Exhibit 6: Test Report

TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY
1940 W. Alexander Street
Salt Lake City, Utah
84119-2039

Type of Report: Certification

TEST OF: MDW 9040

FCC ID: AS5LITMDW9H

To FCC PART 15.247, Subpart C

Test Report Serial No: 73-6951

Applicant:

Lucent Technologies, Inc.
600 Mountain Avenue
Murray Hill, NJ 07974

Date(s) of Test: December 13 – 17, 1999

Issue Date: December 30, 1999

Equipment Receipt Date: December 10, 1999

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Communication Certification Laboratory to determine compliance of the device described below with the requirements of FCC PART 15.247, Subpart C. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Lucent Technologies, Inc.
- Manufacturer: Lucent Technologies, Inc.
- Brand Name: Trans Talk
- Model Number: MDW 9040
- FCC ID: AS5LITMDW9H

On this 30th day of December 1999, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

COMMUNICATION CERTIFICATION LABORATORY

Checked by: William S. Hurst, P.E.
Vice President

Tested by: Roger J. Midgley
EMC Engineering Manager

SECTION 1. CLIENT INFORMATION AND RESPONSIBLE PARTY:

1.1 Client Information:

Company Name: Lucent Technologies, Inc.
600 Mountain Avenue
Murray Hill, NJ 07974

Contact Name: Don Webber
Title: Member – Technical Staff

SECTION 2. EQUIPMENT UNDER TEST (EUT)

2.1 Identification of EUT:

Trade Name:	Trans Talk
Model Name or Number:	MDW 9040
Serial Numbers:	108487174, 108487158 and 108535998
Options Fitted:	None
Country of Manufacture:	U.S.A.

2.2 Description of EUT:

See theory of operation (Exhibit 12). This report covers the transmitter only the receiver is covered under a separate verification report.

The base stations can be used with four different Lucent PBX's. The RF section of the base stations is identical the only difference is in the interface section to the PBX. The DCP works with the DEFINITY, the TDL works with the MERLIN MAGIK, the ATL works with the MERLIN and the ETR works with the PARTNER. The DCP and the TDL use the same interface board and the ETR and ATL use the same interface board.

The base station is equipped with a third antenna port (Antenna C) on the bottom of the unit, this port is only used in the factory to set the output power. This port will not be populated during production.

2.3 Modification Incorporated/Special Accessories on EUT:

There were no modifications or special accessories required in order to comply with the specification.

2.4 EUT and Support Equipment:

The FCC ID numbers for all the EUT and support equipment used during the test (including inserted cards) are listed below:

Brand Name Model Number Serial No.	FCC ID Number	Description	Name of Interface Ports/Interface Cables
BN: Trans Talk MN: MDW 9040 SN: 108487174 108487158 108535998	AS5LITMDW9H	Base Station and Handset (EUT's)	N/A

SECTION 3. TEST SPECIFICATION, METHODS & PROCEDURES

3.1 Test Specification:

Title: FCC PART 15.247, Subpart C (47 CFR 15).

Limits and methods of measurement of radio interference characteristics of radio frequency devices. Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.

Purpose of Test: The tests were performed to demonstrate Initial compliance.

3.2 Methods & Procedures:

3.2.1 § 15.247

(a) Operation under the provisions of this section is limited to frequency hopping and direct sequence spread spectrum intentional radiators that comply with the following provisions:

(1) Frequency hoping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. The system shall hop to channel frequencies that are selected at the system-hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitting signals.

(i) For frequency hopping systems operating in the 902 - 928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

(ii) Frequency hopping systems operating in the 2400 – 2483.5 MHz and the 5725 – 5850 MHz bands shall use at least 75 hopping frequencies. The maximum allowed 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

(2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

(b) The maximum peak output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400 – 2483.5 MHz or 5725 – 5850 MHz band and for all direct sequence systems: 1 watt.

(2) For frequency hopping systems operating in the 902 - 928 MHz band: 1 watt for systems employing at least 50 hopping channels; and 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

(3) Except as show in paragraphs (b)(3)(i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(i) Systems operating in the 2400 – 2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

(iii) Fixed, point-to-point operation, as used in paragraphs (b)(3)(i) and (b)(3)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of the responsibility.

(4) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See Sec. 1.1307(b)(1) of this chapter.

(c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general levels specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

(d) For direct sequence systems, the peak power density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

(e) The processing gain of a direct sequence system shall be at least 10 dB. The processing gain represents the improvement to the received signal-to-noise ratio, after filtering to the information bandwidth, from the spreading/despreading function. The processing gain may be determined using one of the following methods:

(1) As measured at the demodulated output of the receiver: the ratio in dB of the signal-to-noise ratio with the system spreading code turned off to the signal-to-noise ratio with the system spreading code turned on.

(2) As measured using the CW jamming margin method: a signal generator is stepped in 50 kHz increments across the passband of the system, recording at each pint the generator level required to produce the recommended Bit Error Rate (BER). This level is the jammer level. The output power of the intentional radiator is measured at the same point. This jammer to signal ratio (J/S) is than calculated, discarding the worst 20% of the J/S data points. The lowest remaining J/S ratio is used to calculate the

processing gain, as follows: Gp = (S/N)o+Mj+Lsys, where Gp = processing gain of the system, (S/N)o = signal to noise ratio required for the chosen BER, Mj = J/S ratio, and Lsys = system losses. Note that total losses in a system, including intentional radiator and receiver, should be assumed to be no more than 2 dB.

(f) Hybrid systems that employ a combination of both direct sequence and frequency hopping modulation techniques shall achieve a processing gain of at least 17 dB from the combined techniques. The frequency hopping operation of the hybrid system, with the direct sequence operation turned off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4. The direct sequence operation of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

(g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be deigned to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmission over the minimum number of hopping channels specified in this section.

(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopset to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters in not permitted.

NOTE: Spread spectrum systems are sharing these bands on a non-interference basis with systems supporting critical Government requirements that have been allocated the usage of these bands, secondary only to ISM equipment operated under the provisions of part 18 of this chapter. Many of these Government systems are airborne radiolocation systems that emit a high EIRP, which can cause interference to other users. Also, investigations of the effect of spread spectrum interference to U.S. Government operations in the 902-928 MHz band may require a future decrease in the power limits allowed for spread spectrum operation.

3.2.2 § 15.207 Conducted Limits

(a) For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 450 kHz to 30 MHz shall not exceed 250 microvolts. Compliance with the provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

(b) The following option may be employed if the conducted emissions exceed the limits in paragraph (a) of this section when measured using instrumentation employing a quasi-peak detector function: If the level of the emission measured using the quasi-peak instrumentation is 6 dB, or more, higher than the level of the same emission measured with instrumentation having an average detector and a 9 kHz minimum bandwidth, that emission is considered broadband and the level obtained with the quasi-peak detector may be reduced by 13 dB for comparison to the limits. When employing this option, the following conditions shall be observed:

(1) The measuring instrumentation with the average detector shall employ a linear IF amplifier.

(2) Care must be taken not to exceed the dynamic range of the measuring instrument when measuring an emission with a low duty cycle.

(3) The test report required for verification of for an application for a grant of equipment authorization shall contain all details supporting the use of this option.

(c) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operation as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §§ 15.205, 15.209, 15.221, 15.223, 15.225 or 15.227, as appropriate.

(d) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operation while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.2.3 Test Procedure

The testing was performed according to the procedures in ANSI C63.4 (1992). Testing was performed at CCL’s anechoic chamber located in Salt Lake City, Utah. This site has been fully described in a report submitted to the FCC, and was accepted in a letter dated March 1, 1999 (31040/SIT).

CCL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and has been accepted under NVLAP Lab Code:100272-0, which is effective until September 30, 2000.

For radiated emissions testing that is performed at distances closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

SECTION 4. OPERATION OF EUT DURING TESTING.

4.1 Operating Environment:

Power Supply: 120VAC
AC Mains Frequency: 60Hz

4.2 Operating Modes:

Each mode of operation was exercised to produce worst case emissions. The worst case emissions were with the MDW 9040 running in the following mode. The MDW 9040 was placed in the transmit mode with the same type of modulation that would normally be used during normal operation.

Since the RF section of each type of base station (see Section 2.2), all of the conducted (RF output, bandwidth, etc.) was performed on the DCM unit. Both the DCM and the ETR were measured for the radiated spurious emissions that fall within the restricted bands, the worst case emissions were from the ETR unit so this data is reported in this report as a representative of both units.

The AC line conducted test was performed with the base station power supply plugged into the LISN. The handset does not connect to the AC mains and will not transmit while in the battery charger; therefore, line conducted emissions testing is not applicable.

4.3 Configuration & Peripherals:

The MDW 9040 was placed on the table in the transmit mode with the same type of modulation that would normally be used during normal operation.

SECTION 5. SUMMARY OF TEST RESULTS:

5.1 FCC PART 15.247, Subpart C

5.1.1 Summary of Tests:

Section	Test Performed	Frequency Range (MHz)	Result
15.247 (a)(1)	Hopping Channel Carrier Frequencies	902 to 928	Complied
15.247 (a)(1)(i)	Emission Bandwidth	902 to 928	Complied
15.247 (b)(2)	Peak Output Power	902 to 928	Complied
15.247 (C)	Antenna Conducted Spurious Emissions	9 to 10,000	Complied
15.247 (C)	Radiated Spurious Emissions	9 to 10,000	Complied
15.207	Line Conducted Emissions (Hot Lead to Ground)	0.45 to 30	Complied
15.207	Line Conducted Emissions (Neutral Lead to Ground)	0.45 to 30	Complied

5.2 Result

In the configuration tested, the EUT complied with the requirements of the specification.

SECTION 6. MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS:

6.1 General Comments:

This section contains the test results only. Details of the test methods used, etc., can be found in Appendix B of this report.

6.2 Test Results

6.2.1 § 15.247 (a) (1)

Demonstration of Compliance:

See theory of operation in Exhibit 12.

6.3.2 § 15.247 (a) (1) (i)

Demonstration of Compliance:

The total on time in a 10 second period is 211.8 msec (10 sec divided by 100 msec = 100 msec periods) (100 msec periods times 2.118 msec = 211.8 msec)

See theory of operation in Exhibit 12 and page 50 of this Exhibit.

Measurement Data Emission Bandwidth:

A diagram of the test configuration is enclosed in Appendix A and a list of reference codes for test equipment used is enclosed in Appendix B.

Test equipment used: 1, 3 and 4.

