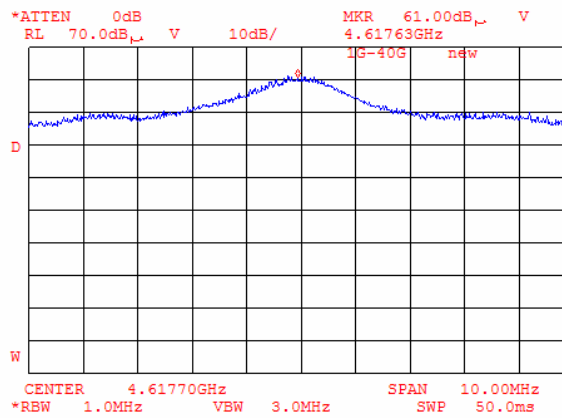
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

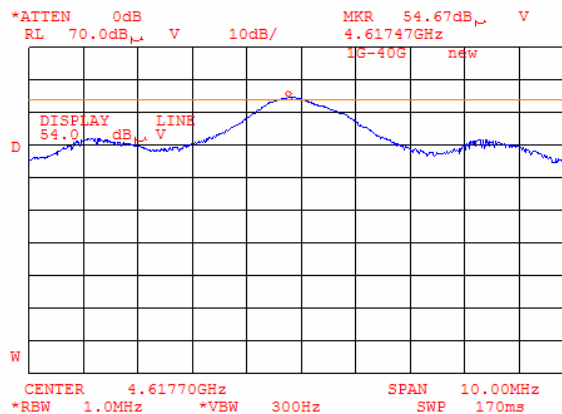
Plot 7.3.99 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.100 Radiated emission measurements at the fifth harmonic of high carrier frequency

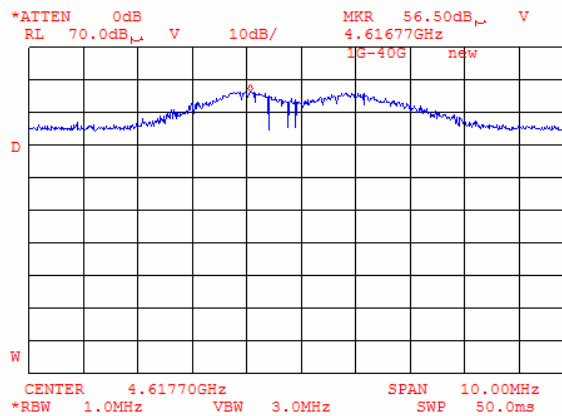
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

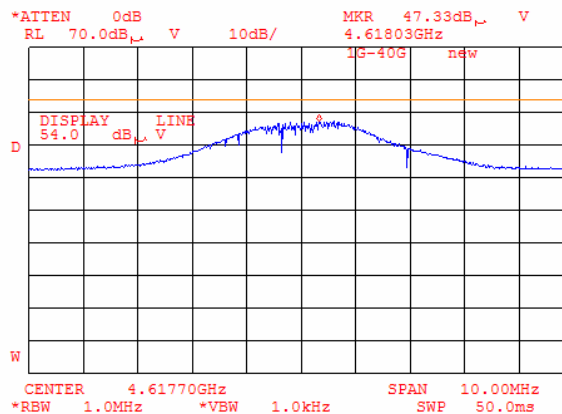
Plot 7.3.101 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.102 Radiated emission measurements at the fifth harmonic of high carrier frequency

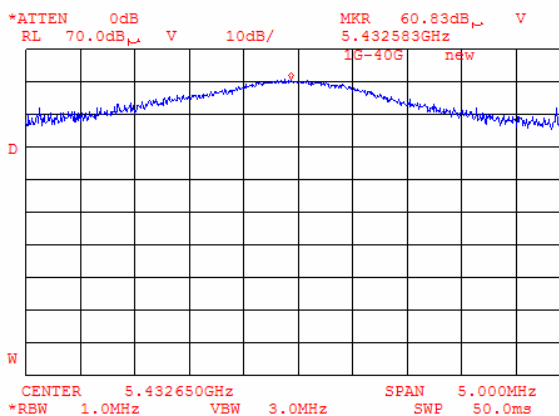
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

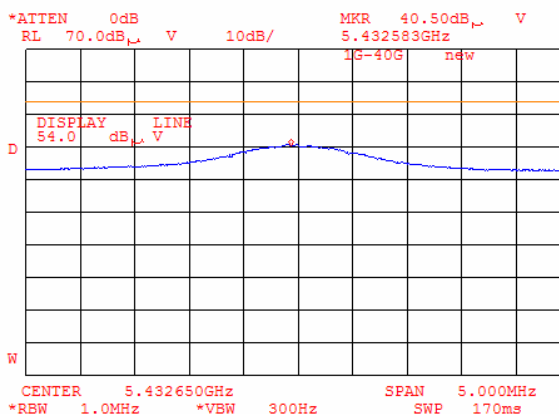
Plot 7.3.103 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.104 Radiated emission measurements at the sixth harmonic of low carrier frequency

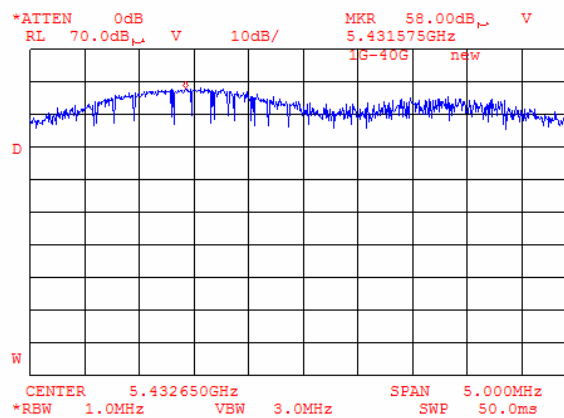
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

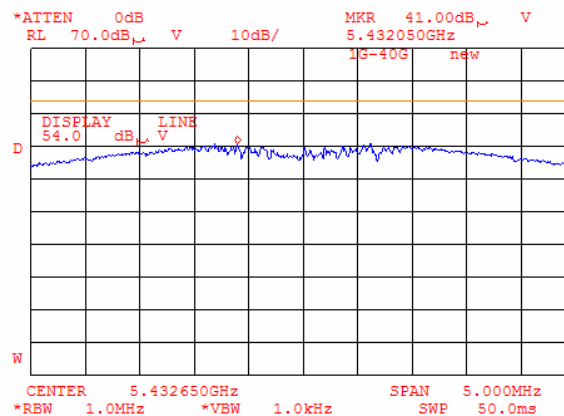
Plot 7.3.105 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.106 Radiated emission measurements at the sixth harmonic of low carrier frequency

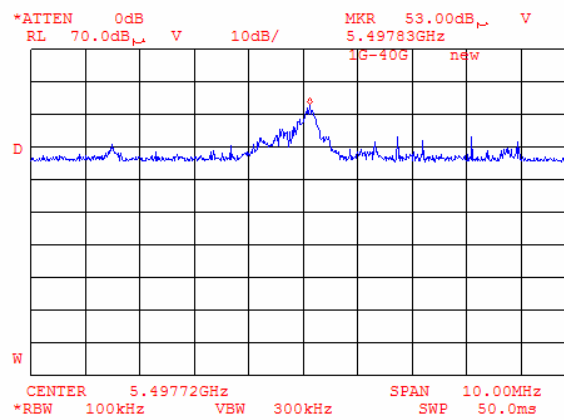
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

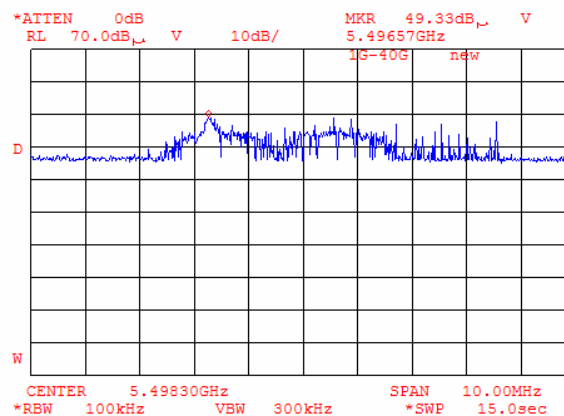
Plot 7.3.107 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.108 Radiated emission measurements at the sixth harmonic of mid carrier frequency

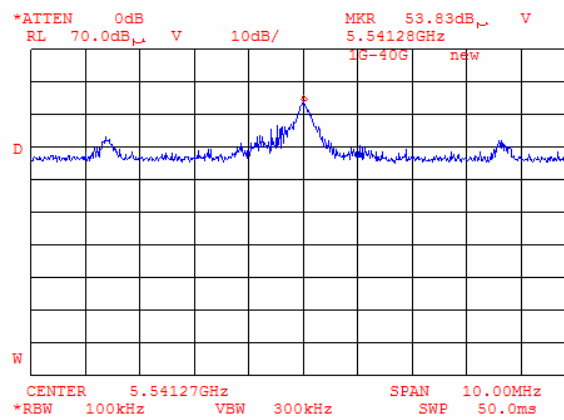
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

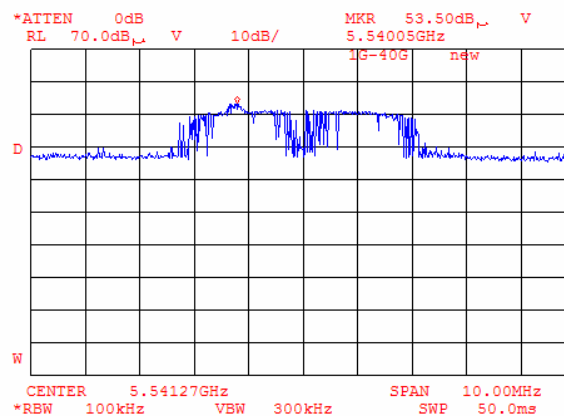
Plot 7.3.109 Radiated emission measurements at the sixth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.110 Radiated emission measurements at the sixth harmonic of high carrier frequency

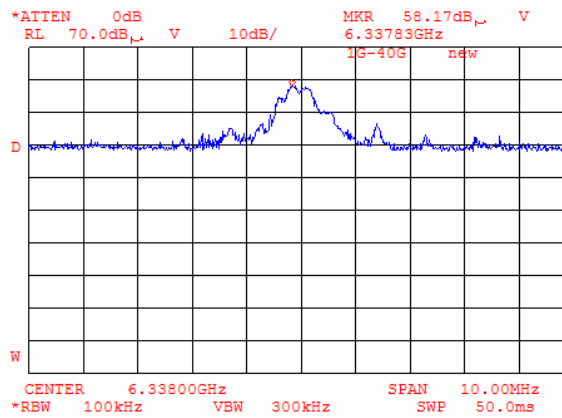
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

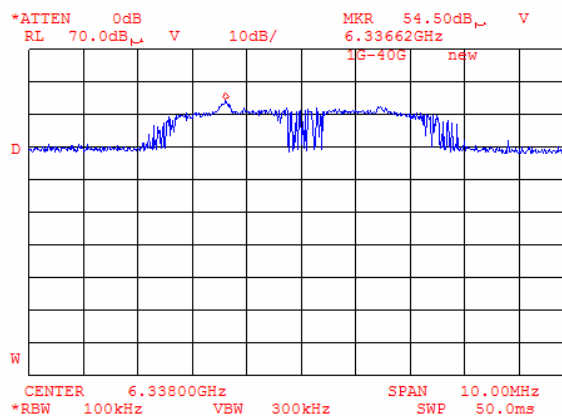
Plot 7.3.111 Radiated emission measurements at the seventh harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.112 Radiated emission measurements at the seventh harmonic of low carrier frequency

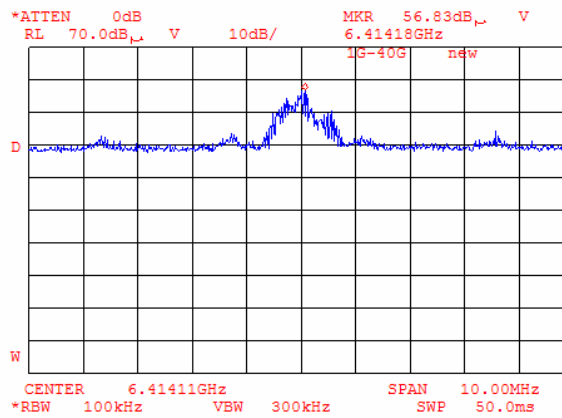
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

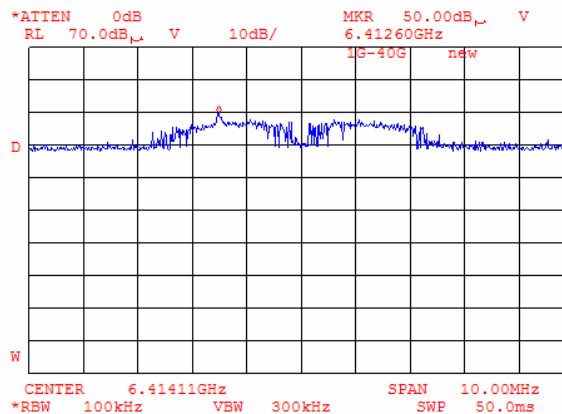
Plot 7.3.113 Radiated emission measurements at the seventh harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.114 Radiated emission measurements at the seventh harmonic of mid carrier frequency

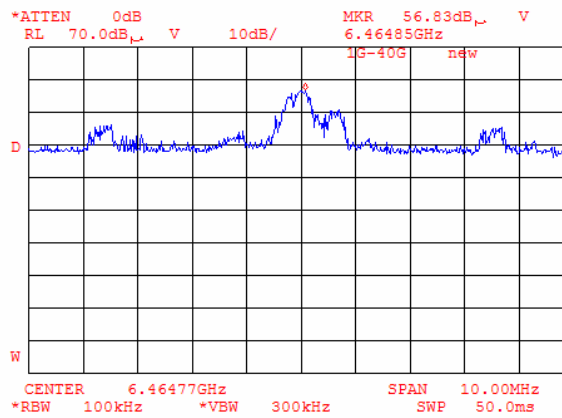
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

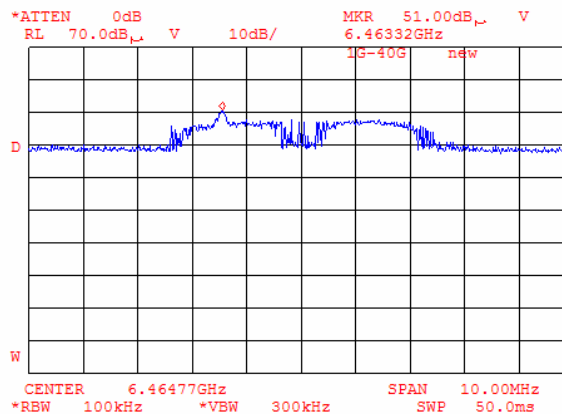
Plot 7.3.115 Radiated emission measurements at the seventh harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.116 Radiated emission measurements at the seventh harmonic of high carrier frequency

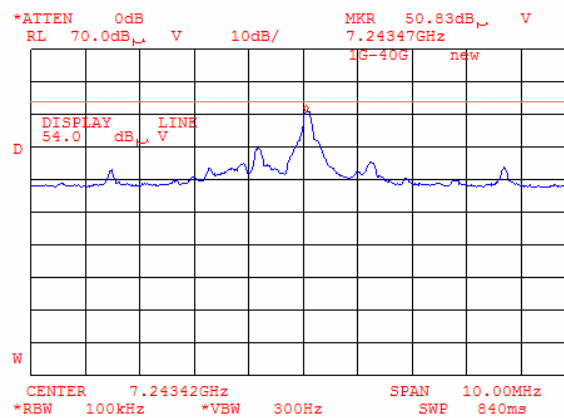
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

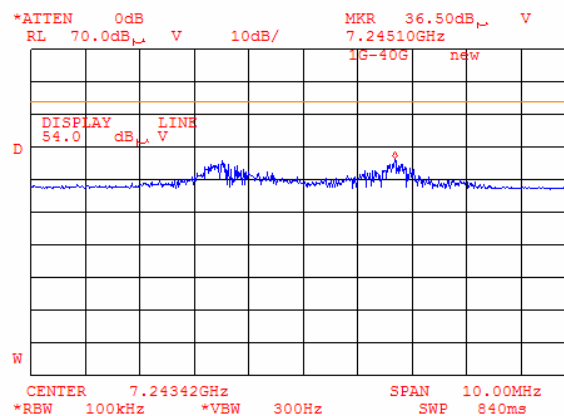
Plot 7.3.117 Radiated emission measurements at the eight harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.118 Radiated emission measurements at the eight harmonic of low carrier frequency

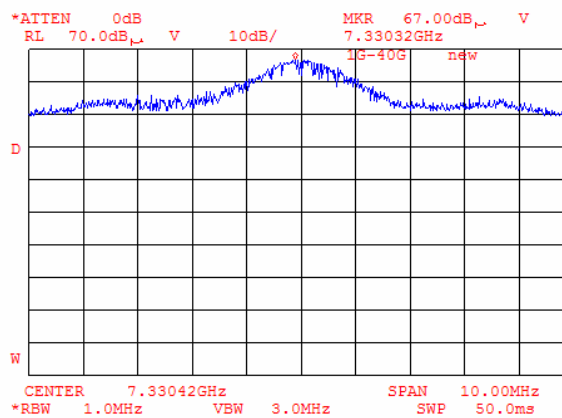
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK



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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

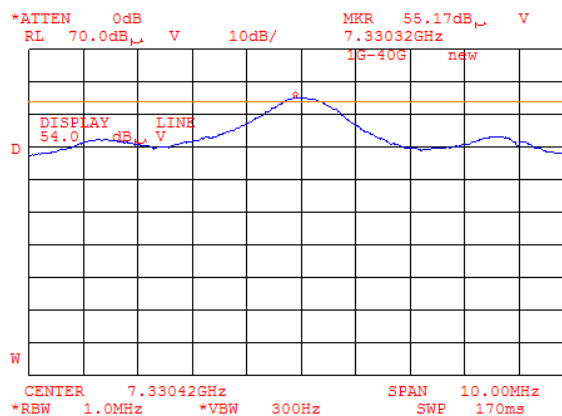
Plot 7.3.119 Radiated emission measurements at the eight harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.120 Radiated emission measurements at the eight harmonic of mid carrier frequency

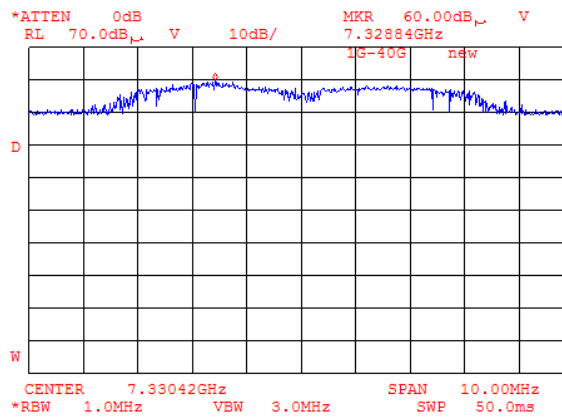
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

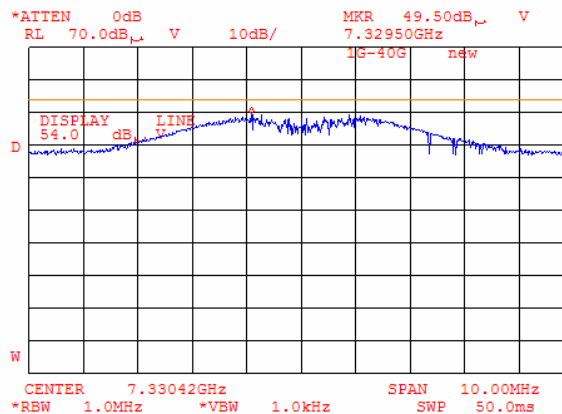
Plot 7.3.121 Radiated emission measurements at the eight harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.122 Radiated emission measurements at the eight harmonic of mid carrier frequency

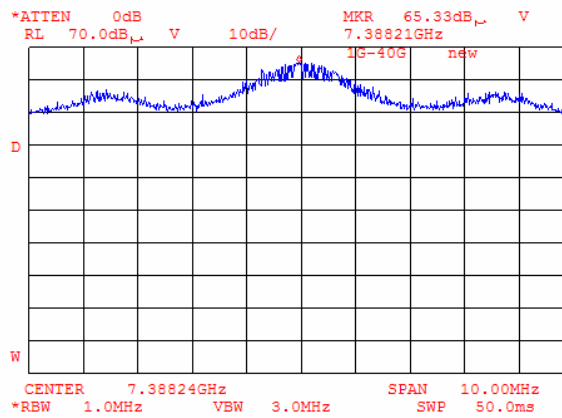
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

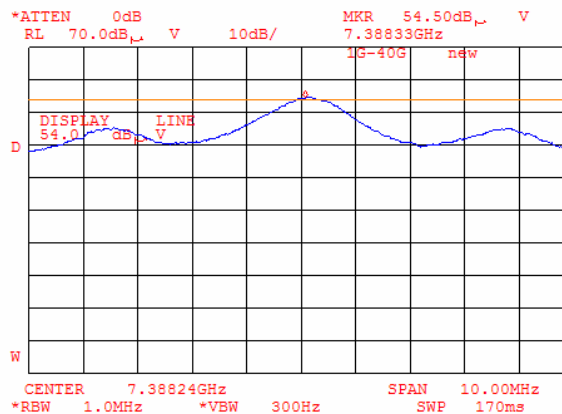
Plot 7.3.123 Radiated emission measurements at the eight harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.124 Radiated emission measurements at the eight harmonic of high carrier frequency

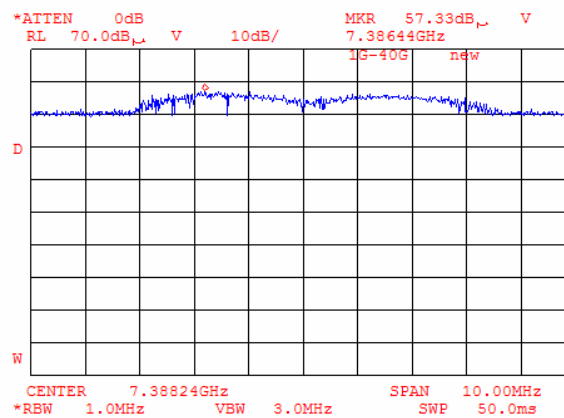
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

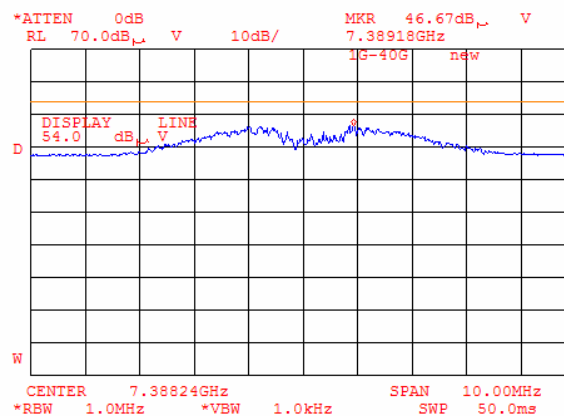
Plot 7.3.125 Radiated emission measurements at the eight harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.126 Radiated emission measurements at the eight harmonic of high carrier frequency

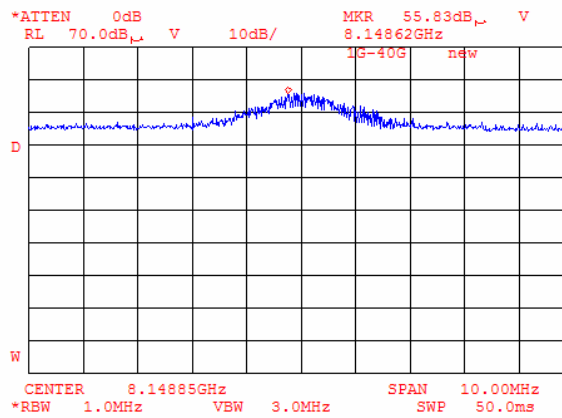
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

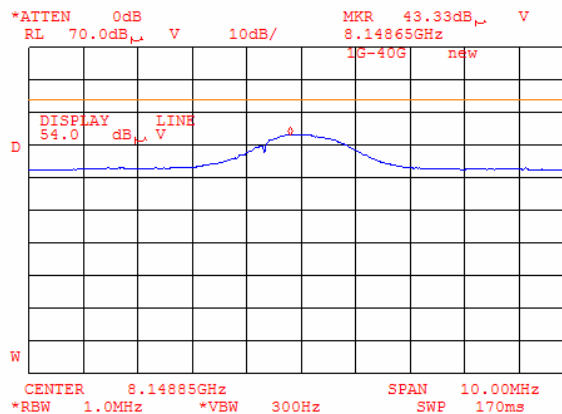
Plot 7.3.127 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.128 Radiated emission measurements at the ninth harmonic of low carrier frequency

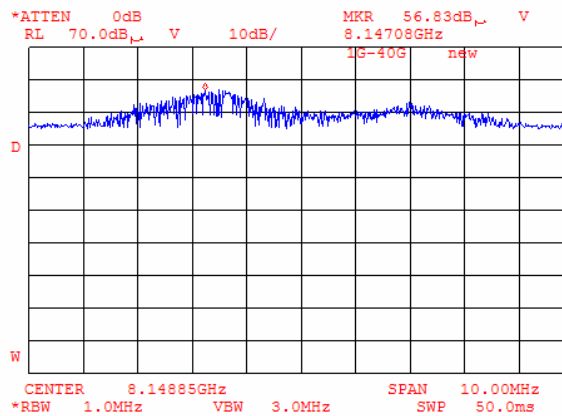
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

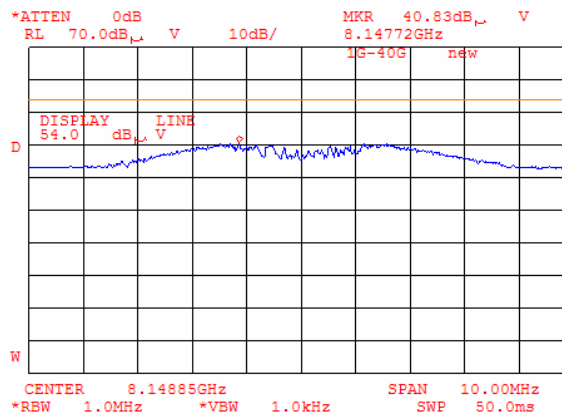
Plot 7.3.129 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.130 Radiated emission measurements at the ninth harmonic of low carrier frequency

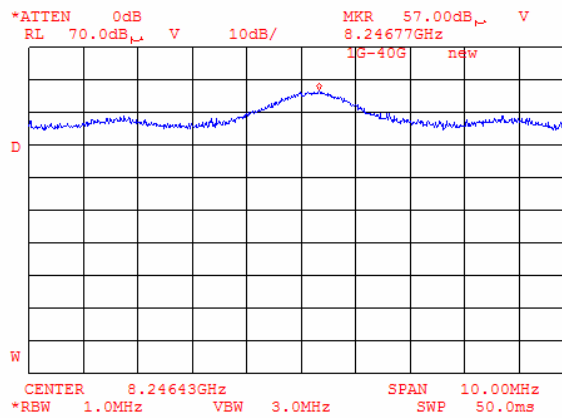
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