Base Station

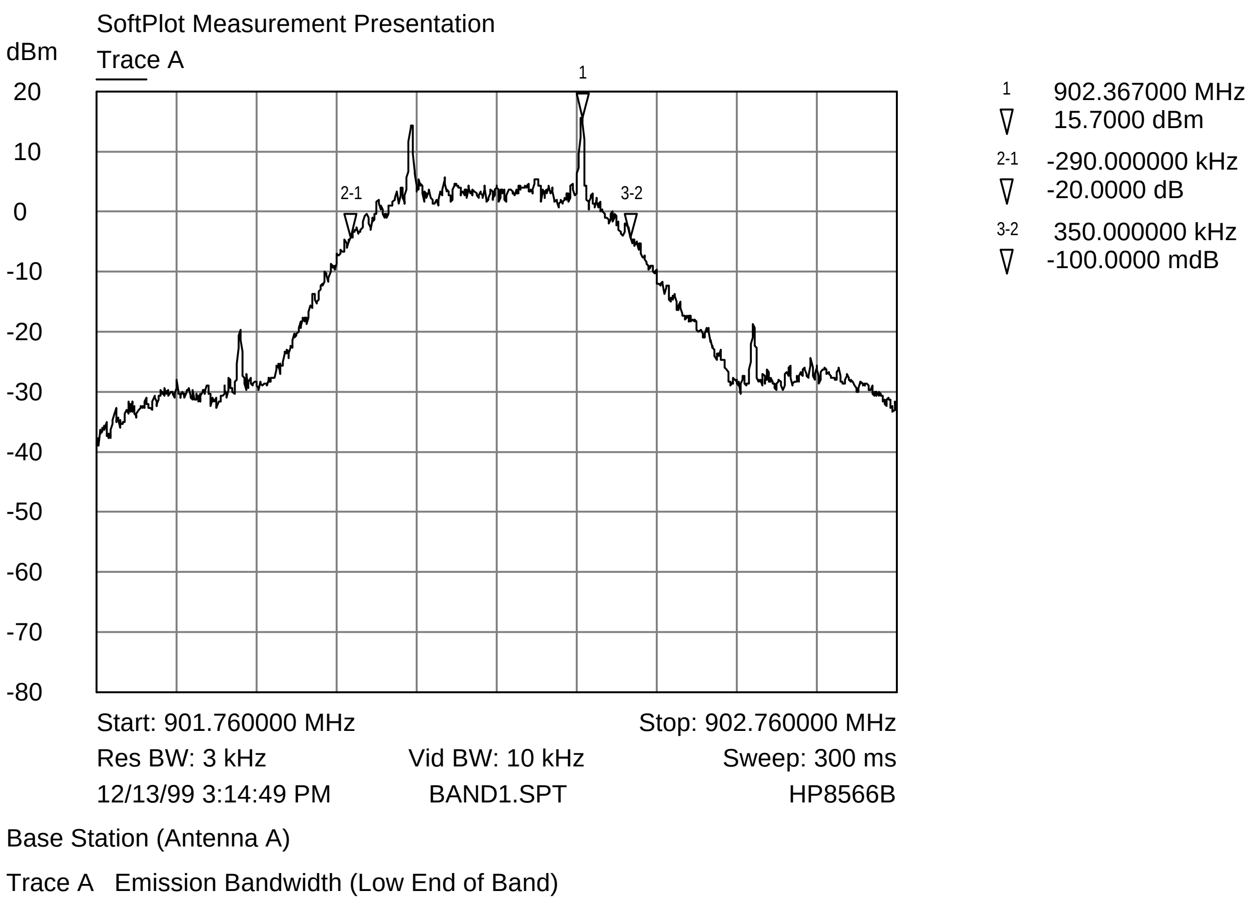
Frequency (MHz)	Measured Emission Bandwidth (kHz)
902.26	350.0
915.36	365.0
927.65	350.0

Handset

Frequency (MHz)	Measured Emission Bandwidth (kHz)
902.26	345.0
915.36	358.0
927.65	350.0

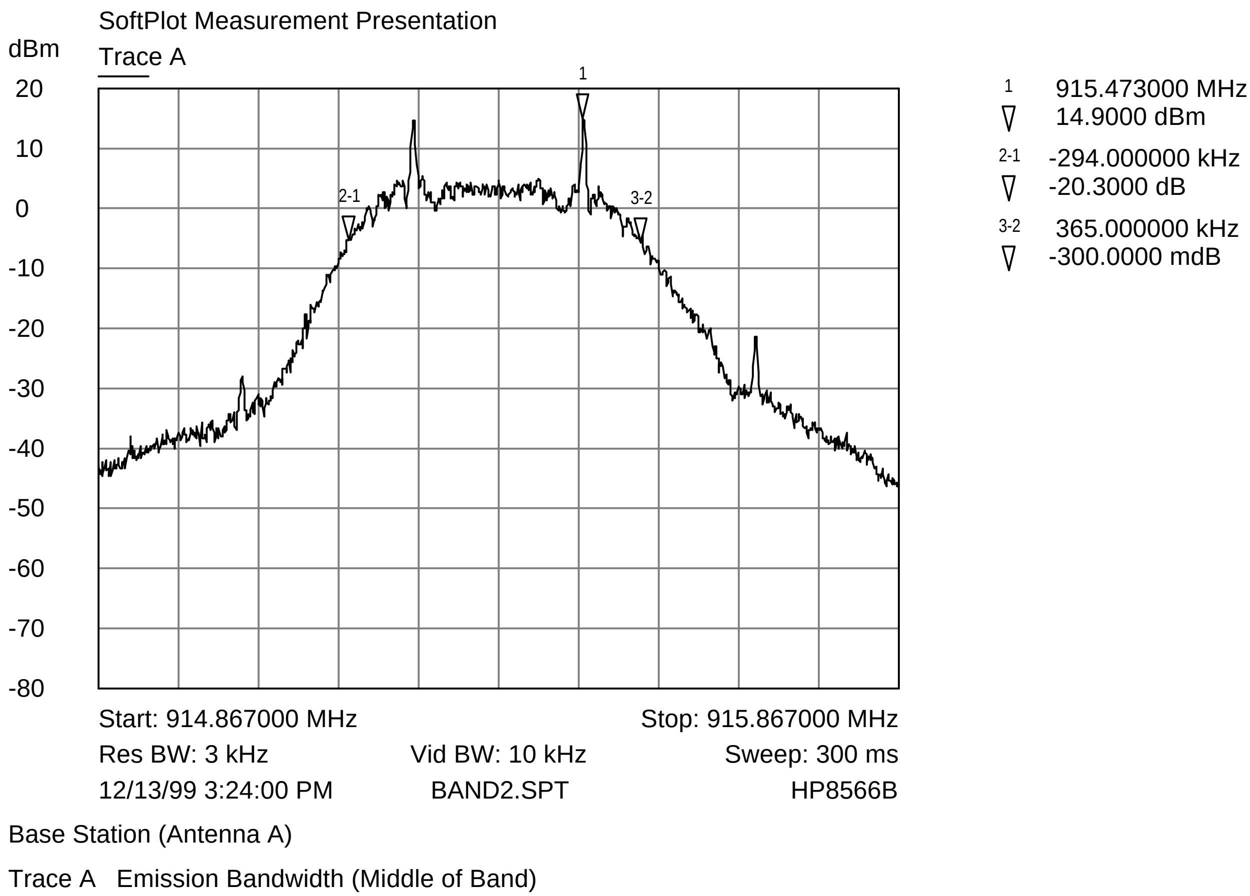
RESULT

In the configuration tested, the EUT complied with the requirements of the specification (see spectrum analyzer plots below).

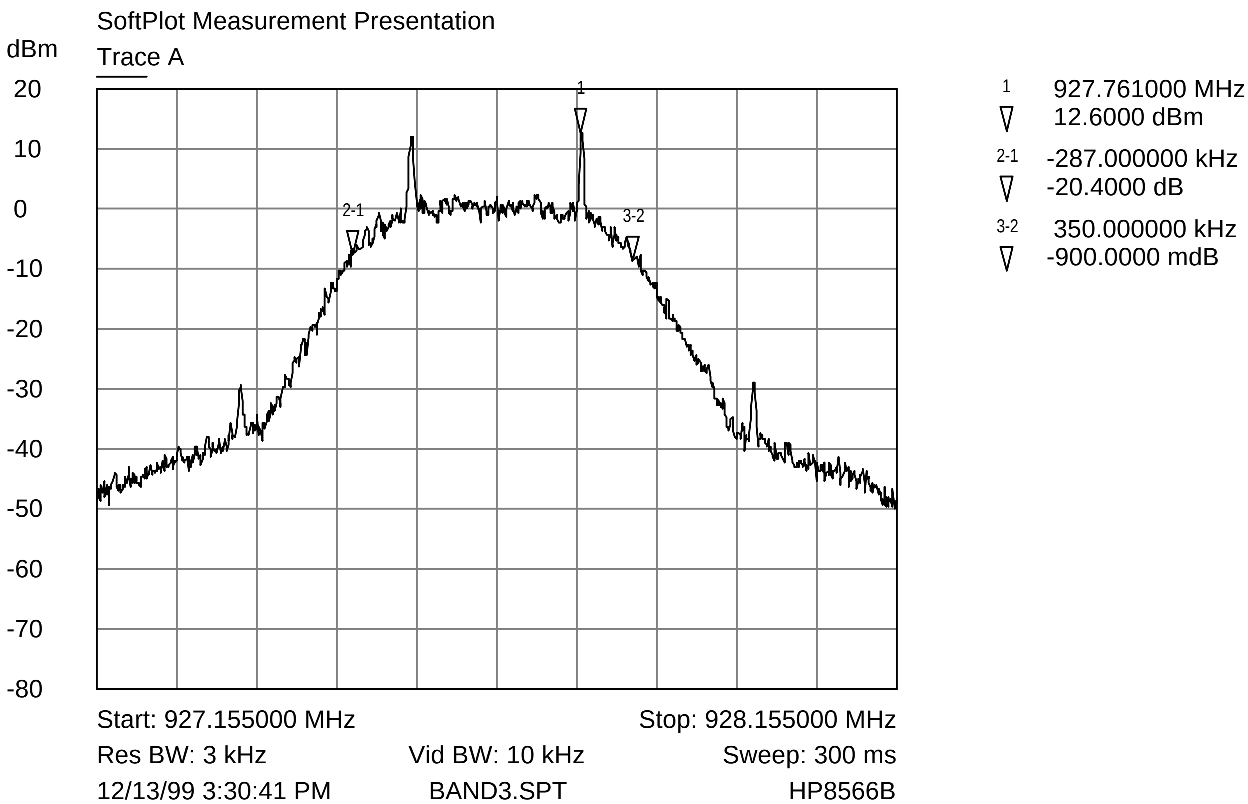


Emission Bandwidth (Low end of band) Base Station

Exhibit 6



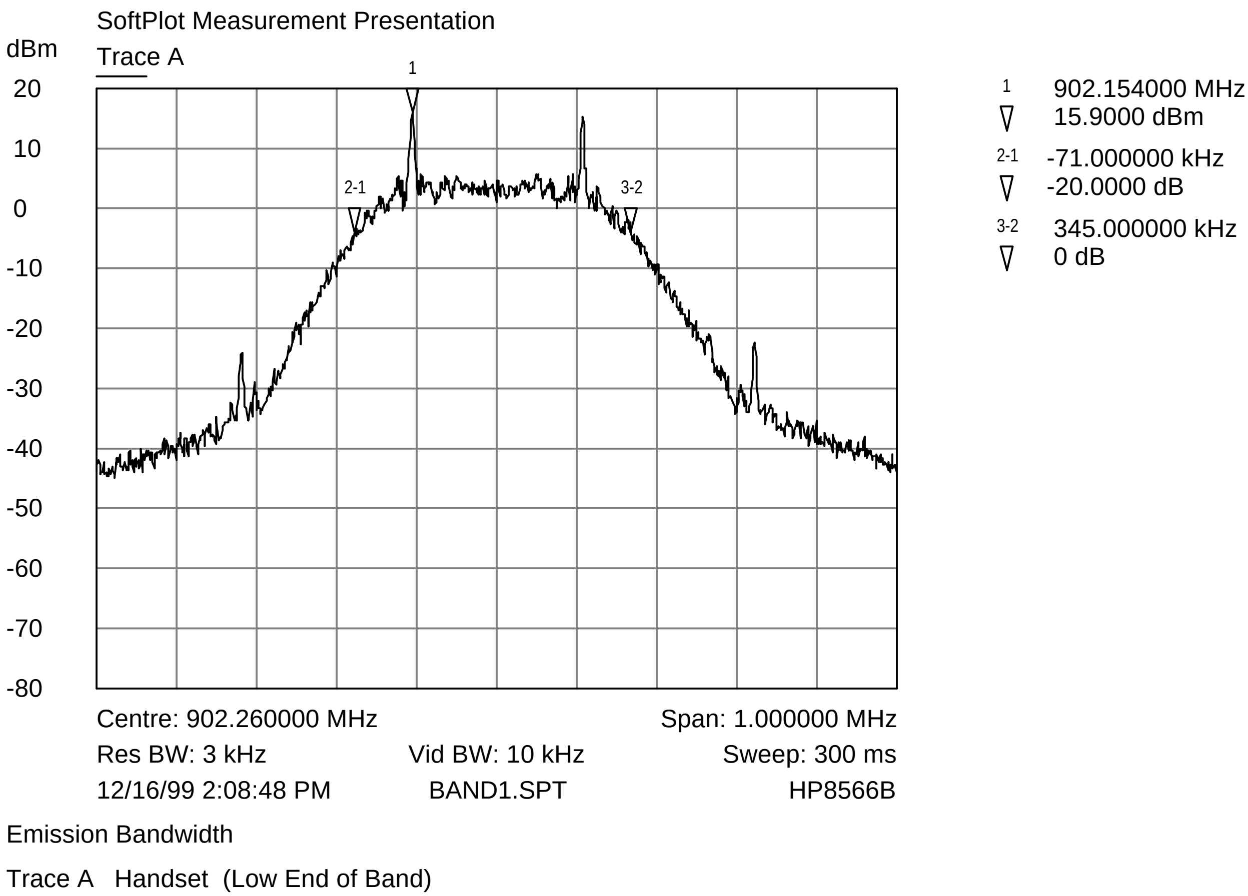
Emission Bandwidth (Middle of band) Base Station