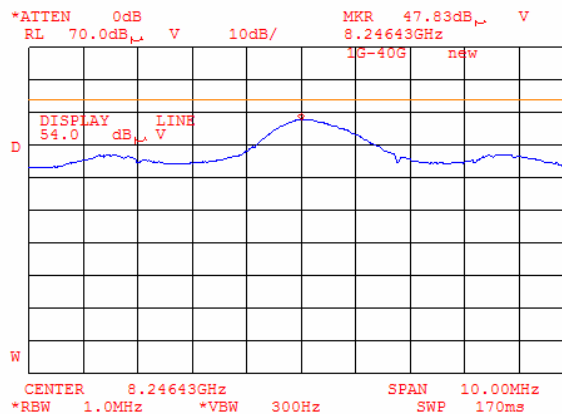
Plot 7.3.131 Radiated emission measurements at the ninth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.132 Radiated emission measurements at the ninth harmonic of mid carrier frequency

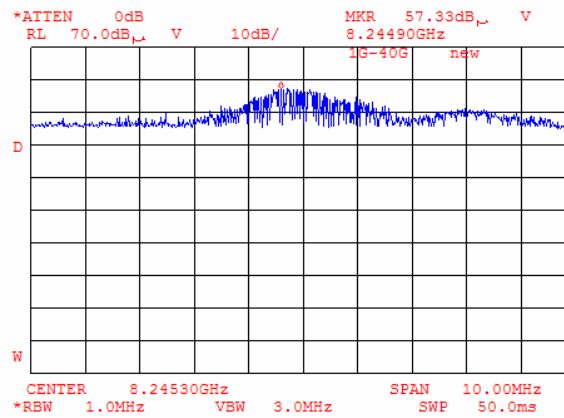
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

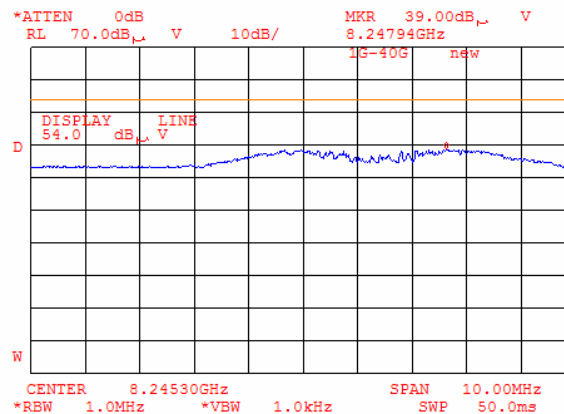
Plot 7.3.133 Radiated emission measurements at the ninth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.134 Radiated emission measurements at the ninth harmonic of mid carrier frequency

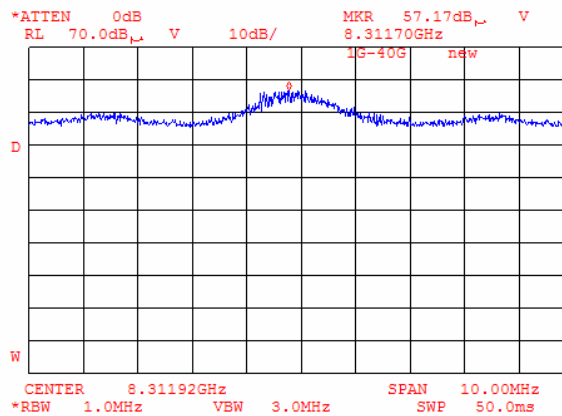
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

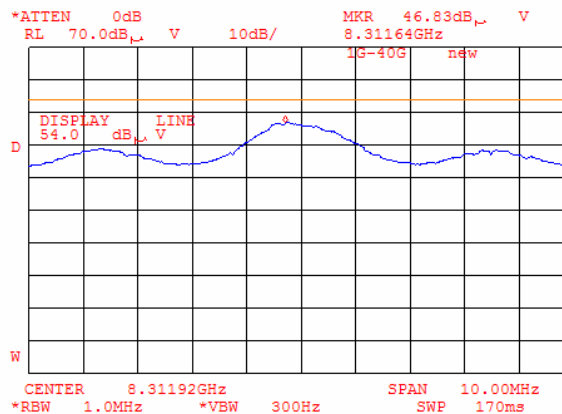
Plot 7.3.135 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.136 Radiated emission measurements at the ninth harmonic of high carrier frequency

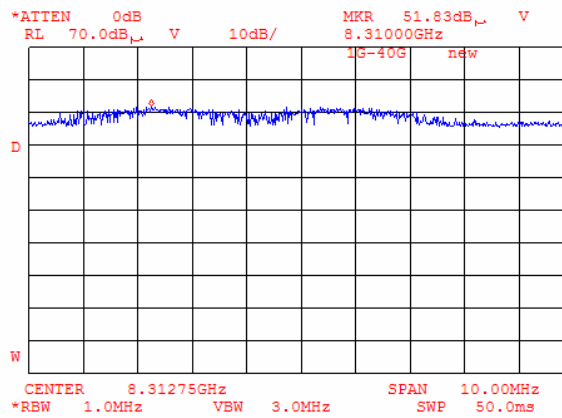
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

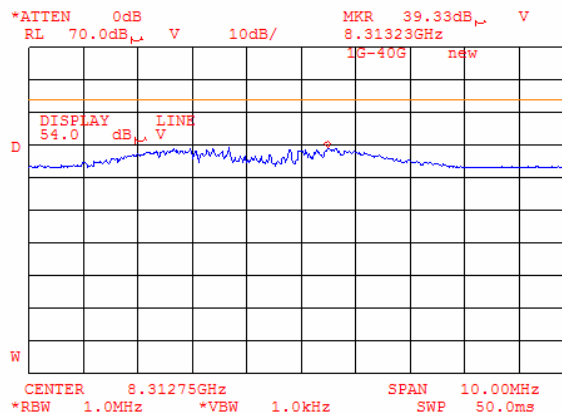
Plot 7.3.137 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.138 Radiated emission measurements at the ninth harmonic of high carrier frequency

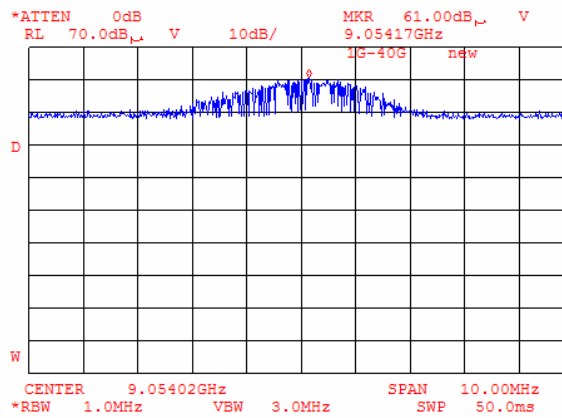
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

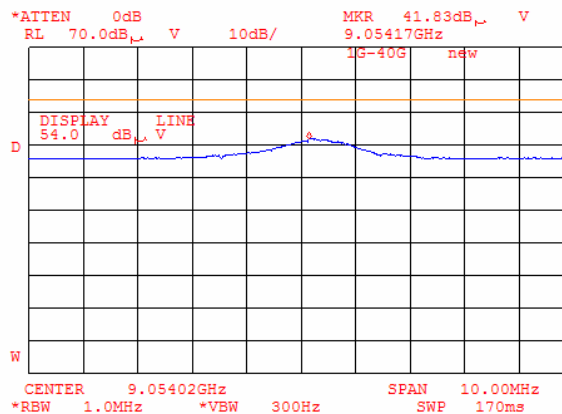
Plot 7.3.139 Radiated emission measurements at the tenth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.140 Radiated emission measurements at the tenth harmonic of low carrier frequency

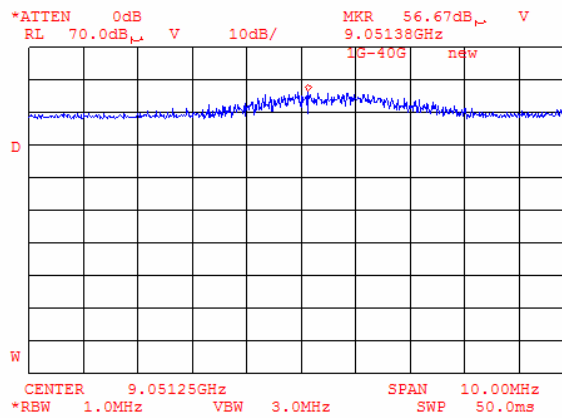
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

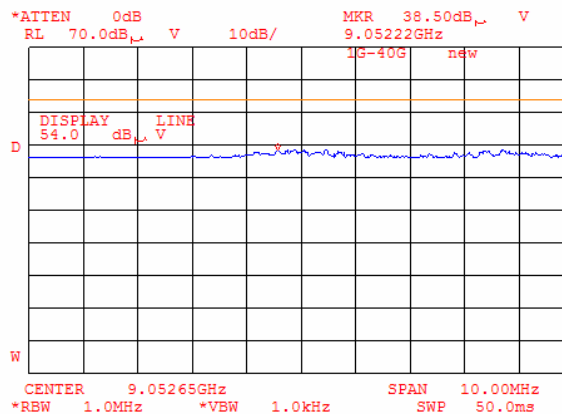
Plot 7.3.141 Radiated emission measurements at the tenth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.142 Radiated emission measurements at the tenth harmonic of low carrier frequency

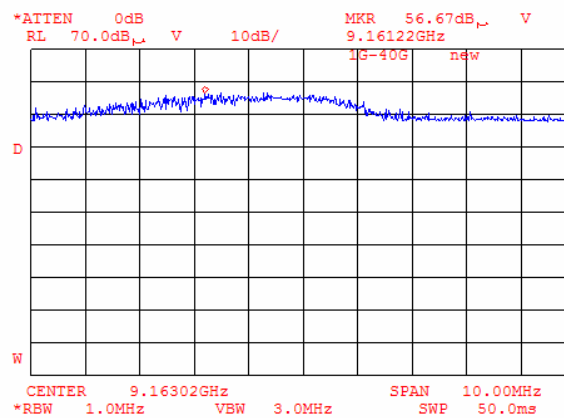
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



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|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

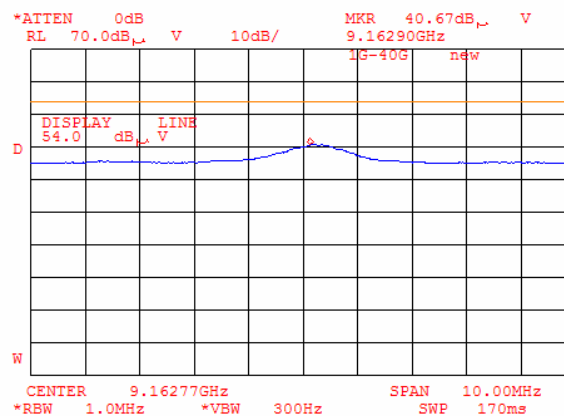
Plot 7.3.143 Radiated emission measurements at the tenth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: PSK



Plot 7.3.144 Radiated emission measurements at the tenth harmonic of mid carrier frequency

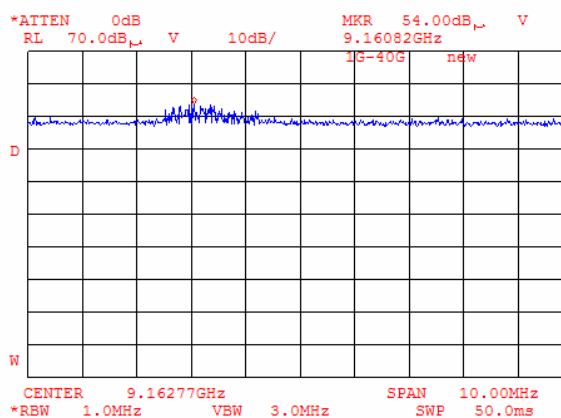
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 Hz
MODULATION: PSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

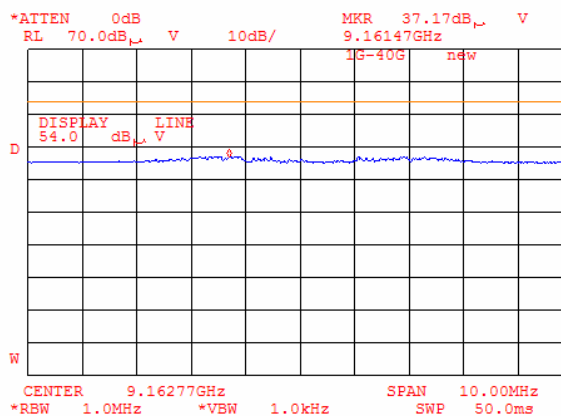
Plot 7.3.145 Radiated emission measurements at the tenth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 3 MHz
MODULATION: FSK



Plot 7.3.146 Radiated emission measurements at the tenth harmonic of mid carrier frequency

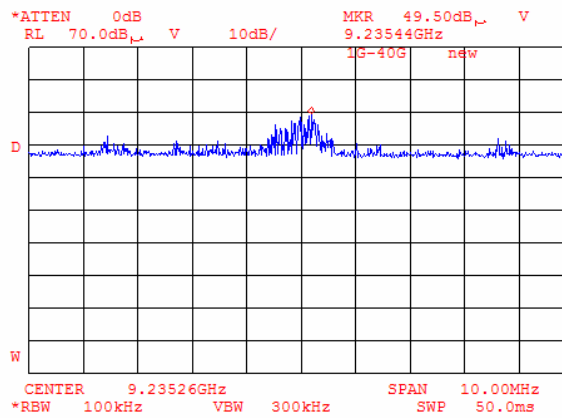
TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 1000 Hz
MODULATION: FSK



| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

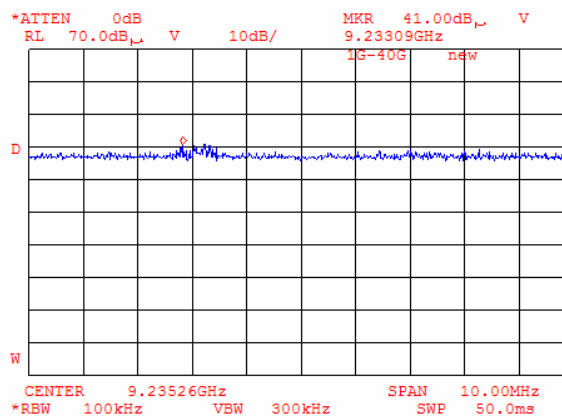
Plot 7.3.147 Radiated emission measurements at the tenth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: PSK



Plot 7.3.148 Radiated emission measurements at the tenth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
VIDEO BANDWIDTH: 300 kHz
MODULATION: FSK

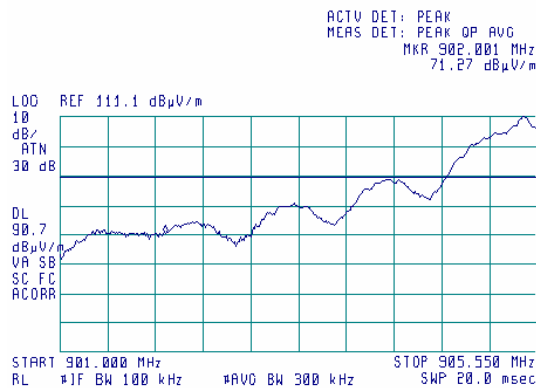


| | | | |
|----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.247(d), Radiated spurious emissions | |
| Test procedure: | | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.149 Radiated emission measurements from 901 to 905.55 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

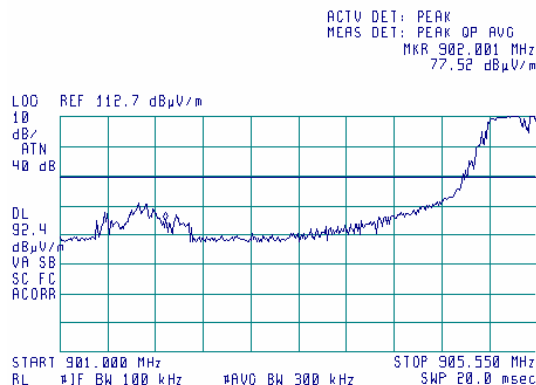
11:40:42 OCT 10, 2005



Plot 7.3.150 Radiated emission measurements from 901 to 905.55 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

11:44:01 OCT 10, 2005

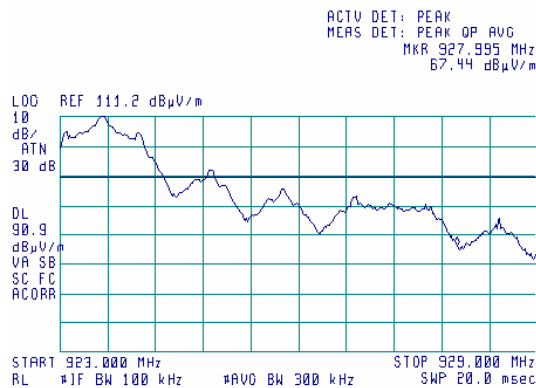


| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.151 Radiated emission measurements from 923 to 929 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK

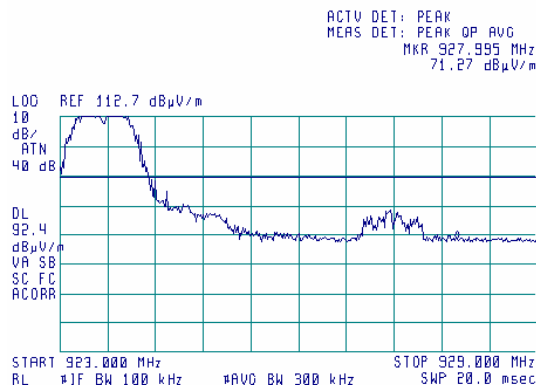
11:55:15 OCT 10, 2005



Plot 7.3.152 Radiated emission measurements from 923 to 929 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK

11:47:14 OCT 10, 2005



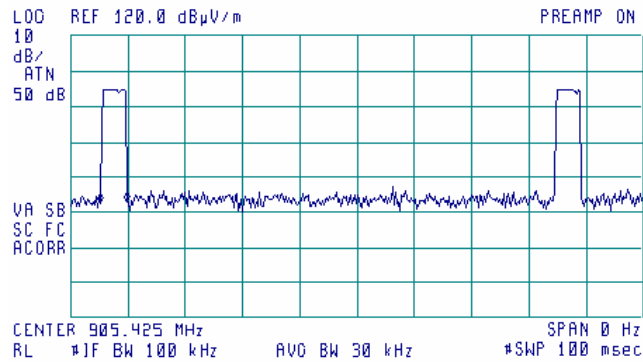
| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.153 Transmission pulse duration

MODULATION: PSK

10:24:29 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKRΔ 4.5000 msec
.47 dB

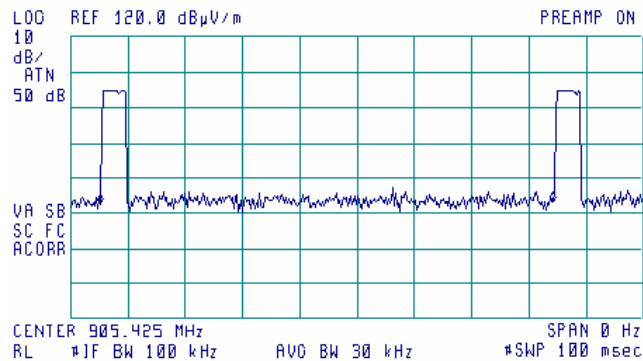


Plot 7.3.154 Transmission pulse period

MODULATION: PSK

10:25:31 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKRΔ 79.000 msec
.02 dB



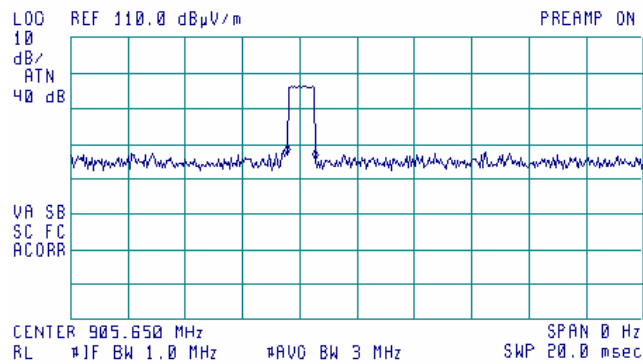
| | | | |
|----------------------------|--|--------------------------------|-------------------------------|
| Test specification: | Section 15.247(d), Radiated spurious emissions | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/10/2005 12:50:22 PM | | |
| Temperature: 22 °C | Air Pressure: 1013 hPa | Relative Humidity: 44 % | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.3.155 Transmission pulse duration

MODULATION: FSK

13:26:11 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKRΔ 1.0000 msec
-1.49 dB

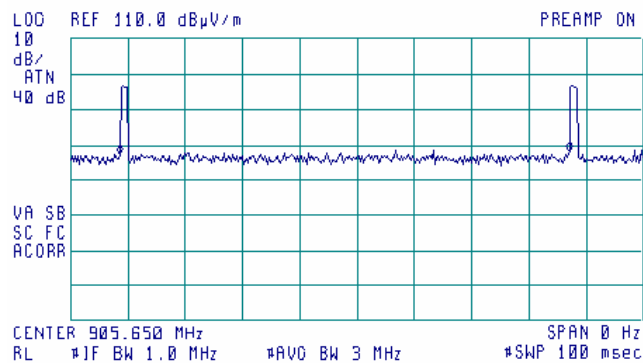


Plot 7.3.156 Transmission pulse period

MODULATION: FSK

13:24:51 OCT 06, 2005

ACTV DET: PEAK
MEAS DET: PEAK OP AVG
MKRΔ 70.500 msec
.53 dB



| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

7.4 Peak spectral power density

7.4.1 General

This test was performed to measure the peak spectral power density radiated by the transmitter RF antenna. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Peak spectral power density limits

| Assigned frequency range, MHz | Measurement bandwidth, kHz | Peak spectral power density, dBm | Equivalent field strength limit @ 3m, dB(μ V/m)* |
|-------------------------------|----------------------------|----------------------------------|---|
| 902.0 – 928.0 | 3.0 | 8.0 | 103.2 |

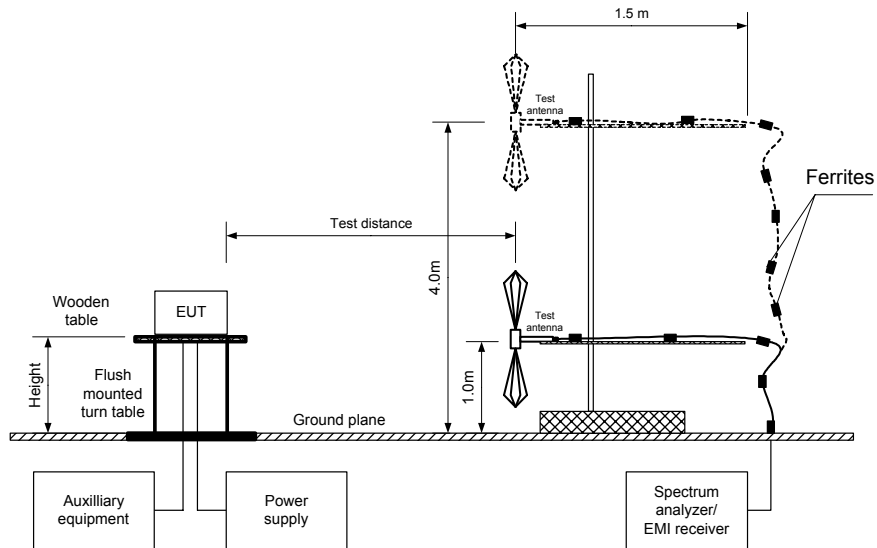
* - Equivalent field strength limit was calculated from the peak spectral power density as follows:
 $E = 8 \text{ dBm} + 95.2 \text{ dB} = 103.2 \text{ dB}(\mu\text{V/m})$.

7.4.2 Test procedure for field strength measurements

- 7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.
- 7.4.2.2 The EUT was adjusted to produce maximum available to end user RF output power.
- 7.4.2.3 The field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna height was swept in both vertical and horizontal polarizations.
- 7.4.2.4 The frequency span of spectrum analyzer was set to capture the entire 6 dB band of the transmitter, in peak hold mode with resolution bandwidth set to 3.0 kHz, video bandwidth wider than resolution bandwidth, auto sweep time and sufficient number of sweeps was allowed for trace stabilization. The spectrum lines spacing was verified to be wider than 3 kHz. Otherwise the resolution bandwidth was reduced until individual spectrum lines were resolved and the power of individual spectrum lines was integrated over 3 kHz band.
- 7.4.2.5 The peak of emission was zoomed with span set just wide enough to capture the emission peak area and sweep time was set equal to span width divided by resolution bandwidth. Spectrum analyzer was set in peak hold mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.4.2 and associated plots.

| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Figure 7.4.1 Setup for carrier field strength measurements



| | |
|--|-------------------------------|
| Test specification: Section 15.247(e), Peak power density | |
| Test procedure: FR Vol. 62, page 26243, Section 15.247(d) | |
| Test mode: Compliance | Verdict: PASS |
| Date & Time: 10/24/2005 12:31:36 PM | |
| Temperature: 21°C | Air Pressure: 1007 hPa |
| Relative Humidity: 54% | |
| Power Supply: 3.6 V DC | |
| Remarks: | |

Table 7.4.2 Field strength measurement of peak spectral power density

ASSIGNED FREQUENCY RANGE: 902 – 928 MHz
TEST DISTANCE: 3 m
TEST SITE: Semi anechoic chamber
EUT HEIGHT: 0.8 m
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 3 kHz
VIDEO BANDWIDTH: 10 kHz
TEST ANTENNA TYPE: Biconilog (30 MHz – 1000 MHz)
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

MODULATION: PSK
MODULATING SIGNAL: PRBS
BIT RATE: 60 kbps
TRANSMITTER OUTPUT POWER: 20.42 dBm at low carrier frequency
21.02 dBm at mid carrier frequency
21.60 dBm at high carrier frequency

| Frequency, MHz | Field strength, dB(μV/m) | EUT antenna gain, dBi | Limit, dB(μV/m) | Margin, dB* | Antenna polarization | Antenna height, m | Turn-table position**, degrees |
|----------------|--------------------------|-----------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|
| 905.494 | 106.45 | 5.0 | 103.23 | -1.78 | Vertical | 1.0 | 55 |
| 916.246 | 106.81 | 5.0 | 103.23 | -1.42 | Vertical | 1.0 | 51 |
| 923.489 | 107.41 | 5.0 | 103.23 | -0.82 | Vertical | 1.0 | 52 |

MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 120 kbps
TRANSMITTER OUTPUT POWER: 15.11 dBm at low carrier frequency
15.82 dBm at mid carrier frequency
16.72 dBm at high carrier frequency

| Frequency, MHz | Field strength, dB(μV/m) | EUT antenna gain, dBi | Limit, dB(μV/m) | Margin, dB* | Antenna polarization | Antenna height, m | Turn-table position**, degrees |
|----------------|--------------------------|-----------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|
| 905.243 | 106.22 | 5.0 | 103.23 | -2.01 | Vertical | 1.0 | 55 |
| 916.470 | 107.91 | 5.0 | 103.23 | -0.32 | Vertical | 1.0 | 51 |
| 923.716 | 107.47 | 5.0 | 103.23 | -0.76 | Vertical | 1.0 | 52 |

*- Margin = Field strength - EUT antenna gain - calculated field strength limit.