Base Station (Antenna A)

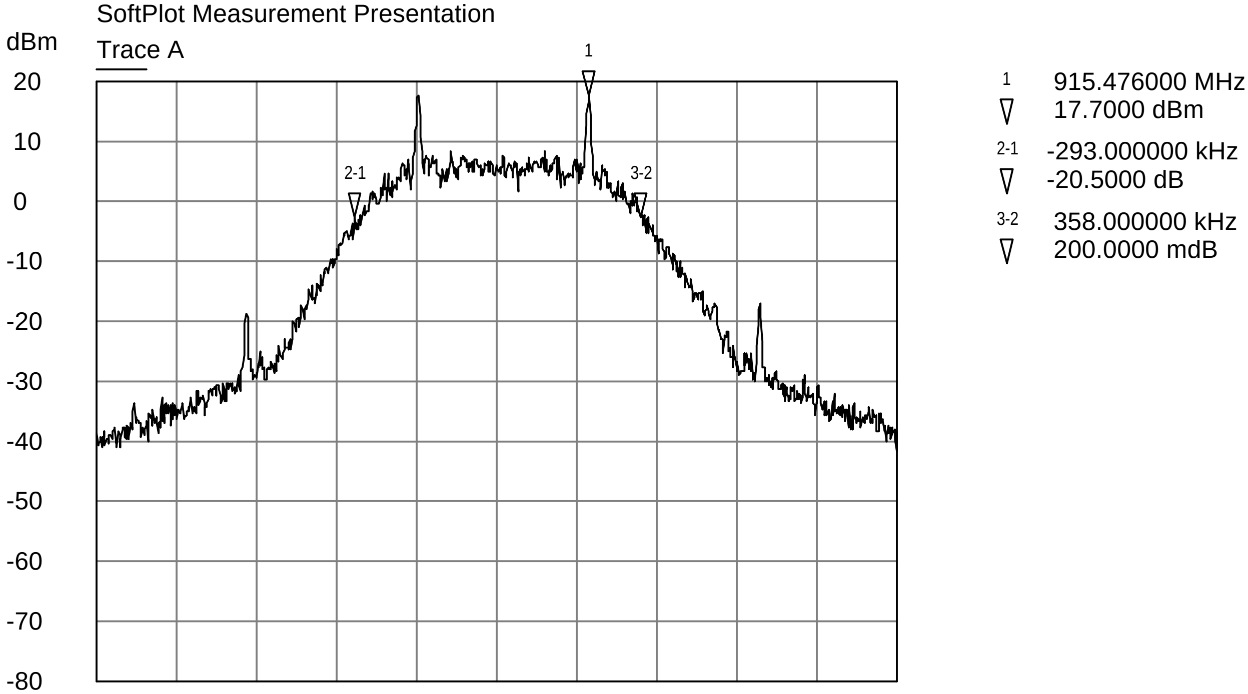
Trace A Emission Bandwidth (High End of Band)

Emission Bandwidth (High end of band) Base Station



Emission Bandwidth (Low end of band) Handset

SoftPlot Measurement Presentation

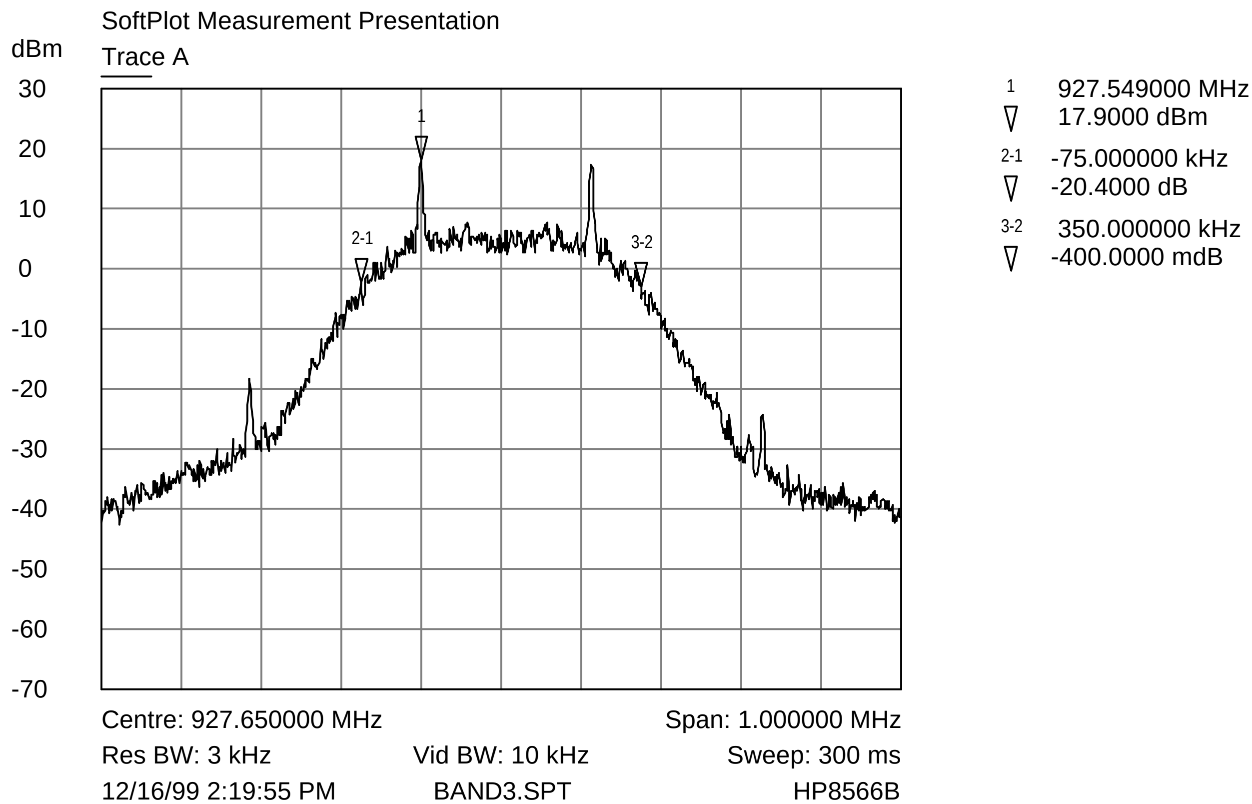


Centre: 915.360000 MHz Span: 1.000000 MHz
Res BW: 3 kHz Vid BW: 10 kHz Sweep: 300 ms
12/16/99 2:10:33 PM BAND2.SPT HP8566B

Emission Bandwidth

Trace A Handset (Middle of Band)

Emission Bandwidth (Middle of band) Handset



Emission Bandwidth

Trace A Handset (High End of Band)

Emission Bandwidth (High end of band) Handset

6.2.3 § 15.247 (b) Peak Output Power:

Measurement Data:

The maximum peak output power measured for this device was 166.0 mW or 22.2 dBm. Shown below is the measured peak output power. The maximum directional gain of the antenna is less than 6 dBi; therefore, the maximum output power is not required to be reduced from the value measured.

A diagram of the test configuration is enclosed in Appendix A and a list of reference codes for test equipment used is enclosed in Appendix B.

Test equipment used: 1, 3 and 4.

Base Station

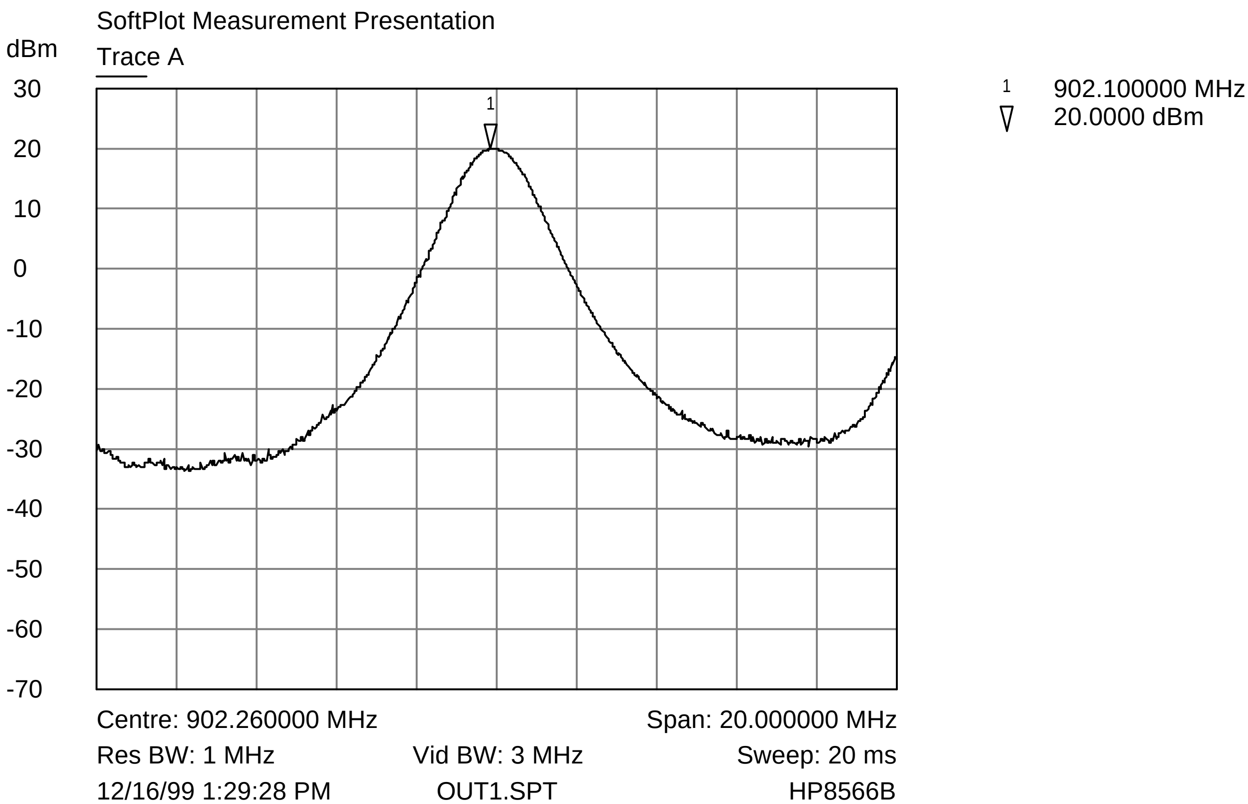
Frequency (MHz)	Measured Output Power (dBm)	Measured Output Power (mW)
902.26	20.0	100.0
915.36	21.2	132.0
927.65	19.6	91.2

Handset

Frequency (MHz)	Measured Output Power (dBm)	Measured Output Power (mW)
902.26	20.0	100.0
915.36	22.2	166.0
927.65	21.9	155.0