** - EUT front panel refer to 0 degrees position of turntable.

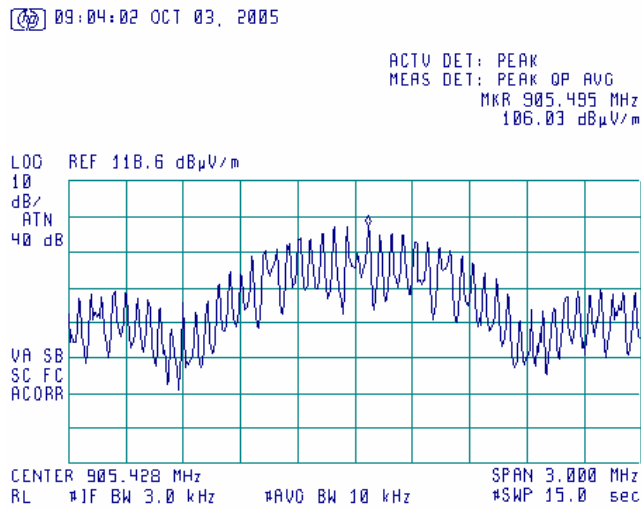
Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|---------|---------|--|--|--|--|
| HL 0521 | HL 0589 | HL 0604 | HL 2009 | | | | |
|---------|---------|---------|---------|--|--|--|--|

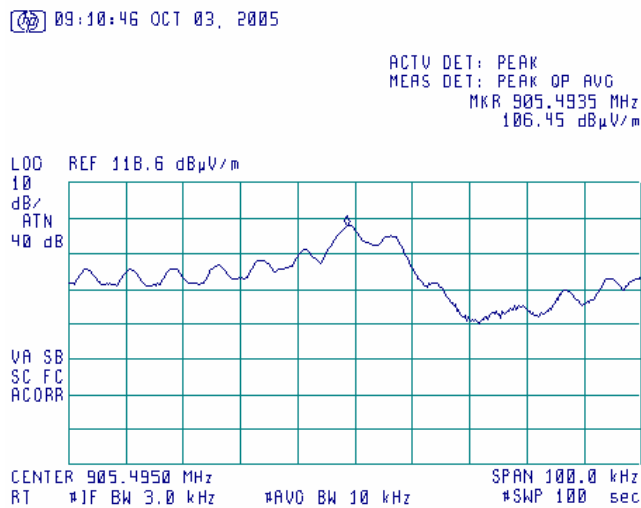
Full description is given in Appendix A.

| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.1 Peak spectral power density at low frequency within 6 dB band, PSK modulation

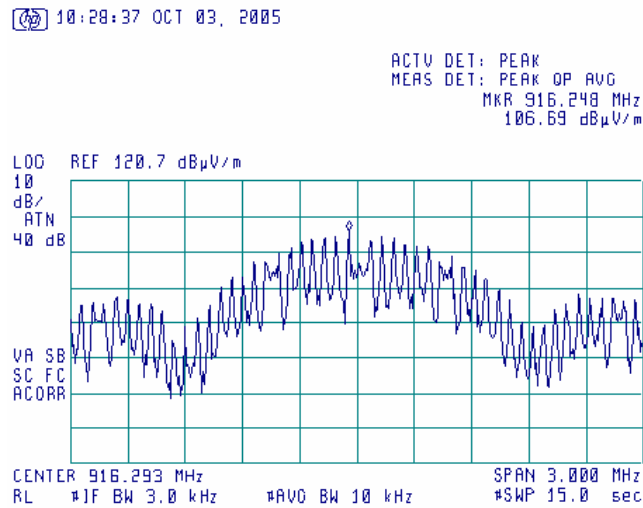


Plot 7.4.2 Peak spectral power density at low frequency zoomed at the peak, PSK modulation

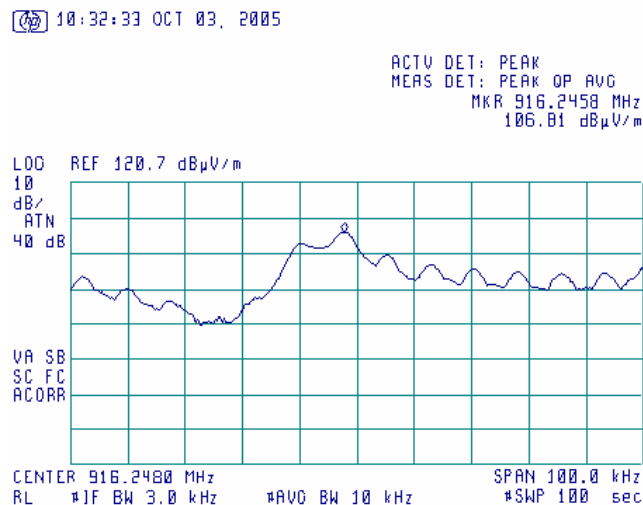


| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.3 Peak spectral power density at mid frequency within 6 dB band, PSK modulation

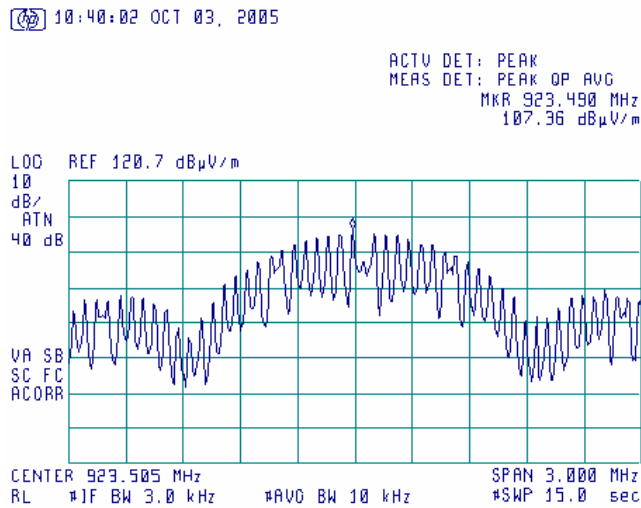


Plot 7.4.4 Peak spectral power density at mid frequency zoomed at the peak, PSK modulation

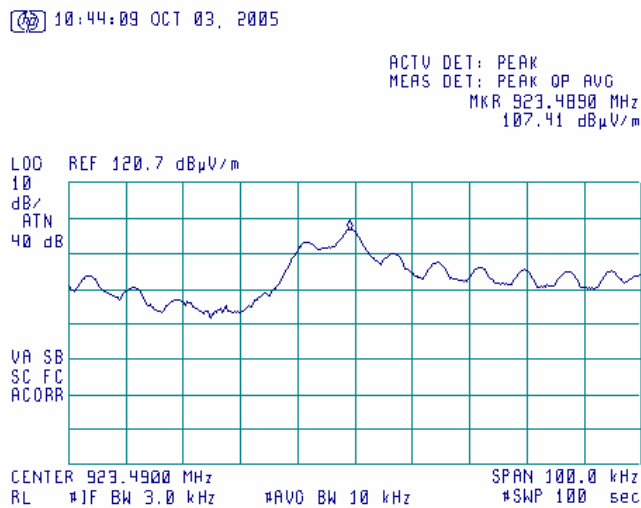


| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.5 Peak spectral power density at high frequency within 6 dB band, PSK modulation

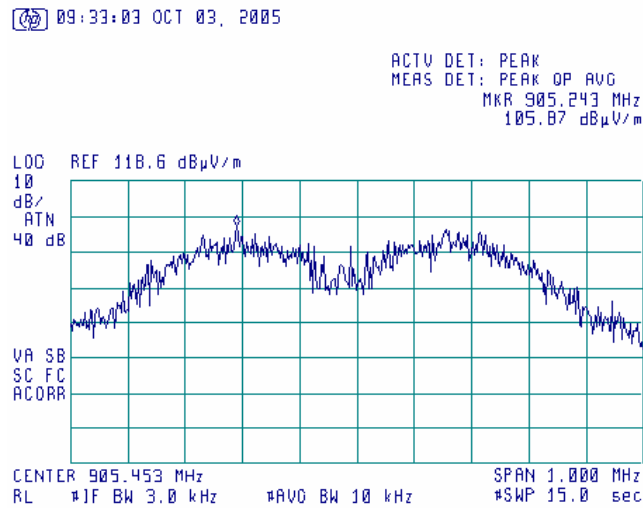


Plot 7.4.6 Peak spectral power density at high frequency zoomed at the peak, PSK modulation

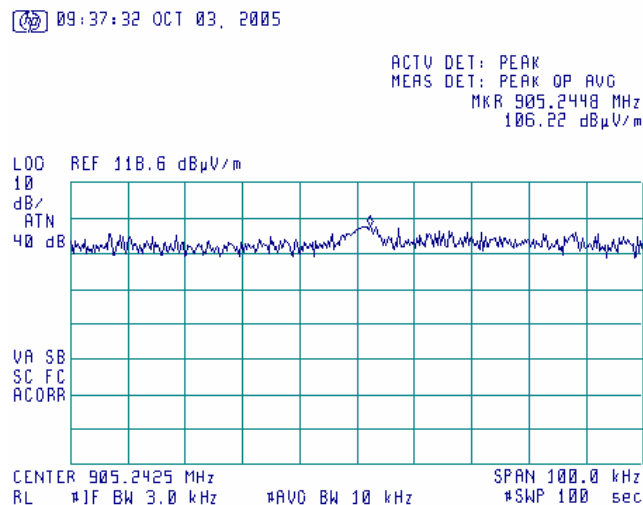


| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.7 Peak spectral power density at low frequency within 6 dB band, FSK modulation

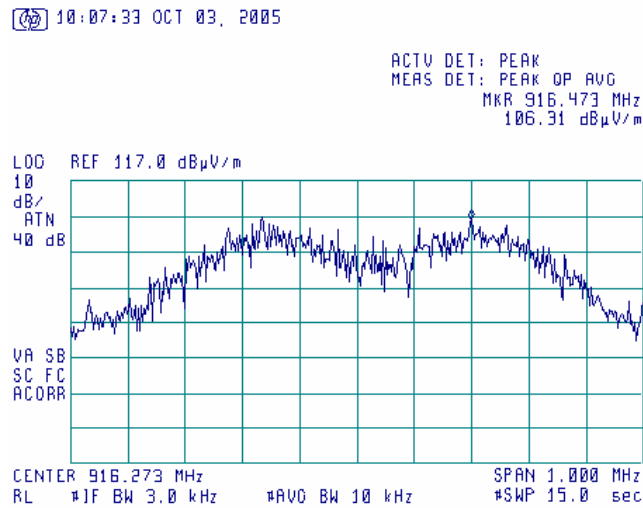


Plot 7.4.8 Peak spectral power density at low frequency zoomed at the peak, FSK modulation

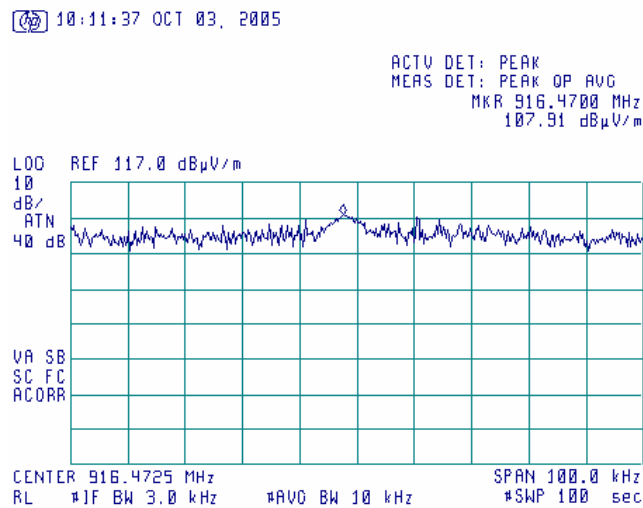


| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.9 Peak spectral power density at mid frequency within 6 dB band, FSK modulation

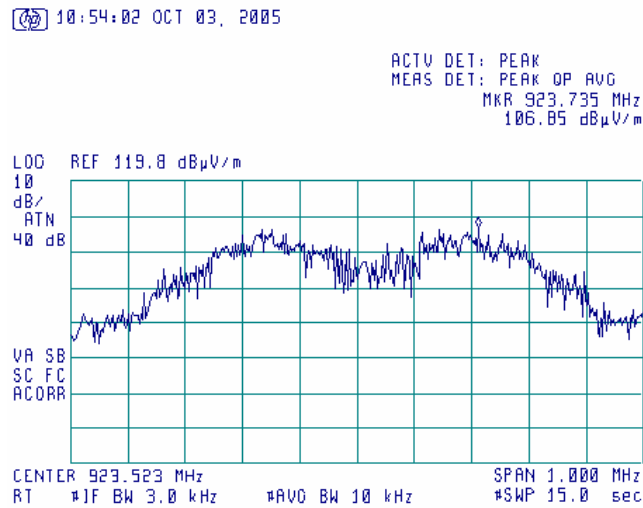


Plot 7.4.10 Peak spectral power density at mid frequency zoomed at the peak, FSK modulation

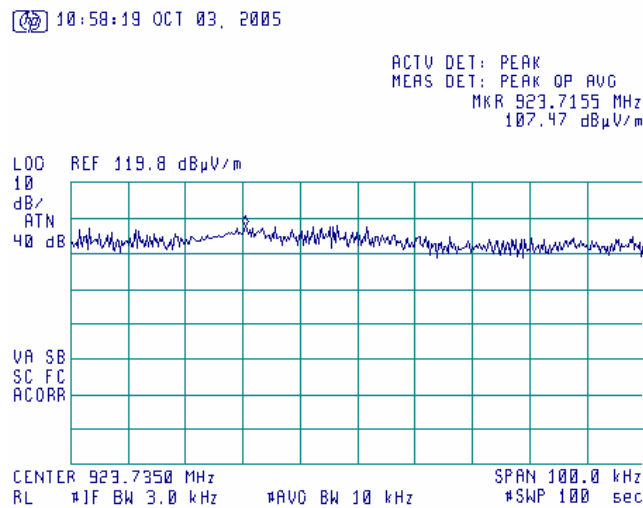


| | | | |
|----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.247(e), Peak power density | | |
| Test procedure: | FR Vol. 62, page 26243, Section 15.247(d) | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 12:31:36 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: | | | |

Plot 7.4.11 Peak spectral power density at high frequency within 6 dB band, FSK modulation



Plot 7.4.12 Peak spectral power density at high frequency zoomed at the peak, FSK modulation



| | | | |
|-----------------------------|-------------------------------|--|-------------------------------|
| Test specification: | | Section 15.109, Radiated emission | |
| Test procedure: | | ANSI C63.4, Sections 11.6 and 12.1.4 | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 1:17:10 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

7.5 Radiated emission measurements

7.5.1 General

This test was performed to measure radiated emissions from the EUT enclosure. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Radiated emission test limits

| Frequency, MHz | Class B limit, dB(μV/m) | | Class A limit, dB(μV/m) | |
|----------------|-------------------------|--------------|-------------------------|--------------|
| | 10 m distance | 3 m distance | 10 m distance | 3 m distance |
| 30 - 88 | 29.5* | 40.0 | 39.0 | 49.5* |
| 88 - 216 | 33.0* | 43.5 | 43.5 | 54.0* |
| 216 - 960 | 35.5* | 46.0 | 46.4 | 56.9* |
| Above 960 | 43.5* | 54.0 | 49.5 | 60.0* |

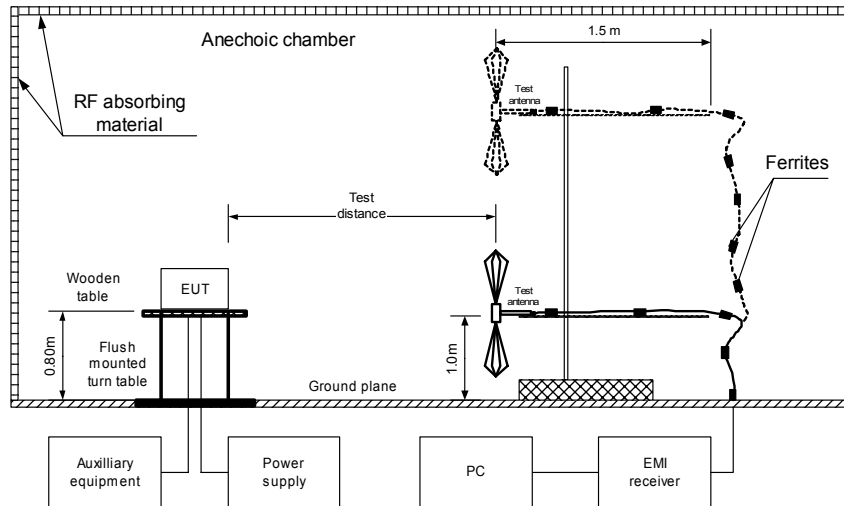
* The limit for test distance other than specified was calculated using the inverse linear distance extrapolation factor as follows: $Lim_{S_2} = Lim_{S_1} + 20 \log(S_1/S_2)$, where S_1 and S_2 – standard defined and test distance respectively in meters.

7.5.2 Test procedure for measurements in semi-anechoic chamber

- 7.5.2.1** The EUT was set up as shown in Figure 7.5.1 and associated photograph/s, energized and the performance check was conducted.
- 7.5.2.2** The specified frequency range was investigated with biconilog antenna connected to EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal and the EUT cables position was varied.
- 7.5.2.3** The worst test results (the lowest margins) were recorded in Table 7.5.2 and shown in the associated plots.

| | | | |
|--|-------------------------------|-------------------------------|-------------------------------|
| Test specification: Section 15.109, Radiated emission | | | |
| Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date & Time: 10/24/2005 1:17:10 PM | | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

Figure 7.5.1 Setup for radiated emission measurements in anechoic chamber, table-top equipment



Photograph 7.5.1 Setup for preliminary radiated emission measurements



| | | | |
|-----------------------------|--|-------------------------------|-------------------------------|
| Test specification: | Section 15.109, Radiated emission | | |
| Test procedure: | ANSI C63.4, Sections 11.6 and 12.1.4 | | |
| Test mode: | Compliance | Verdict: | PASS |
| Date & Time: | 10/24/2005 1:17:10 PM | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

Table 7.5.2 Radiated emission test results

EUT SET UP: TABLE-TOP
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / QUASI-PEAK
FREQUENCY RANGE: 30 MHz – 1000 MHz
RESOLUTION BANDWIDTH: 120 kHz

| Frequency, MHz | Peak emission, dB(μV/m) | Quasi-peak | | | Antenna polarization | Antenna height, m | Turn-table position**, degrees | Verdict |
|-------------------------|-------------------------|-----------------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|---------|
| | | Measured emission, dB(μV/m) | Limit, dB(μV/m) | Margin, dB* | | | | |
| No emissions were found | | | | | | | | Pass |

TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / AVERAGE
FREQUENCY RANGE: 1000 MHz – 5000 MHz
RESOLUTION BANDWIDTH: 1000 kHz

| Frequency, MHz | Peak emission, dB(μV/m) | Average | | | Antenna polarization | Antenna height, m | Turn-table position**, degrees | Verdict |
|-------------------------|-------------------------|-----------------------------|-----------------|-------------|----------------------|-------------------|--------------------------------|---------|
| | | Measured emission, dB(μV/m) | Limit, dB(μV/m) | Margin, dB* | | | | |
| No emissions were found | | | | | | | | Pass |

*- Margin = Measured emission - specification limit.

** - EUT front panel refer to 0 degrees position of turntable.

Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|
| HL 0465 | HL 0521 | HL 0589 | HL 0592 | HL 0593 | HL 0594 | HL 0604 | HL 1947 |
| HL 2009 | HL 2432 | | | | | | |

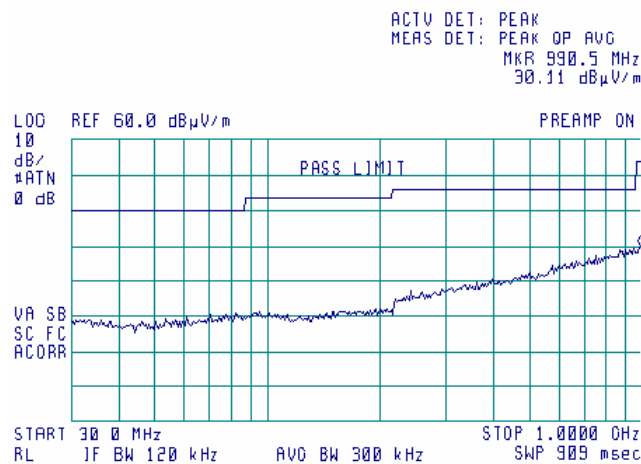
Full description is given in Appendix A.

| | | | |
|--|-------------------------------|-------------------------------|-------------------------------|
| Test specification: Section 15.109, Radiated emission | | | |
| Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/24/2005 1:17:10 PM | | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

Plot 7.5.1 Radiated emission measurements in 30- 1000 MHz range, vertical antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

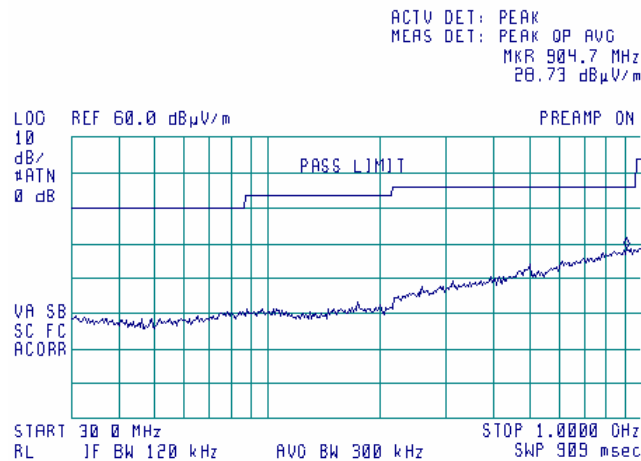
17:05:40 OCT 06, 2005



Plot 7.5.2 Radiated emission measurements in 30- 1000 MHz range, horizontal antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

17:07:05 OCT 06, 2005

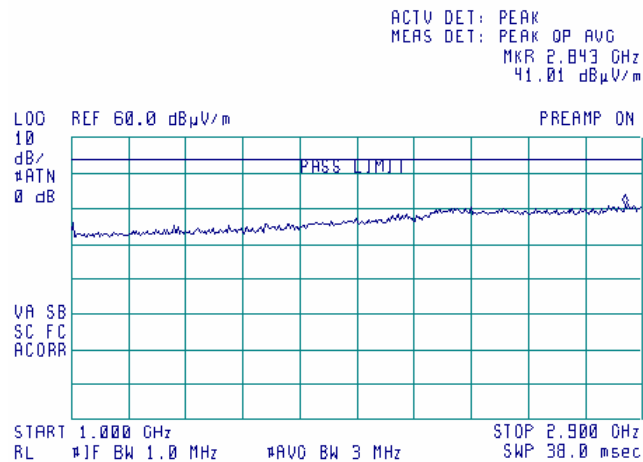


| | | | |
|--|-------------------------------|-------------------------------|-------------------------------|
| Test specification: Section 15.109, Radiated emission | | | |
| Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/24/2005 1:17:10 PM | | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

Plot 7.5.3 Radiated emission measurements in 1000- 2900 MHz range, vertical antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

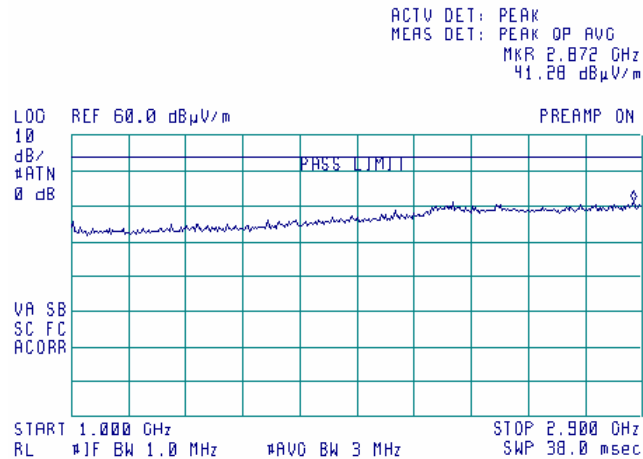
17:08:33 OCT 06, 2005



Plot 7.5.4 Radiated emission measurements in 1000- 2900 MHz range, horizontal antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

17:09:39 OCT 06, 2005

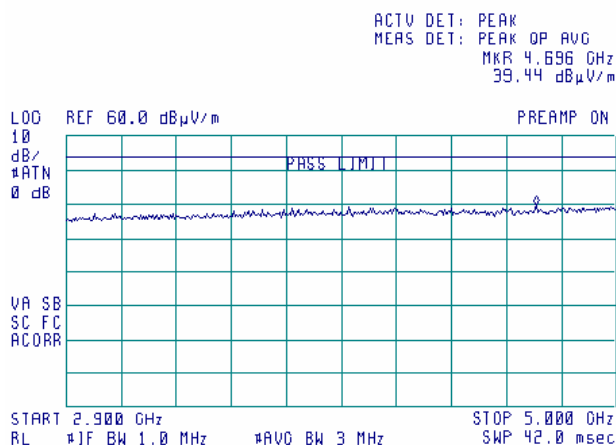


| | | | |
|--|-------------------------------|-------------------------------|-------------------------------|
| Test specification: Section 15.109, Radiated emission | | | |
| Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4 | | | |
| Test mode: Compliance | Verdict: PASS | | |
| Date & Time: 10/24/2005 1:17:10 PM | | | |
| Temperature: 21°C | Air Pressure: 1007 hPa | Relative Humidity: 54% | Power Supply: 3.6 V DC |
| Remarks: Preliminary | | | |

Plot 7.5.5 Radiated emission measurements in 2900- 5000 MHz range, vertical antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

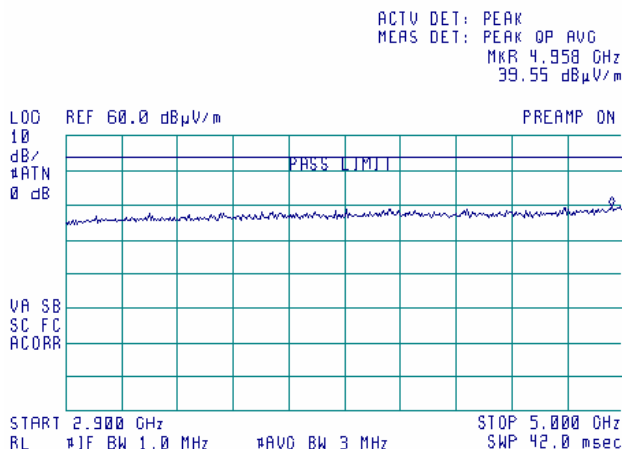
17:14:07 OCT 06, 2005



Plot 7.5.6 Radiated emission measurements in 2900- 5000 MHz range, horizontal antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by