RESULT

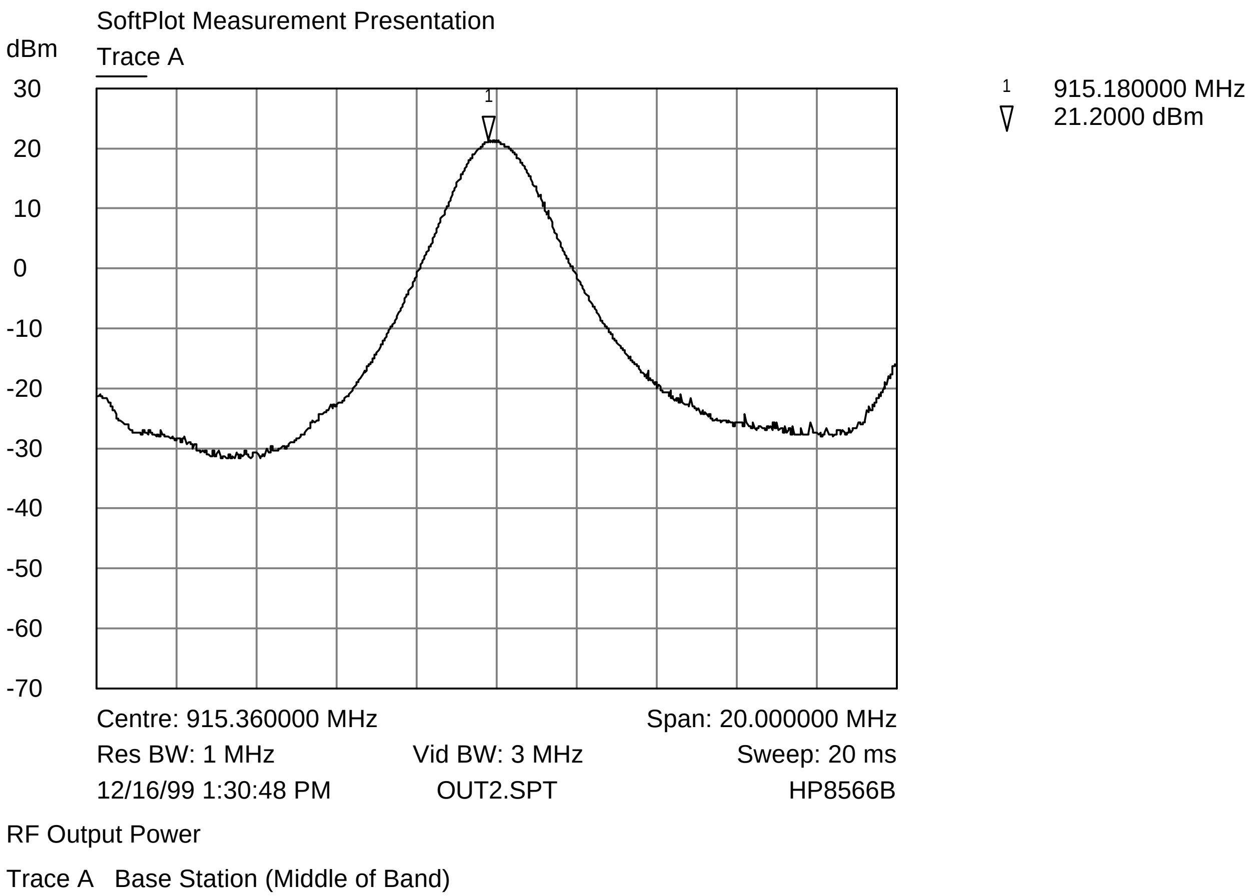
In the configuration tested, the EUT complied with the requirements of the specification.



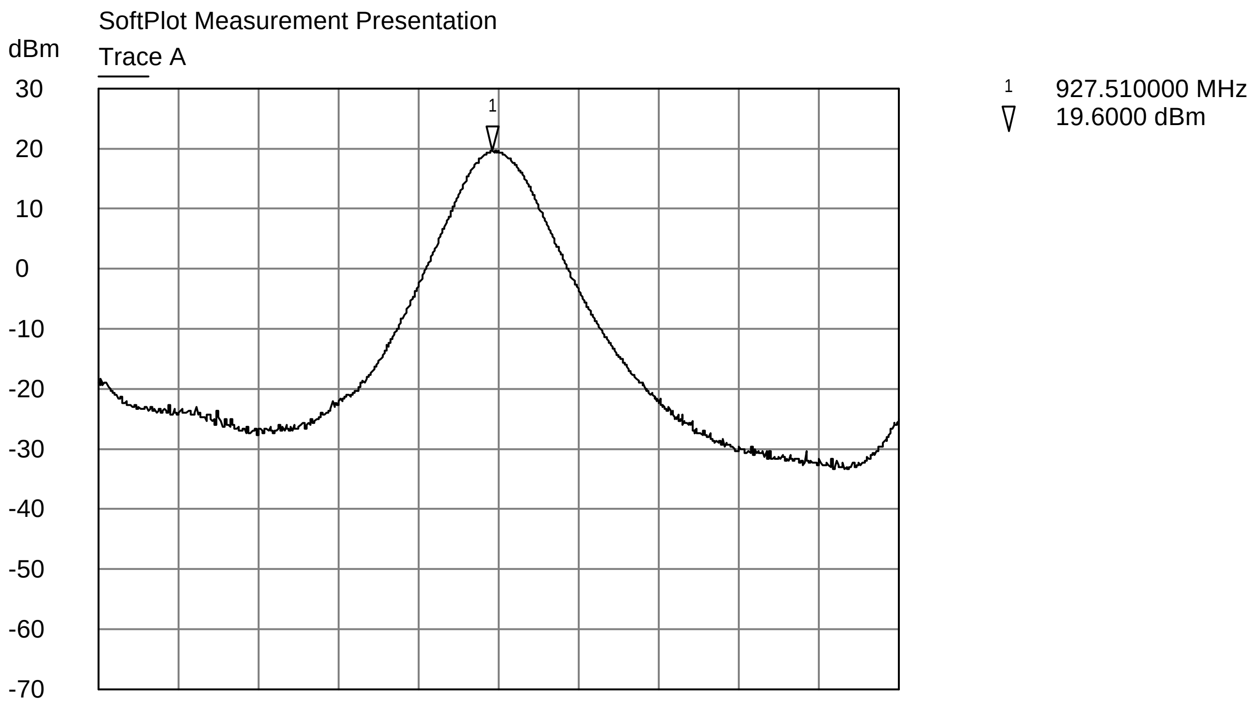
RF Output Power

Trace A Base Station (Low End of Band)

Output Power (Low end of band) Base Station



Output Power (Middle of band) Base Station



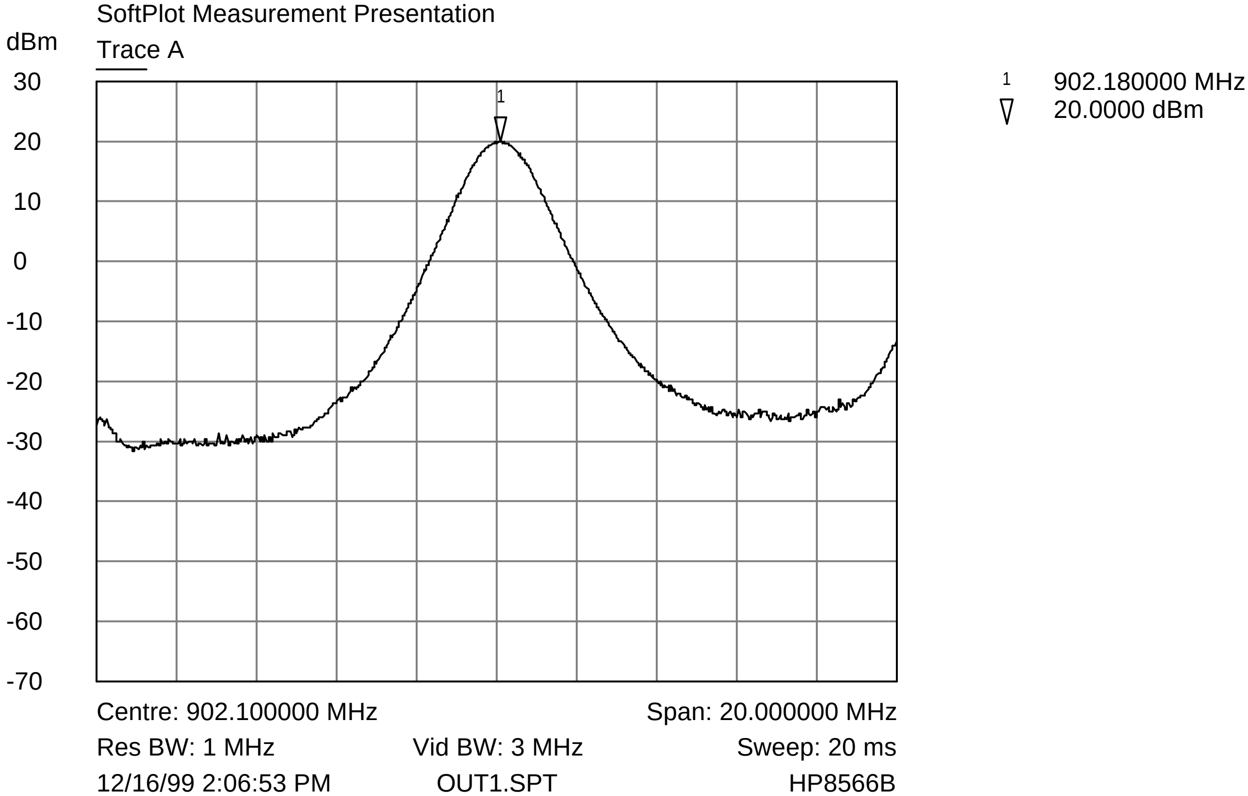
Centre: 927.650000 MHz Span: 20.000000 MHz
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 20 ms
12/16/99 1:32:59 PM OUT3.SPT HP8566B

RF Output Power

Trace A Base Station (High End of Band)