17:15:25 OCT 06, 2005



8 APPENDIX A Test equipment and ancillaries used for tests

| HL No | Description | Manufacturer | Model | Ser. No. | Last Cal. | Due Cal. |
|-------|---|----------------------------|--------------------|--------------------------|-----------|-----------|
| 0287 | Turntable, Motorized Diameter, 2 m (OATS) | HL | TMD-2 | 042 | 11-Nov-04 | 11-Nov-05 |
| 0410 | Cable, Coax, Microwave, DC-18 GHz, N-N, 1 m | Gore | PFP01P0 1039.4 | 9338767 | 11-Nov-04 | 11-Nov-05 |
| 0446 | Antenna, Loop active, 10kHz-30MHz | EMCO | 6502 | 2857 | 28-Jun-05 | 28-Jun-06 |
| 0465 | Anechoic Chamber 9(L) x 6.5(W) x 5.5(H) m | HL | AC - 1 | 023 | 10-Oct-05 | 10-Oct-06 |
| 0521 | EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz | Hewlett Packard | 8546A | 3617A 00319, 3448A002 53 | 10-Oct-05 | 10-Oct-06 |
| 0589 | Cable Coaxial, GORE A2P01POL118, 2.3 m | HL | GORE-3 | 176 | 10-Oct-05 | 10-Oct-06 |
| 0592 | Position Controller | HL | L2-SR3000 | 100 | 18-May-05 | 18-May-06 |
| 0593 | Antenna Mast, 1-4 m Pneumatic | Madgesh | AM-F1 | 101 | 03-Feb-05 | 03-Feb-06 |
| 0594 | Turn Table FOR ANECHOIC CHAMBER flush mount d=1.2 m Pneumatic | HL | TT-WDC1 | 102 | 27-Jan-05 | 27-Jan-06 |
| 0604 | Antenna BiconiLog Log-Periodic/T Bow-TIE 26 - 2000 MHz | EMCO | 3141 | 9611-1011 | 27-Jan-05 | 27-Jan-06 |
| 0813 | Cable Coax, RG-214, 12 m, N-type connectors | HL | C214-12 | 149 | 27-Jan-05 | 27-Jan-06 |
| 1004 | Cable Coaxial , ANDREW PSWJ4 , 6m | HL | ANDREW -6 | 163 | 27-Jan-05 | 27-Jan-06 |
| 1200 | Quadruplexer 1-12 GHz (1-2 GHz; 2-4GHz;4-8 GHz; 8-12GHz) | Elettronica S.p.A. - Roma | UE 84 | D/00240 | 10-Feb-05 | 10-Feb-06 |
| 1424 | Spectrum Analyzer, 30 Hz- 40 GHz | Agilent Technologies (HP) | 8564EC | 3946A002 19 | 27-Jan-05 | 27-Jan-06 |
| 1430 | EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432 | Agilent Technologies (HP) | 8542E | 3807A002 62,3705A0 0217 | 27-Jan-05 | 27-Jan-06 |
| 1552 | Cable RF, 8 m | Alpha Wire | RG-214 | 1552 | 27-Jan-05 | 27-Jan-06 |
| 1848 | Antenna mast 4m/6m with polarity control (OATS) | Sh. I. Machines | AM-5 | 1 | 19-Apr-05 | 19-Apr-06 |
| 1941 | Cable 18GHz, 4 m, green | Rhophase Microwave Limited | SPS-1803A-4000-NPS | T4657 | 19-Apr-05 | 19-Apr-06 |
| 1947 | Cable 18GHz, 6.5 m, blue | Rhophase Microwave Limited | NPS-1803A-6500-NPS | T4974 | 19-Apr-05 | 19-Apr-06 |
| 1984 | Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W, N-type | EMC Test Systems | 3115 | 9911-5964 | 19-Apr-05 | 19-Apr-06 |
| 2009 | Cable RF, 8 m | Alpha Wire | RG-214 | C-56 | 19-Apr-05 | 19-Apr-06 |
| 2254 | Cable 40GHz, 0.8 m, blue | Rhophase Microwave Limited | KPS-1503A-800-KPS | W4907 | 24-Jun-05 | 24-Jun-06 |
| 2259 | Amplifier Low Noise 2-20 GHz | Sophia Wireless | LNA0220-C | 0223 | 19-Apr-05 | 19-Apr-06 |
| 2387 | Filter Bandpass, 8-14 GHz | HL | FBP8-14 | 2387 | 05-Jun-05 | 05-Jun-06 |
| 2432 | Antenna, Double-Ridged Waveguide Horn 1-18 GHz | EMC Test Systems | 3115 | 00027177 | 19-Apr-05 | 19-Apr-06 |
| 2499 | Quadruplexer 1-12 GHz (1-2 GHz; 2-4GHz;4-8 GHz; 8-12GHz) | Elettronica S.p.A. - Roma | UE 84 | D/00239 | 19-Apr-05 | 19-Apr-06 |

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

| Test description | Expanded uncertainty |
|--|--|
| Conducted carrier power at RF antenna connector | Below 12.4 GHz: ± 1.7 dB 12.4 GHz to 40 GHz: ± 2.3 dB |
| Conducted emissions at RF antenna connector | 9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB |
| Occupied bandwidth | ± 8.0 % |
| Duty cycle, timing (Tx ON / OFF) and average factor measurements | ± 1.0 % |
| Conducted emissions with LISN | 9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB |
| Radiated emissions at 3 m measuring distance Horizontal polarization Vertical polarization | Biconilog antenna: ± 5.3 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.3 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 6.0 dB Biconical antenna: ± 5.7 dB Log periodic antenna: ± 6.0 dB Double ridged horn antenna: ± 6.0 dB |

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error. The standards and instruments used in the calibration system conform to the present requirements of ISO/IEC 17025 (or alternately ANSI/NC SL Z540-1).

The laboratory calibrates its measurement standards by a third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements. The Hermon Labs EMC measurements uncertainty is given in the table above.

10 APPENDIX C Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47) and by Industry Canada for electromagnetic emissions (file numbers IC 2186-1 for OATS and IC 2186-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, telecommunications, environmental, safety standards, and by AMTAC (UK) for safety of medical devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01).

Address: P.O. Box 23, Binyamina 30500, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

11 APPENDIX D Specification references

| | |
|---------------------|--|
| 47CFR part 15: 2005 | Radio Frequency Devices. |
| FR Vol.62 | Federal Register, Volume 62, May 13, 1997 |
| ANSI C63.2: 1996 | American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications. |
| ANSI C63.4: 2003 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. |

12 APPENDIX E Abbreviations and acronyms

| | |
|----------------|---|
| A | ampere |
| AC | alternating current |
| A/m | ampere per meter |
| AM | amplitude modulation |
| AVRG | average (detector) |
| cm | centimeter |
| dB | decibel |
| dBm | decibel referred to one milliwatt |
| dB(μ V) | decibel referred to one microvolt |
| dB(μ V/m) | decibel referred to one microvolt per meter |
| dB(μ A) | decibel referred to one microampere |
| dB Ω | decibel referred to one Ohm |
| DC | direct current |
| DTS | digital transmission system |
| EIRP | equivalent isotropically radiated power |
| ERP | effective radiated power |
| EUT | equipment under test |
| F | frequency |
| GHz | gigahertz |
| GND | ground |
| H | height |
| HL | Hermon laboratories |
| Hz | hertz |
| ITE | information technology equipment |
| k | kilo |
| kHz | kilohertz |
| LISN | line impedance stabilization network |
| LO | local oscillator |
| m | meter |
| MHz | megahertz |
| min | minute |
| mm | millimeter |
| ms | millisecond |
| μ s | microsecond |
| NA | not applicable |
| NT | not tested |
| OATS | open area test site |
| Ω | Ohm |
| PCB | printed circuit board |
| PM | pulse modulation |
| PS | power supply |
| ppm | part per million (10^{-6}) |
| QP | quasi-peak |
| RE | radiated emission |
| RF | radio frequency |
| rms | root mean square |
| Rx | receive |
| s | second |
| T | temperature |
| Tx | transmit |
| V | volt |
| VA | volt-ampere |

13 APPENDIX F Test equipment correction factors

Antenna factor
Biconilog antenna EMCO, model 3141, serial number 1011, HL 0604

| Frequency, MHz | Antenna factor, dB(1/m) | Frequency, MHz | Antenna factor, dB(1/m) | Frequency, MHz | Antenna factor, dB(1/m) |
|----------------|-------------------------|----------------|-------------------------|----------------|-------------------------|
| 26 | 7.8 | 560 | 19.8 | 1300 | 27.0 |
| 28 | 7.8 | 580 | 20.6 | 1320 | 27.8 |
| 30 | 7.8 | 600 | 21.3 | 1340 | 28.3 |
| 40 | 7.2 | 620 | 21.5 | 1360 | 28.2 |
| 60 | 7.1 | 640 | 21.2 | 1380 | 27.9 |
| 70 | 8.5 | 660 | 21.4 | 1400 | 27.9 |
| 80 | 9.4 | 680 | 21.9 | 1420 | 27.9 |
| 90 | 9.8 | 700 | 22.2 | 1440 | 27.8 |
| 100 | 9.7 | 720 | 22.2 | 1460 | 27.8 |
| 110 | 9.3 | 740 | 22.1 | 1480 | 28.0 |
| 120 | 8.8 | 760 | 22.3 | 1500 | 28.5 |
| 130 | 8.7 | 780 | 22.6 | 1520 | 28.9 |
| 140 | 9.2 | 800 | 22.7 | 1540 | 29.6 |
| 150 | 9.8 | 820 | 22.9 | 1560 | 29.8 |
| 160 | 10.2 | 840 | 23.1 | 1580 | 29.6 |
| 170 | 10.4 | 860 | 23.4 | 1600 | 29.5 |
| 180 | 10.4 | 880 | 23.8 | 1620 | 29.3 |
| 190 | 10.3 | 900 | 24.1 | 1640 | 29.2 |
| 200 | 10.6 | 920 | 24.1 | 1660 | 29.4 |
| 220 | 11.6 | 940 | 24.0 | 1680 | 29.6 |
| 240 | 12.4 | 960 | 24.1 | 1700 | 29.8 |
| 260 | 12.8 | 980 | 24.5 | 1720 | 30.3 |
| 280 | 13.7 | 1000 | 24.9 | 1740 | 30.8 |
| 300 | 14.7 | 1020 | 25.0 | 1760 | 31.1 |
| 320 | 15.2 | 1040 | 25.2 | 1780 | 31.0 |
| 340 | 15.4 | 1060 | 25.4 | 1800 | 30.9 |
| 360 | 16.1 | 1080 | 25.6 | 1820 | 30.7 |
| 380 | 16.4 | 1100 | 25.7 | 1840 | 30.6 |
| 400 | 16.6 | 1120 | 26.0 | 1860 | 30.6 |
| 420 | 16.7 | 1140 | 26.4 | 1880 | 30.6 |
| 440 | 17.0 | 1160 | 27.0 | 1900 | 30.6 |
| 460 | 17.7 | 1180 | 27.0 | 1920 | 30.7 |
| 480 | 18.1 | 1200 | 26.7 | 1940 | 30.9 |
| 500 | 18.5 | 1220 | 26.5 | 1960 | 31.2 |
| 520 | 19.1 | 1240 | 26.5 | 1980 | 31.6 |
| 540 | 19.5 | 1260 | 26.5 | 2000 | 32.0 |
| | | 1280 | 26.6 | | |

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μ V) to convert it into field intensity in dB(μ V/m).

**Antenna factor
 Double-ridged wave guide horn antenna
 Model 3115, S/N 9911-5964, HL1984**

| Frequency, MHz | Antenna factor, dB(1/m) |
|-------------------|----------------------------|
| 1000.0 | 24.7 |
| 1500.0 | 25.7 |
| 2000.0 | 27.6 |
| 2500.0 | 28.9 |
| 3000.0 | 31.2 |
| 3500.0 | 32.0 |
| 4000.0 | 32.5 |
| 4500.0 | 32.7 |
| 5000.0 | 33.6 |
| 5500.0 | 35.1 |
| 6000.0 | 35.4 |
| 6500.0 | 34.9 |
| 7000.0 | 36.1 |
| 7500.0 | 37.8 |
| 8000.0 | 38.0 |
| 8500.0 | 38.1 |
| 9000.0 | 39.1 |
| 9500.0 | 38.3 |
| 10000.0 | 38.6 |
| 10500.0 | 38.2 |
| 11000.0 | 38.7 |
| 11500.0 | 39.5 |
| 12000.0 | 40.0 |
| 12500.0 | 40.4 |
| 13000.0 | 40.5 |
| 13500.0 | 41.1 |
| 14000.0 | 41.6 |
| 14500.0 | 41.7 |
| 15000.0 | 38.7 |
| 15500.0 | 38.2 |
| 16000.0 | 38.8 |
| 16500.0 | 40.5 |
| 17000.0 | 42.5 |
| 17500.0 | 45.9 |
| 18000.0 | 49.4 |

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μ V) to convert it into field intensity in dB(μ V/m).

**Antenna factor
Double-ridged guide horn antenna
Model 3115, serial number: 00027177, HL2432**

| Frequency, MHz | Antenna factor. dB(1/m) |
|-------------------|----------------------------|
| 1000.0 | 24.7 |
| 1500.0 | 25.7 |
| 2000.0 | 27.8 |
| 2500.0 | 28.9 |
| 3000.0 | 30.7 |
| 3500.0 | 31.8 |
| 4000.0 | 33.0 |
| 4500.0 | 32.8 |
| 5000.0 | 34.2 |
| 5500.0 | 34.9 |
| 6000.0 | 35.2 |
| 6500.0 | 35.4 |
| 7000.0 | 36.3 |
| 7500.0 | 37.3 |
| 8000.0 | 37.5 |
| 8500.0 | 38.0 |
| 9000.0 | 38.3 |
| 9500.0 | 38.3 |
| 10000.0 | 38.7 |
| 10500.0 | 38.7 |
| 11000.0 | 38.9 |
| 11500.0 | 39.5 |
| 12000.0 | 39.5 |
| 12500.0 | 39.4 |
| 13000.0 | 40.5 |
| 13500.0 | 40.8 |
| 14000.0 | 41.5 |
| 14500.0 | 41.3 |
| 15000.0 | 40.2 |
| 15500.0 | 38.7 |
| 16000.0 | 38.5 |
| 16500.0 | 39.8 |
| 17000.0 | 41.9 |
| 17500.0 | 45.8 |
| 18000.0 | 49.1 |

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μ V) to convert it into field intensity in dB(μ V/m).

Antenna Factor
Active Loop Antenna
EMC Test Systems, model 6502, serial number 2857, HL 0446

| Frequency, MHz | Magnetic Antenna Factor, dB(S/m) | Electric Antenna Factor, dB(1/m) |
|----------------|----------------------------------|----------------------------------|
| 0.009 | -32.8 | 18.7 |
| 0.010 | -33.8 | 17.7 |
| 0.020 | -38.3 | 13.2 |
| 0.050 | -41.1 | 10.4 |
| 0.075 | -41.3 | 10.2 |
| 0.100 | -41.6 | 9.9 |
| 0.150 | -41.7 | 9.8 |
| 0.250 | -41.6 | 9.9 |
| 0.500 | -41.8 | 9.7 |
| 0.750 | -41.9 | 9.6 |
| 1.000 | -41.4 | 10.1 |
| 2.000 | -41.5 | 10.0 |
| 3.000 | -41.4 | 10.1 |
| 4.000 | -41.4 | 10.1 |
| 5.000 | -41.5 | 10.0 |
| 10.000 | -41.9 | 9.6 |
| 15.000 | -41.9 | 9.6 |
| 20.000 | -42.2 | 9.3 |
| 25.000 | -42.8 | 8.7 |
| 30.000 | -44.0 | 7.5 |

Antenna factor in dB(S/m) is to be added to receiver meter reading in dB(μ V) to convert it into field intensity in dB(μ A/m).
Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μ V) to convert it into field intensity in dB(μ V/m).

Cable loss
Cable GORE, HL 0410

| No. | Frequency, GHz | Cable loss, dB |
|-----|----------------|----------------|
| 1 | 0.5 | 0.16 |
| 2 | 1 | 0.28 |
| 3 | 2 | 0.38 |
| 4 | 4 | 0.55 |
| 5 | 6 | 0.85 |
| 6 | 8 | 0.90 |
| 7 | 10 | 1.07 |
| 8 | 12 | 1.11 |
| 9 | 14 | 1.29 |
| 10 | 16 | 1.41 |
| 11 | 18 | 1.73 |

Cable loss
Cable RG-214, HL 0813

| No. | Frequency, MHz | Cable loss, dB |
|-----|----------------|----------------|
| 1 | 10 | 0.15 |
| 2 | 20 | 0.40 |
| 3 | 30 | 0.51 |
| 4 | 40 | 0.61 |
| 5 | 50 | 0.68 |
| 6 | 60 | 0.76 |
| 7 | 70 | 0.80 |
| 8 | 80 | 0.92 |
| 9 | 90 | 0.96 |
| 10 | 100 | 0.99 |
| 11 | 200 | 1.60 |
| 12 | 300 | 1.85 |
| 13 | 400 | 2.25 |
| 14 | 500 | 2.43 |
| 15 | 600 | 2.80 |
| 16 | 700 | 3.14 |
| 17 | 800 | 3.34 |
| 18 | 900 | 3.75 |
| 19 | 1000 | 4.05 |
| 20 | 1200 | 4.41 |
| 21 | 1400 | 4.81 |
| 22 | 1600 | 5.18 |
| 23 | 1800 | 5.58 |
| 24 | 2000 | 6.09 |
| 25 | 2500 | 7.27 |
| 26 | 2900 | 8.01 |

Cable loss
Cable Coaxial, GORE A2P01POL118, 2.3 m, model:GORE-3, HL 0589
+ Cable Coaxial, ANDREW PSWJ4, 6m, model: ANDREW-6, HL 1004

| No. | Frequency, MHz | Cable loss, dB | Tolerance (Specification), dB | Measurement uncertainty, dB |
|-----|----------------|----------------|-------------------------------|-----------------------------|
| 1 | 30 | 0.33 | ≤ 6.5 | ±0.12 |
| 2 | 50 | 0.40 | | |
| 3 | 100 | 0.57 | | |
| 4 | 300 | 0.97 | | |
| 5 | 500 | 1.25 | | |
| 6 | 800 | 1.59 | | |
| 7 | 1000 | 1.81 | | |
| 8 | 1200 | 1.97 | | |
| 9 | 1400 | 2.15 | | |
| 10 | 1600 | 2.28 | | |
| 11 | 1800 | 2.43 | | |
| 12 | 2000 | 2.61 | | |
| 13 | 2200 | 2.75 | | |
| 14 | 2400 | 2.89 | | |
| 15 | 2600 | 2.97 | | |
| 16 | 2800 | 3.21 | ≤ 6.5 | ±0.12 |
| 17 | 3000 | 3.32 | | |
| 18 | 3300 | 3.47 | | |
| 19 | 3600 | 3.62 | | |
| 20 | 3900 | 3.84 | | |
| 21 | 4200 | 3.92 | | |
| 22 | 4500 | 4.07 | | |
| 23 | 4800 | 4.36 | | |
| 24 | 5100 | 4.62 | | |
| 25 | 5400 | 4.78 | | |
| 26 | 5700 | 5.16 | | |
| 27 | 6000 | 5.67 | | |
| 28 | 6500 | 5.99 | | ±0.17 |

Cable loss
RF cable 8 m, model RG-214-8m, HL 1552

| No. | Frequency, MHz | Cable loss, dB | Measurement uncertainty, dB | Notes |
|-----|----------------|----------------|-----------------------------|-------|
| 1 | 0.010 | 0.01 | ±0.05 | |
| 2 | 0.1 | 0.01 | | |
| 3 | 1 | 0.03 | | |
| 4 | 10 | 0.12 | | |
| 5 | 20 | 0.23 | | |
| 6 | 30 | 0.30 | | |
| 7 | 40 | 0.32 | | |
| 8 | 50 | 0.34 | | |
| 9 | 60 | 0.39 | | |
| 10 | 70 | 0.43 | | |
| 11 | 80 | 0.48 | | |
| 12 | 90 | 0.50 | | |
| 13 | 100 | 0.55 | | |
| 14 | 200 | 0.78 | | |
| 15 | 300 | 1.04 | | |
| 16 | 400 | 1.16 | | |
| 17 | 500 | 1.33 | | |
| 18 | 600 | 1.51 | | |
| 19 | 700 | 1.65 | | |
| 20 | 800 | 1.77 | | |
| 21 | 900 | 1.92 | | |
| 22 | 1000 | 2.04 | | |
| 23 | 1200 | 2.26 | | |
| 24 | 1400 | 2.49 | | |
| 25 | 1600 | 2.74 | | |
| 26 | 1800 | 2.94 | | |
| 27 | 2000 | 3.18 | | |
| 28 | 2500 | 3.65 | | |
| 29 | 2900 | 4.08 | | |

Cable loss
Cable 18 GHz, 4 m, green, model: SPS-1803A-4000-NPS, S/N T4657, HL 1941

| Frequency, GHz | Cable loss, dB |
|----------------|----------------|
| 0.03 | 0.39 |
| 0.05 | 0.49 |
| 0.1 | 0.68 |
| 0.2 | 0.95 |
| 0.3 | 1.30 |
| 0.5 | 1.58 |
| 0.7 | 1.84 |
| 0.9 | 2.08 |
| 1.1 | 2.28 |
| 1.3 | 2.56 |
| 1.5 | 2.91 |
| 1.7 | 2.95 |
| 1.9 | 3.17 |
| 2.1 | 3.22 |
| 2.3 | 3.25 |
| 2.5 | 3.39 |
| 2.7 | 3.51 |
| 2.9 | 3.67 |
| 3.1 | 3.81 |
| 3.3 | 3.92 |
| 3.5 | 4.05 |
| 3.7 | 4.14 |
| 3.9 | 4.30 |
| 4.1 | 4.44 |
| 4.3 | 4.55 |
| 4.5 | 4.68 |
| 4.7 | 4.75 |
| 4.9 | 4.84 |
| 5.1 | 4.86 |
| 5.3 | 4.89 |
| 5.5 | 5.00 |
| 5.7 | 5.05 |
| 5.9 | 5.19 |
| 6.1 | 5.28 |
| 7.7 | 5.58 |

| Frequency, GHz | Cable loss, dB |
|----------------|----------------|
| 7.9 | 5.63 |
| 8.1 | 5.67 |
| 8.3 | 5.70 |
| 8.5 | 5.74 |
| 8.7 | 5.78 |
| 8.9 | 5.84 |
| 9.1 | 5.89 |
| 9.3 | 5.94 |
| 9.5 | 6.02 |
| 9.7 | 6.10 |
| 9.9 | 6.12 |
| 10.1 | 6.09 |
| 10.3 | 6.03 |
| 10.5 | 6.01 |
| 10.7 | 6.05 |
| 10.9 | 6.08 |
| 11.1 | 6.10 |
| 11.3 | 6.18 |
| 11.5 | 6.23 |
| 11.7 | 6.20 |
| 11.9 | 6.16 |
| 12.1 | 6.18 |
| 12.4 | 6.33 |
| 13.0 | 6.51 |
| 13.5 | 6.51 |
| 14.0 | 6.75 |
| 14.5 | 6.82 |
| 15.0 | 6.93 |
| 15.5 | 7.16 |
| 16.0 | 7.10 |
| 16.5 | 7.18 |
| 17.0 | 7.67 |
| 17.5 | 7.71 |
| 18.0 | 7.61 |

Cable loss
Cable 18 GHz, 6.5 m, blue, model: NPS-1803A-6500-NPS, S/N T4974, HL 1947

| Frequency, GHz | Cable loss, dB |
|----------------|----------------|
| 0.03 | 0.30 |
| 0.05 | 0.38 |
| 0.10 | 0.53 |
| 0.20 | 0.74 |
| 0.30 | 0.91 |
| 0.40 | 1.05 |
| 0.50 | 1.18 |
| 0.60 | 1.29 |
| 0.70 | 1.40 |
| 0.80 | 1.50 |
| 0.90 | 1.59 |
| 1.00 | 1.68 |
| 1.10 | 1.77 |
| 1.20 | 1.86 |
| 1.30 | 1.94 |
| 1.40 | 2.01 |
| 1.50 | 2.08 |
| 1.60 | 2.16 |
| 1.70 | 2.22 |
| 1.80 | 2.29 |
| 1.90 | 2.36 |
| 2.00 | 2.42 |
| 2.10 | 2.48 |
| 2.20 | 2.54 |
| 2.30 | 2.60 |
| 2.40 | 2.66 |
| 2.50 | 2.71 |
| 2.60 | 2.77 |
| 2.70 | 2.83 |
| 2.80 | 2.89 |
| 2.90 | 2.95 |
| 3.10 | 3.06 |
| 3.30 | 3.17 |
| 3.50 | 3.28 |
| 3.70 | 3.39 |
| 3.90 | 3.51 |
| 4.10 | 3.62 |
| 4.30 | 3.76 |
| 4.50 | 3.87 |
| 4.70 | 4.01 |
| 4.90 | 4.10 |
| 5.10 | 4.21 |
| 5.30 | 4.31 |
| 5.50 | 4.43 |
| 5.70 | 4.56 |
| 5.90 | 4.71 |

| Frequency, GHz | Cable loss, dB |
|----------------|----------------|
| 6.10 | 4.87 |
| 6.30 | 4.95 |
| 6.50 | 4.94 |
| 6.70 | 4.88 |
| 6.90 | 4.87 |
| 7.10 | 4.83 |
| 7.30 | 4.85 |
| 7.50 | 4.86 |
| 7.70 | 4.91 |
| 7.90 | 4.96 |
| 8.10 | 5.03 |
| 8.30 | 5.08 |
| 8.50 | 5.13 |
| 8.70 | 5.21 |
| 8.90 | 5.22 |
| 9.10 | 5.34 |
| 9.30 | 5.35 |
| 9.50 | 5.52 |
| 9.70 | 5.51 |
| 9.90 | 5.66 |
| 10.10 | 5.70 |
| 10.30 | 5.78 |
| 10.50 | 5.79 |
| 10.70 | 5.82 |
| 10.90 | 5.86 |
| 11.10 | 5.94 |
| 11.30 | 6.06 |
| 11.50 | 6.21 |
| 11.70 | 6.44 |
| 11.90 | 6.61 |
| 12.10 | 6.76 |
| 12.40 | 6.68 |
| 13.00 | 6.66 |
| 13.50 | 6.81 |
| 14.00 | 6.90 |
| 14.50 | 6.90 |
| 15.00 | 6.97 |
| 15.50 | 7.17 |
| 16.00 | 7.28 |
| 16.50 | 7.27 |
| 17.00 | 7.38 |
| 17.50 | 7.68 |
| 18.00 | 7.92 |

Cable loss
RF cable 8 m, model RG-214, HL 2009

| No. | Frequency, MHz | Cable loss, dB | Tolerance (Specification), dB | Measurement uncertainty, dB |
|-----|----------------|----------------|-------------------------------|-----------------------------|
| 1 | 1 | 0.10 | NA | ±0.12 |
| 2 | 10 | 0.14 | | |
| 3 | 30 | 0.25 | | |
| 4 | 50 | 0.34 | | |
| 5 | 100 | 0.53 | | |
| 6 | 300 | 0.99 | | |
| 7 | 500 | 1.31 | | |
| 8 | 800 | 1.73 | | |
| 9 | 1000 | 1.98 | | |
| 10 | 1100 | 2.11 | | |
| 11 | 1200 | 2.21 | | |
| 12 | 1300 | 2.35 | | |
| 13 | 1400 | 2.46 | | |
| 14 | 1500 | 2.55 | | |
| 15 | 1600 | 2.68 | | |
| 16 | 1700 | 2.78 | | |
| 17 | 1800 | 2.88 | | |
| 18 | 1900 | 2.98 | | |
| 19 | 2000 | 3.09 | | |