Output Power (High end of band) Base Station

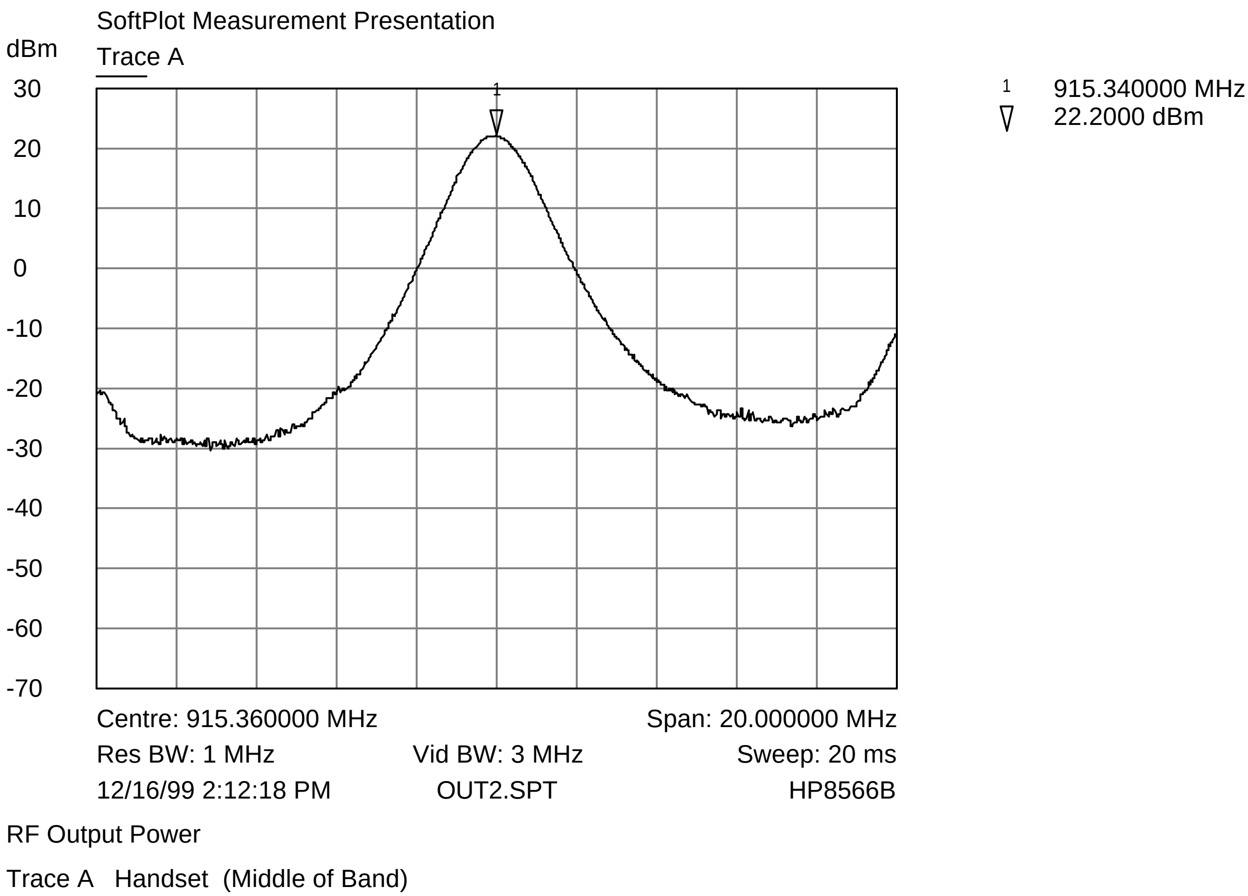
SoftPlot Measurement Presentation



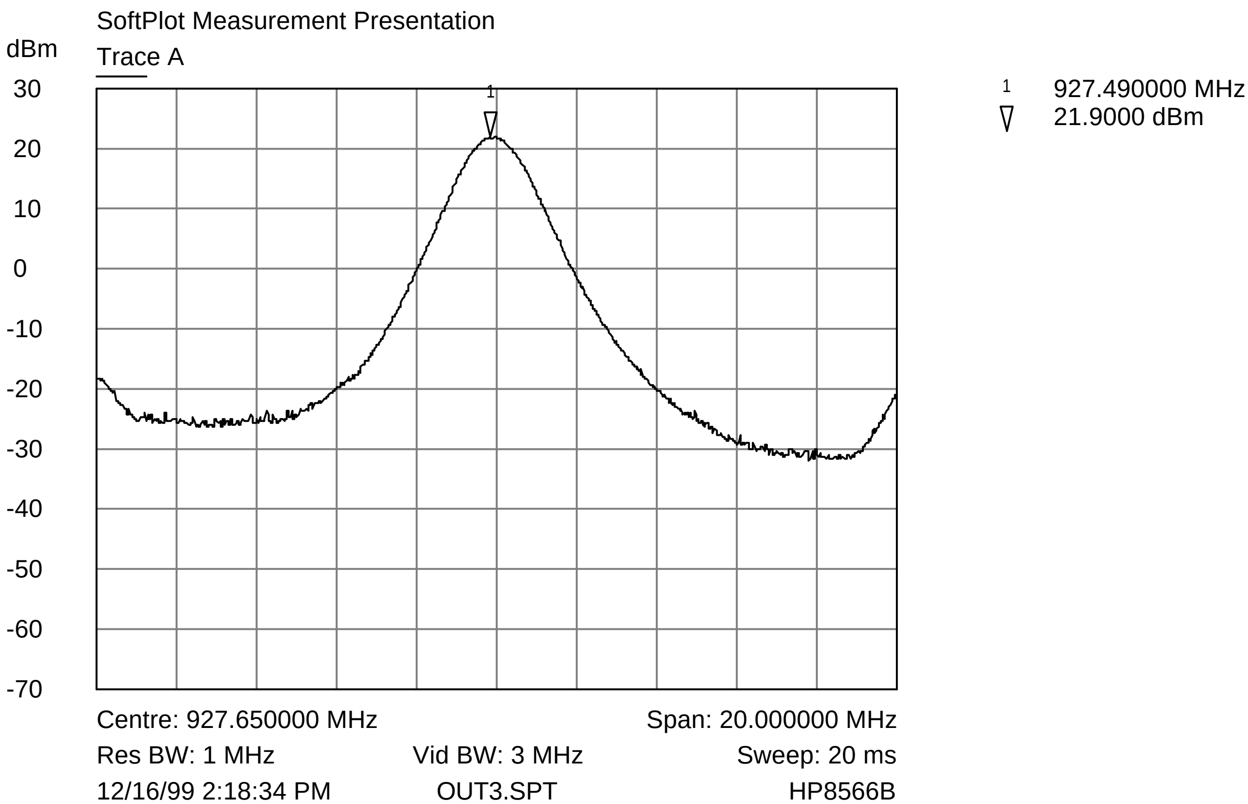
RF Output Power

Trace A Handset (Low End of Band)

Output Power (Low end of band) Handset



Output Power (Middle of band) Handset



RF Output Power

Trace A Handset (High End of Band)

Output Power (High end of band) Handset

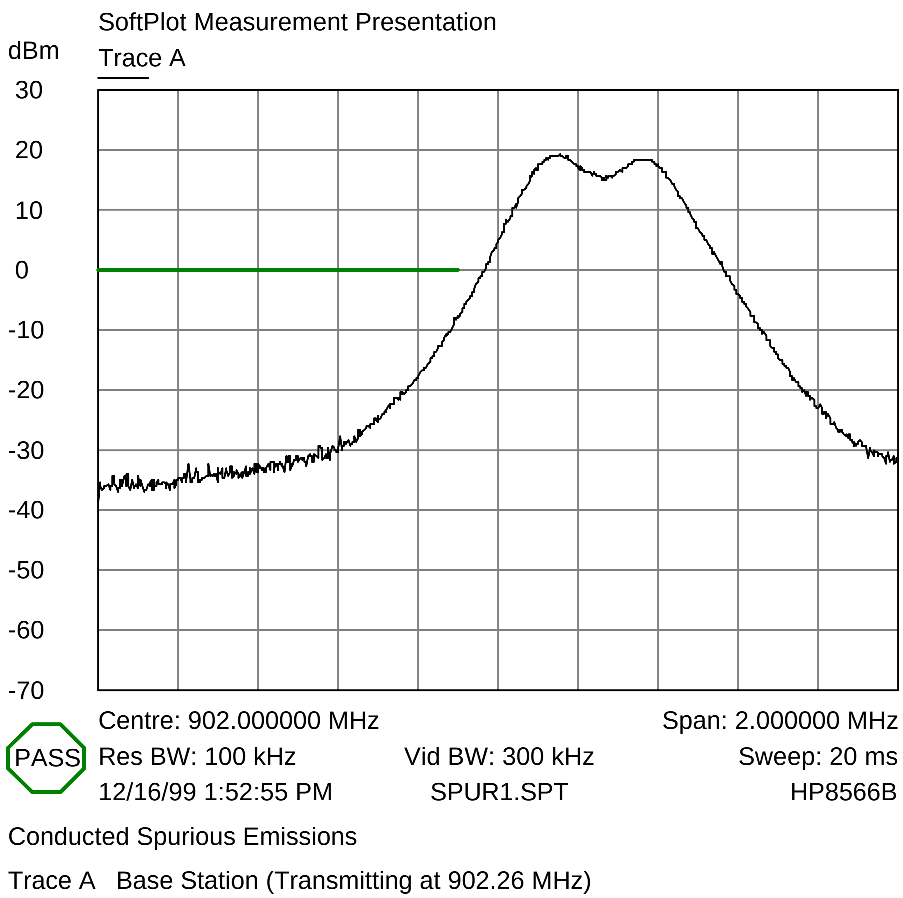
6.2.4 § 15.247 (c) Spurious Emissions:

Measurement Data Antenna Conducted Emissions:

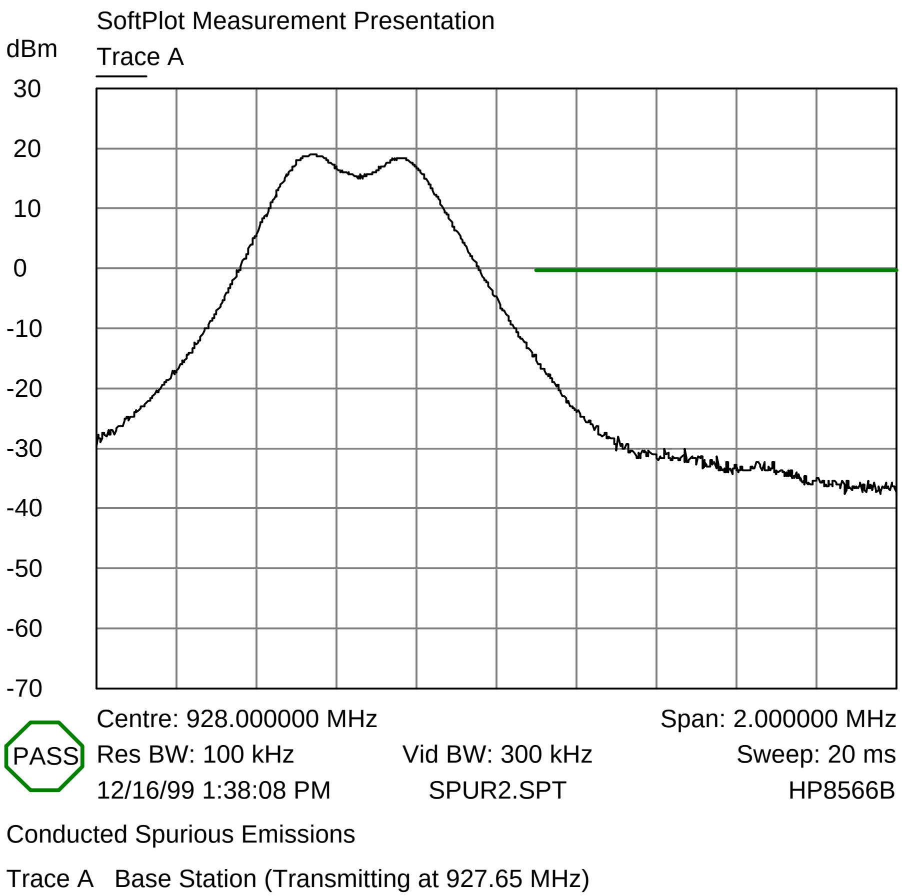
The frequency range from 9 MHz to the tenth harmonic of the highest fundamental frequency was investigated to measure any antenna-conducted emissions. Shown below are plots with the MDW 9040 tuned to the upper and lower band edges. These demonstrate compliance with the provisions of this section.

A diagram of the test configuration is enclosed in Appendix A and a list of reference codes for test equipment used is enclosed in Appendix B.

Test equipment used: 1, 3 and 4.



Conducted Spurious Emissions (Transmitting at 902.26 MHz)



Conducted Spurious Emissions (Transmitting at 927.65 MHz)

Base Station

The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 20.0 – 20.0 = 0.0 dBm.

Transmitting at 902.26 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 - 200	65.5	-52.0	0.0
200 - 901.9	891.8	-22.7	0.0
928.1 - 1500	973.3	-54.5	0.0
1500 - 2000	1804.1	-27.5	0.0
2000 - 3000	2706.3	-57.9	0.0
3000 - 4000	3608.5	-74.6	0.0
4000 - 5000	4510.5	-73.7 *	0.0
5000 - 6000	5412.6	-73.5 *	0.0
6000 - 7000	6314.7	-73.8 *	0.0
7000 - 8000	7216.8	-68.1 *	0.0
8000 - 9000	8118.9	-68.0 *	0.0
9000 - 10000	9021.0	-67.0 *	0.0
* Noise Floor			

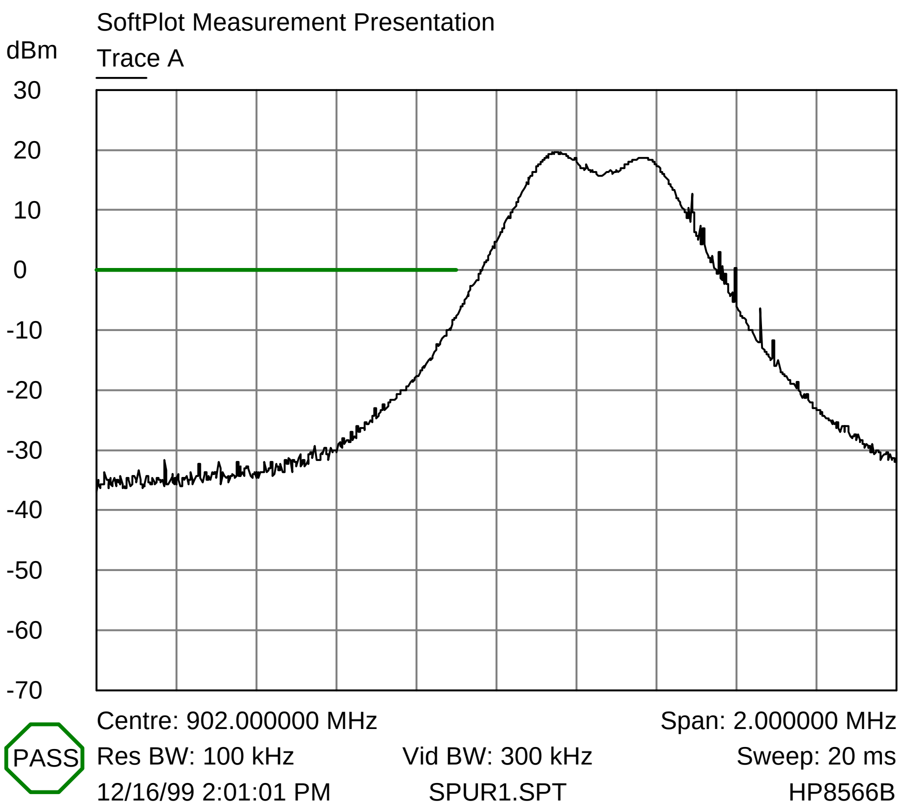
The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 21.2 – 20.0 = 1.2 dBm.

Transmitting at 915.36 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 - 200	79.2	-48.6	1.2
200 - 901.9	894.3	-41.8	1.2
928.1 - 1500	935.1	-38.9	1.2
1500 - 2000	1830.0	-28.4	1.2
2000 - 3000	2745.0	-53.4	1.2
3000 - 4000	3660.0	-72.8 *	1.2
4000 - 5000	4575.0	-73.7 *	1.2
5000 - 6000	5490.0	-73.5 *	1.2
6000 - 7000	6405.0	-73.8 *	1.2
7000 - 8000	7320.0	-68.1 *	1.2
8000 - 9000	8235.0	-68.0 *	1.2
9000 - 10000	9150.0	-67.0 *	1.2
* Noise Floor			

The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 19.6 – 20.0 = -0.4 dBm.

Transmitting at 927.65 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 - 200	44.4	-37.9	-0.4
200 - 901.9	899.8	-49.5	-0.4
928.1 - 1500	938.4	-23.8	-0.4
1500 - 2000	1855.8	-30.2	-0.4
2000 - 3000	2783.7	-58.1	-0.4
3000 - 4000	3711.6	-73.7 *	-0.4
4000 - 5000	4639.5	-73.7 *	-0.4
5000 - 6000	5567.4	-73.5 *	-0.4
6000 - 7000	6495.3	-73.8 *	-0.4
7000 - 8000	7423.2	-68.1 *	-0.4
8000 - 9000	8351.1	-68.0 *	-0.4
9000 - 10000	9279.0	-67.0 *	-0.4
* Noise Floor			

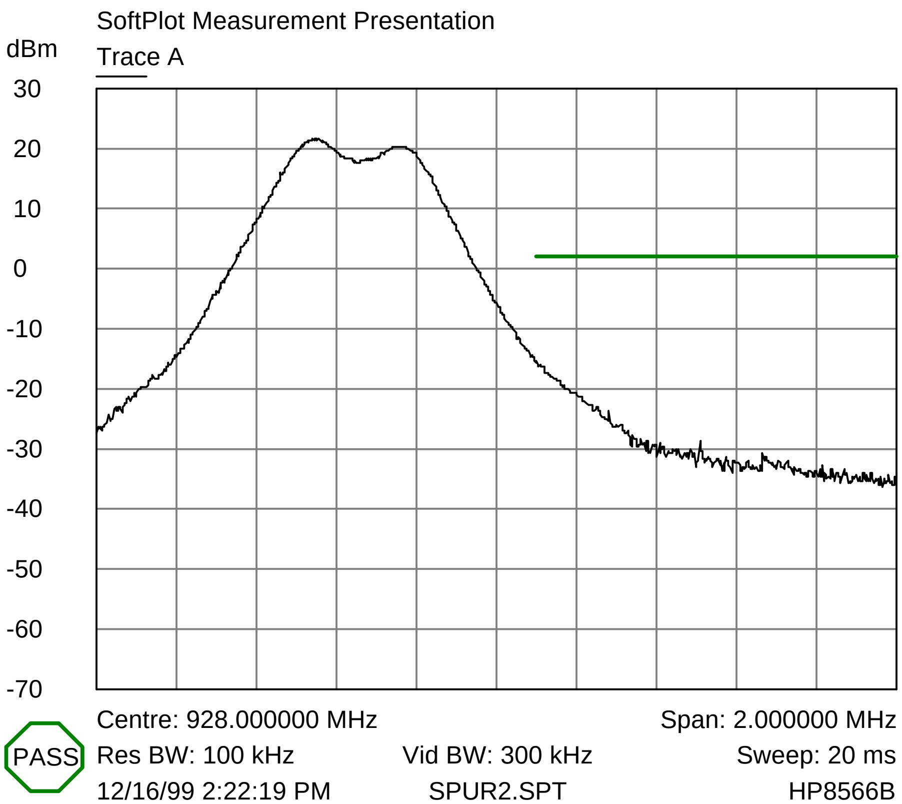
Handset



Conducted Spurious Emissions

Trace A Handset (Transmitting at 902.26 MHz)

Conducted Spurious Emissions (Transmitting at 902.26 MHz)



Conducted Spurious Emissions

Trace A Handset (Transmitting at 927.65 MHz)

Conducted Spurious Emissions (Transmitting at 927.65 MHz)

Handset

The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 20.0 – 20.0 = 0.0 dBm.

Transmitting at 902.26 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 - 200	67.4	-32.8	0.0
200 - 901.9	891.8	-19.2	0.0
928.1 - 1500	973.2	-64.8	0.0
1500 - 2000	1804.1	-34.4	0.0
2000 - 3000	2706.3	-53.7	0.0
3000 - 4000	3608.5	-50.1	0.0
4000 - 5000	4510.5	-59.3	0.0
5000 - 6000	5412.6	-57.2	0.0
6000 - 7000	6314.7	-57.3	0.0
7000 - 8000	7216.8	-68.1 *	0.0
8000 - 9000	8118.9	-68.0 *	0.0
9000 - 10000	9021.0	-67.0 *	0.0
* Noise Floor			

The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 22.2 – 20.0 = 2.2 dBm.

Transmitting at 915.36 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 -200	81.0	-53.3	2.2
200 - 901.9	893.6	-40.0	2.2
928.1 - 1500	935.1	-37.5	2.2
1500 - 2000	1830.0	-25.6	2.2
2000 - 3000	2745.0	-50.6	2.2
3000 - 4000	3660.0	-51.3	2.2
4000 - 5000	4575.0	-53.4	2.2
5000 - 6000	5490.0	-55.9	2.2
6000 - 7000	6405.0	-56.6	2.2
7000 - 8000	7320.0	-67.4	2.2
8000 - 9000	8235.0	-63.3	2.2
9000 - 10000	9150.0	-65.8	2.2
* Noise Floor			

The emissions must be attenuated 20 dB below the highest power level measured; therefore, the criteria is 21.9 – 20.0 = 1.9 dBm.

Transmitting at 927.65 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
9 -200	44.4	-39.0	1.9
200 - 901.9	899.7	-50.9	1.9
928.1 - 1500	938.4	-21.0	1.9
1500 - 2000	1855.8	-24.4	1.9
2000 - 3000	2783.7	-51.4	1.9
3000 - 4000	3711.6	-67.3	1.9
4000 - 5000	4639.5	-54.1	1.9
5000 - 6000	5567.4	-64.3	1.9
6000 - 7000	6495.3	-56.6	1.9
7000 - 8000	7423.2	-66.0	1.9
8000 - 9000	8351.1	-63.6	1.9
9000 - 10000	9279.0	-67.0 *	1.9
* Noise Floor			

Measurement Data Radiated Emissions Restricted Bands § 15.205:

The frequency range from 30 MHz to 10 GHz was investigated to measure any radiated emissions in the restricted bands.

A diagram of the test configuration is enclosed in Appendix A and a list of reference codes for test equipment used is enclosed in Appendix B.

Test equipment used: 1, 3, 4, 6, 7, 8, 9 and 12.

AVERAGE FACTOR

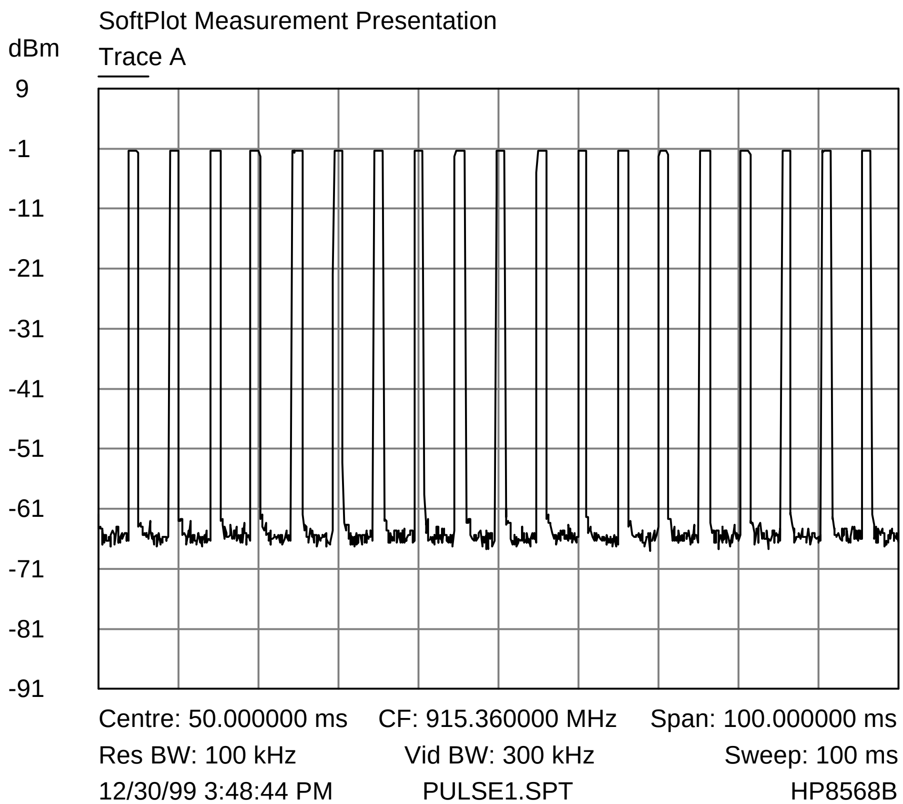
The MDW 9040 transmits TDD for 1.059 msec (the total frame length is 5.0 msec) on one specific hop channel, then it hops to the next channel in the hop list. The MDW 9040 will transmit again on this channel after all 25 channels have been used. Therefore, the total pulse period in 100 msec will be two on times of 1.059 msec for a total of 2.118 msec. The total on time in a 10 second period is 211.8 msec (10 sec divided by 100 msec = 100 msec periods) (100 msec periods times 2.118 msec = 211.8 msec)

The average factor for the MDW 9040 is –33.4 dB. This factor is derived using the following formula:

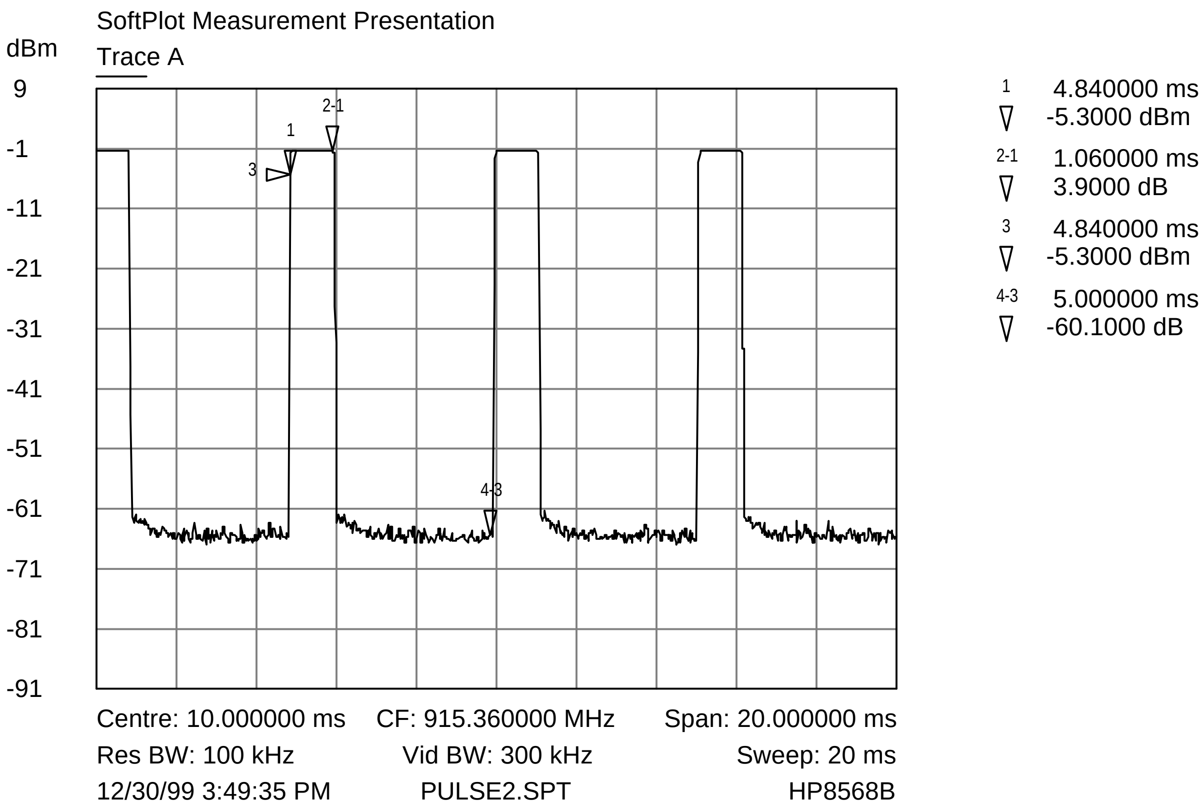
$$20 \log \frac{2.118 \text{ msec}}{100 \text{ msec}} = 20 \log 0.02118 = -33.4 \text{ dB}$$

The maximum allowed average factor is –20.0 dB; therefore, this figure was used to determine compliance.

It was not possible to put the transmitter in normal hopping mode, so the pulse trains shown below only show the pulse duration and the pulse period that were used to compute this average factor.



Pulse Train (100 msec)



Pulse Train (20 msec)

Base Station

The base station uses two antennas for diversity purposes; therefore, measurements were performed with the base station transmitting on both antennas. The results for both measurements are shown below.

Base Station
Vertical Polarity

Transmitting at 902.26 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	11.0	35.2	0.0	46.2	54.0
2706.8	23.0	36.5	-20.0	39.5	54.0
3609.0	11.5	39.8	-20.0	31.3	54.0
3892.8	-0.2	40.2	0.0	40.2	54.0
4511.3	6.5 *	41.1	-20.0	27.6	54.0
4866.0	8.5 *	42.7	0.0	51.2	54.0
5413.5	-0.2 *	45.8	-20.0	25.6	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 902.26 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	14.1	35.2	0.0	49.9	54.0
2706.8	20.1	36.5	-20.0	36.6	54.0
3609.0	8.0	39.8	-20.0	27.8	54.0
3892.8	8.0	40.4	0.0	48.4	54.0
4511.3	8.6	41.1	-20.0	29.7	54.0
4866.0	8.6 *	42.7	0.0	51.3	54.0
5413.5	-0.2 *	45.8	-20.0	25.6	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	11.6	35.5	0.0	47.2	54.0
2746.1	20.2	36.7	-20.0	36.9	54.0
3661.5	9.8	40.0	-20.0	29.8	54.0
3945.2	8.5	40.5	0.0	49.0	54.0
4576.8	9.2	41.4	-20.0	30.6	54.0
4931.5	8.7	41.4	0.0	50.1	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	11.8	35.5	0.0	47.4	54.0
2746.1	23.1	36.7	-20.0	39.8	54.0
3661.5	11.2	40.0	-20.0	31.2	54.0
3945.2	8.4	40.5	0.0	49.1	54.0
4576.8	8.0	41.4	-20.0	29.4	54.0
4931.5	8.9	41.4	0.0	50.3	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	9.4	35.9	0.0	45.3	54.0
2782.9	13.4	37.0	-20.0	30.4	54.0
3710.6	9.9	40.1	-20.0	30.0	54.0
3994.4	8.9	40.6	0.0	49.5	54.0
4638.3	8.3	41.7	-20.0	30.0	54.0
4993.0	8.6 *	43.4	0.0	52.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	9.0	35.9	0.0	44.9	54.0
2782.9	12.6	37.0	-20.0	29.6	54.0
3710.6	8.5	40.1	-20.0	28.6	54.0
3994.4	9.0	40.6	0.0	49.6	54.0
4638.3	7.6 *	41.7	-20.0	29.3	54.0
4993.0	8.6 *	43.4	0.0	52.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Horizontal Polarity

Transmitting at 902.26 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	10.2	35.2	0.0	45.4	54.0
2706.8	20.3	36.5	-20.0	36.8	54.0
3609.0	15.0	39.8	-20.0	34.8	54.0
3892.8	10.5	40.4	0.0	50.9	54.0
4511.3	9.8	41.1	-20.0	30.9	54.0
4866.0	8.5 *	42.7	0.0	51.2	54.0
5413.5	-0.2 *	45.8	-20.0	25.6	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 902.26 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	7.5	35.2	0.0	42.7	54.0
2706.8	18.6	36.5	-20.0	35.1	54.0
3609.0	14.5	39.8	-20.0	34.3	54.0
3892.8	10.6	40.4	0.0	51.0	54.0
4511.3	9.8	41.1	-20.0	30.9	54.0
4866.0	8.5 *	42.7	0.0	51.2	54.0
5413.5	-0.2 *	45.8	-20.0	25.6	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	6.9	35.5	0.0	42.5	54.0
2746.1	17.9	36.7	-20.0	34.6	54.0
3661.5	12.3	40.0	-20.0	32.3	54.0
3945.2	10.1	40.5	0.0	50.6	54.0
4576.8	9.8	41.4	-20.0	30.9	54.0
4931.5	9.7	41.4	0.0	51.1	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	7.3	35.5	0.0	42.9	54.0
2746.1	20.1	36.7	-20.0	36.8	54.0
3661.5	13.0	40.0	-20.0	33.0	54.0
3945.2	10.9	40.5	0.0	51.4	54.0
4576.8	10.4	41.4	-20.0	31.8	54.0
4931.5	9.7	41.4	0.0	51.1	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz (Antenna A)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	7.4	35.9	0.0	43.3	54.0
2782.9	14.0	37.0	-20.0	31.0	54.0
3710.6	8.7	40.1	-20.0	28.8	54.0
3994.4	8.5	40.6	0.0	49.1	54.0
4638.3	8.0	41.7	-20.0	29.7	54.0
4993.0	8.6 *	43.4	0.0	52.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz (Antenna B)					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	9.0	35.9	0.0	44.9	54.0
2782.9	13.2	37.0	-20.0	30.2	54.0
3710.6	10.4	40.1	-20.0	50.5	54.0
3994.4	7.5	40.6	0.0	48.0	54.0
4638.3	8.5	41.7	-20.0	30.2	54.0
4993.0	8.6 *	43.4	0.0	52.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Handset

Vertical Polarity

Transmitting at 902.26 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	1.9	35.2	0.0	37.1	54.0
2706.8	25.0	36.5	-20.0	41.5	54.0
3609.0	15.4	39.8	-20.0	35.2	54.0
3892.8	10.1 *	40.4	0.0	50.5	54.0
4511.3	12.6	41.1	-20.0	33.7	54.0
4866.0	10.6 *	42.8	0.0	53.4	54.0
5413.5	14.5 *	45.8	-20.0	40.3	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	0.8	35.5	0.0	36.3	54.0
2746.1	26.6	36.7	-20.0	43.3	54.0
3661.5	17.9	40.0	-20.0	37.9	54.0
3945.2	10.2 *	40.5	0.0	50.7	54.0
4576.8	12.8	41.4	-20.0	34.2	54.0
4931.5	10.5 *	43.1	0.0	53.6	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	-1.1	35.9	0.0	34.8	54.0
2782.9	20.6	37.0	-20.0	37.6	54.0
3710.6	12.5	40.1	-20.0	32.6	54.0
3994.4	9.8 *	40.6	0.0	50.4	54.0
4638.3	10.2	41.7	-20.0	31.9	54.0
4993.0	9.6 *	43.4	0.0	53.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Horizontal Polarity

Transmitting at 902.26 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
973.2	2.1	35.2	0.0	37.3	54.0
2706.8	24.0	36.5	-20.0	40.5	54.0
3609.0	20.2	39.8	-20.0	40.0	54.0
3892.8	10.1 *	40.4	0.0	50.5	54.0
4511.3	13.3	41.1	-20.0	34.4	54.0
4866.0	10.6 *	42.8	0.0	53.4	54.0
5413.5	12.9	45.8	-20.0	38.7	54.0
8120.3	13.6 *	40.8	-20.0	34.4	54.0
9022.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 915.36 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
986.31	-0.2	35.5	0.0	35.3	54.0
2746.1	27.6	36.7	-20.0	44.3	54.0
3661.5	23.0	40.0	-20.0	43.0	54.0
3945.2	10.2 *	40.5	0.0	50.7	54.0
4576.8	14.3	41.4	-20.0	35.7	54.0
4931.5	10.5 *	43.1	0.0	53.6	54.0
7322.8	12.6 *	39.2	-20.0	31.8	54.0
8238.2	13.6 *	40.8	-20.0	34.4	54.0
9153.6	14.3 *	41.6	-20.0	35.9	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Transmitting at 927.65 MHz					
Frequency MHz	Receiver Reading dBμV	Correction Factor dB	Average Factor dB	Corrected Reading dBμV/m	Limit dBμV/m
998.61	-0.6	35.9	0.0	35.3	54.0
2782.9	21.9	37.0	-20.0	38.9	54.0
3710.6	12.3	40.1	-20.0	32.4	54.0
3994.4	9.8 *	40.6	0.0	50.4	54.0
4638.3	11.1	41.7	-20.0	32.8	54.0
4993.0	9.6 *	43.4	0.0	53.0	54.0
7421.2	12.6 *	39.2	-20.0	31.8	54.0
8348.8	13.6 *	40.8	-20.0	34.4	54.0

Note 1 - * No emissions were detected with the antenna 1 meter from the EUT, the indicated readings are the noise floor measurements from the spectrum analyzer

Note 2 – The average factor was used to calculate the emissions that were from the Transmit LO.

Sample Field Strength Calculation:

The field strength is calculated by adding the Correction Factor (Antenna Factor + Cable Factor), to the measured level from the receiver. The basic equation with a sample calculation is shown below:

FS = RA + CF - AF Where
FS = Field Strength
RA = Receiver Amplitude (Receiver Reading - Amplifier Gain)
CF = Correction Factor (Antenna Factor + Cable Factor)
AF = Average Factor

RESULT

In the configuration tested, the EUT complied with the requirements of the specification.

6.2.5 § 15.207 Conducted Limits

The frequency range from 450 kHz to 30 MHz was investigated to measure any AC line conducted emissions.

A diagram of the test configuration is enclosed in Appendix A and a list of reference codes for test equipment used is enclosed in Appendix B.

Test equipment used: 1, 3, 4 and 13.

Line Conducted Data - (Hot Lead) Base Station

Frequency MHz	Detector	Measured Level dBμV	Limit dBμV
0.84	Peak	32.8	48.0
8.53	Peak	39.6	48.0
10.42	Peak	39.7	48.0
12.21	Peak	41.8	48.0
14.51	Peak	45.2	48.0
14.74	Peak	44.0	48.0
15.02	Peak	38.0	48.0
15.80	Peak	38.9	48.0
16.17	Peak	39.2	48.0
16.95	Peak	36.4	48.0
18.12	Peak	39.5	48.0
19.29	Peak	32.0	48.0
20.45	Peak	28.0	48.0

Line Conducted Data - (Neutral Lead) Base Station

Frequency MHz	Detector	Measured Level dBμV	Limit dBμV
0.84	Peak	33.9	48.0
7.70	Peak	39.5	48.0
8.51	Peak	40.0	48.0
10.84	Peak	40.1	48.0
12.21	Peak	41.3	48.0
14.32	Peak	43.5	48.0
14.51	Peak	45.8	48.0
14.71	Peak	44.8	48.0
14.90	Peak	42.6	48.0
15.02	Peak	38.1	48.0
15.98	Peak	39.7	48.0
16.76	Peak	37.1	48.0
18.12	Peak	39.0	48.0
19.29	Peak	32.2	48.0
20.46	Peak	28.4	48.0

APPENDIX A TEST EQUIPMENT USED:

Reference No.	Type	Manufacturer	Model
1	Anechoic Chamber	EMC Test Systems	N/A
2	Wanship Open Area Test Site	CCL	N/A
3	Spectrum Analyzer	Hewlett Packard	8568B or 8566B
4	Quasi-Peak Detector	Hewlett Packard	8565A
5	Biconical Antenna	EMCO	3108 or 3104P
6	Log-Periodic Antenna	EMCO	3146
7	Biconilog Antenna	EMCO	3142
8	Double Ridged Guide Antenna	EMCO	3115
9	Pre-Amplifier	Hewlett Packard	8447D
10	Power Amplifier	Hewlett Packard	8447E
11	Power Amplifier	Hewlett Packard	8449A
12	Power Amplifier	Hewlett Packard	8449B
13	LISN Anechoic Chamber	EMCO	3825/2
14	LISN Wanship	EMCO	3725

An independent calibration laboratory following outlined calibration procedures calibrates all the equipment listed above every 12 months.

APPENDIX B TEST PROCEDURES:

Line Conducted Emissions:

The line-conducted emission from the digital apparatus was measured using a spectrum analyzer with a quasi-peak adapter for peak, quasi-peak and average readings. The quasi-peak adapter uses a bandwidth of 9 kHz, with the spectrum analyzer's resolution bandwidth set at 100 kHz, for readings in the 450 kHz to 30 MHz frequency ranges.

The line conducted emissions measurements are performed in a screen room using a (50 Ω/50 μH) Line Impedance Stabilization Network (LISN).

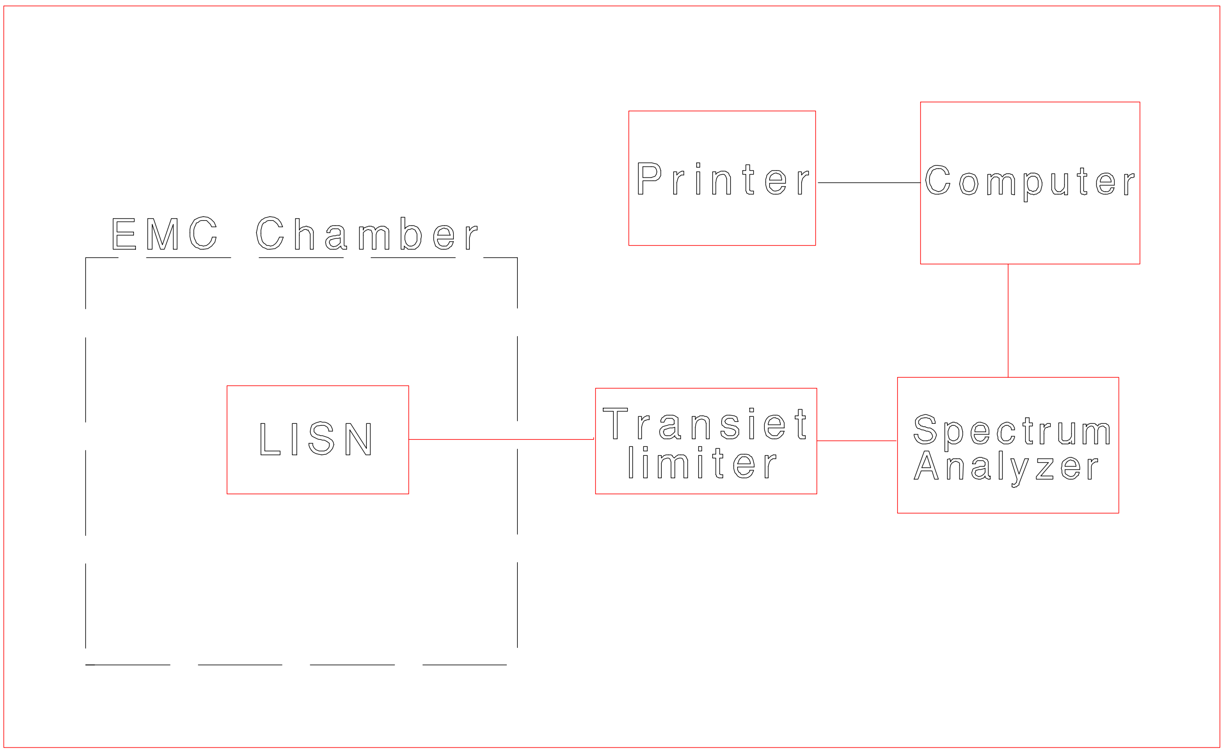
Where mains flexible power cords are longer than 1 m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

Where the EUT is a collection of digital apparatus with each digital apparatus having its own power cord, the point of connection for the LISN is determined from the following rules:

a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
c) Power cords which are specified by the manufacturer to be connected via a host unit or other power supplying equipment shall be connected to that host unit and the power cords of that host unit connected to the LISN and tested.

Desktop digital apparatus are placed on a non-conducting table at least 80 cm from the metallic floor. The equipment is placed a minimum of 40 cm from all walls. Floor standing equipment is placed directly on the earth grounded floor.

Line Conducted Emissions Test



Radiated Spurious Emissions:

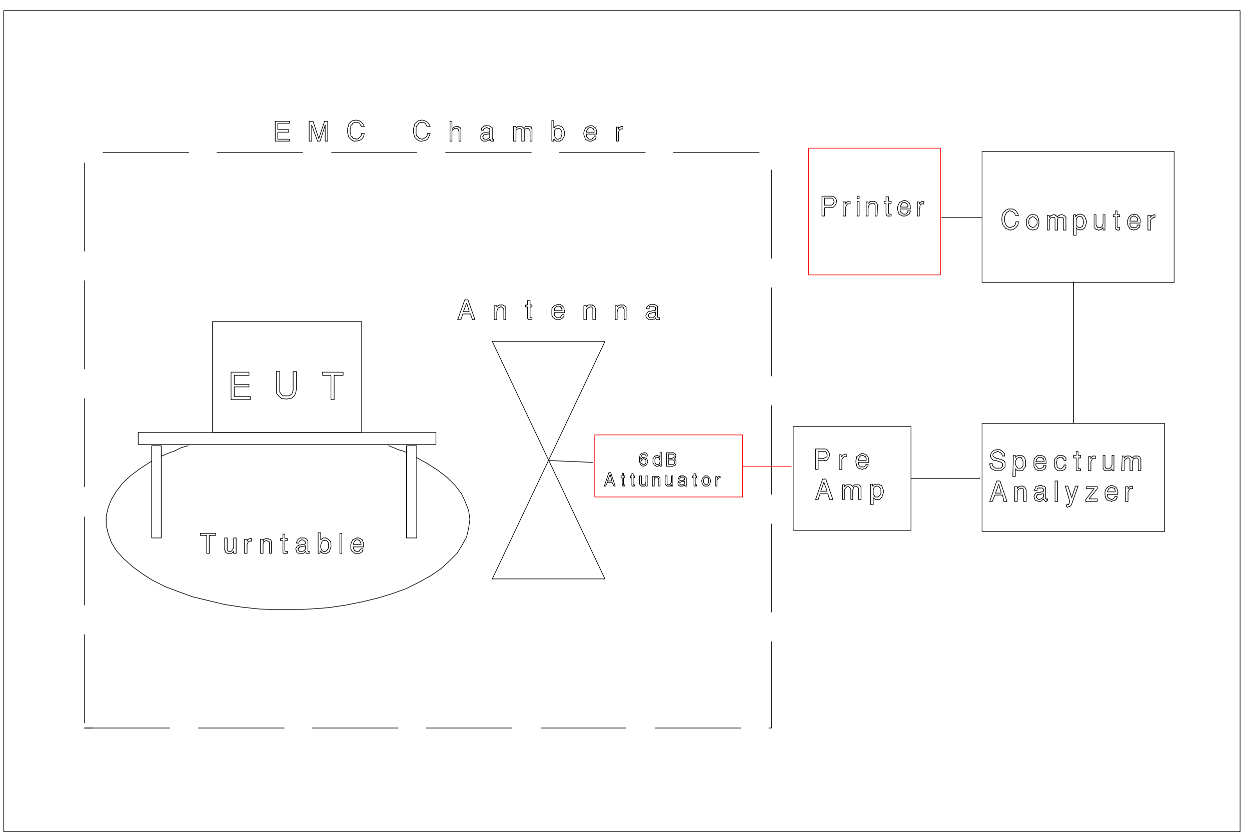
The radiated emission from the transmitter was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 30 dB was used to increase the sensitivity of the measuring instrumentation.

A Biconilog antenna was used to measure the frequency range of 30 to 1000 MHz and a Double Ridge Guide Horn antenna was used to measure the frequency range 1 GHz to 10 GHz, at a distance of 3 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

The configuration of the transmitter was varied to find the maximum radiated emission. The EUT was connected to the peripherals listed in Section 2.4 via the interconnecting cables listed in Section 2.5. These interconnecting cable were manipulated manually by a technician to obtain worst case radiated emissions. The digital apparatus was rotated 360 degrees, and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission. Where there were multiple interface ports all of the same type, cables are either placed on all of the ports or cables added to these ports until the emissions do not increase by more than 2 dB.

Transmitters are measured on a non-conducting table one-meter above the ground plane. The table is placed on a turntable which is level with the ground plane. The turntable has slip rings, which supply AC power to the digital apparatus. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

Radiated Emissions Test



FCC Sections 15.247 Peak Transmit Power, Emission Bandwidth and Spurious Emissions (antenna conducted)

The EUT was directly connected to the spectrum analyzer via the antenna output port as shown in the block diagram below.

The measurements were performed on three channels, as per 47 CFR 15.31(m), one near the bottom of the spectrum, one near the middle of the spectrum and one near the top of the spectrum.

The spectrum analyzer’s resolution bandwidth and video bandwidth were set as follows:

Peak Transmit Power

RBW = 1 MHz
VBW = 3 MHz

Emission Bandwidth

RBW = 3 kHz
VBW = 10 kHz

Spurious Emissions (Antenna Conducted)

RBW = 100 kHz
VBW = 300 kHz

Test Configuration Block Diagram