LS Research Inc.

Airal Phone Base Station

FCC ID: PHIAP100BS

Part 15.247 Type Acceptance, Conducted Measurements

prepared for

Arial Phone

Revision 1.0

Table of Contents

I. Project Information 3
II. FCC Conducted Tests 5
A. Part 15.247 5
1. 15.247 (a) (2) Emission 6 dB Bandwidth 5
2. 15.247 (b) (1) Output Power 10
3. 15.247 (b) (3) Effective Radiated Power 14
4. 15.247 (c) Spurious Modulation Products 14
5. 15.247 (d) Power Spectral Density 28
6. 15.247 (e) Processing Gain 33
III. Critical Equipment List 50
IV. Equipment Uncertainties 50
V. Bit Error Ratio Test Software 51

Airal Phone Base Station

I. Project Information

Project: Airal PhoneBase Station

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Report Date: 3/20/01
Revision: 1.0
Proposal #:
Proposal File: Arial Phone
Job Number:

Signatures:

Technical Approval

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II. FCC Conducted Tests

A. Part 15.247

1. 15.247 (a) (2) Emission 6 dB Bandwidth

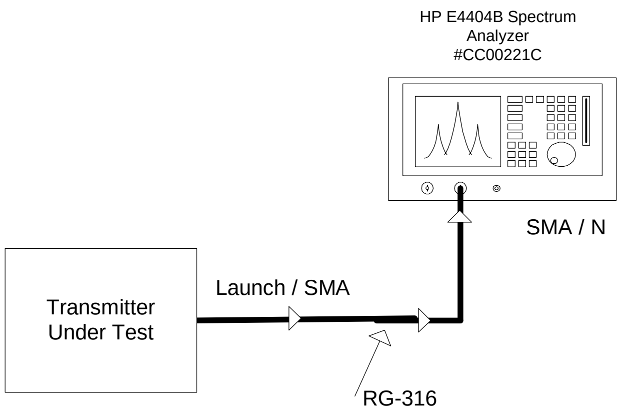
a) Test Requirement

The 6 dB bandwidth of the Equipment emission must be greater than 500 kHz.

$$B_{-6\ dB} > 500\ kHz$$

b) Test Configuration

The test configuration is presented below:



c) Test Conditions: Equipment Under Test

The equipment under test is tunable and is set to 3 different channels, one representing the minimum tunable frequency, one representing a midband frequency and one representing the maximum tunable frequency. The frequencies and their hexadecimal channel designators are presented below for reference.

Channel 1: 904.8 MHz

Channel 9: 914.5 MHz

Channel 13: 925.8 MHz

Test indications under these three frequency conditions are presented.

The output power is fixed to its maximum , worst-case value.

d) Test Conditions: Instrumentation Conditions

The readings indicated on the spectrum analyzer are a result of a marker search function which determines the 6 dB bandwidth of the indicated spectrum. The spectrum analyzer display indicates its conditions as follows:

Center: Center Frequency

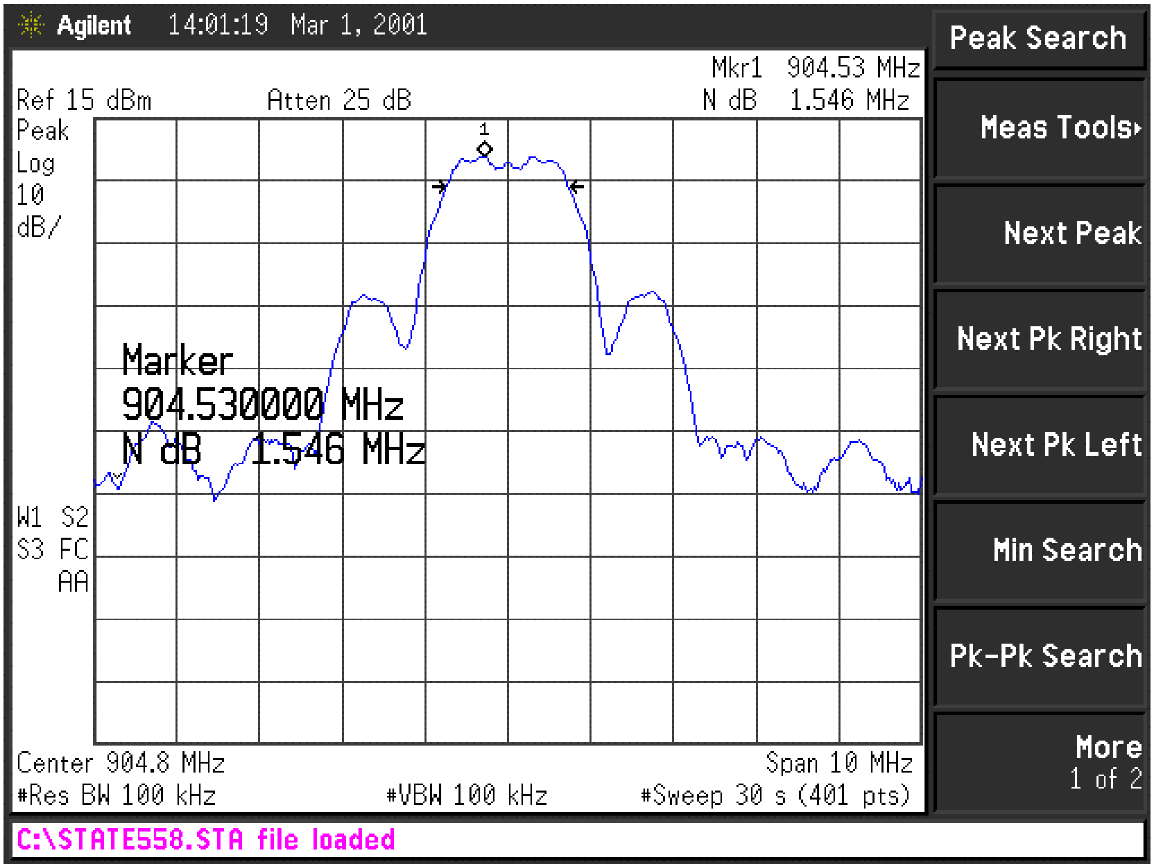
Span: Frequency Span

Res BW: Resolution Bandwidth

VBW: Video (averaging) Bandwidth

Sweep: Frequency Sweep time over indicated frequency Span.

e) Test Indications

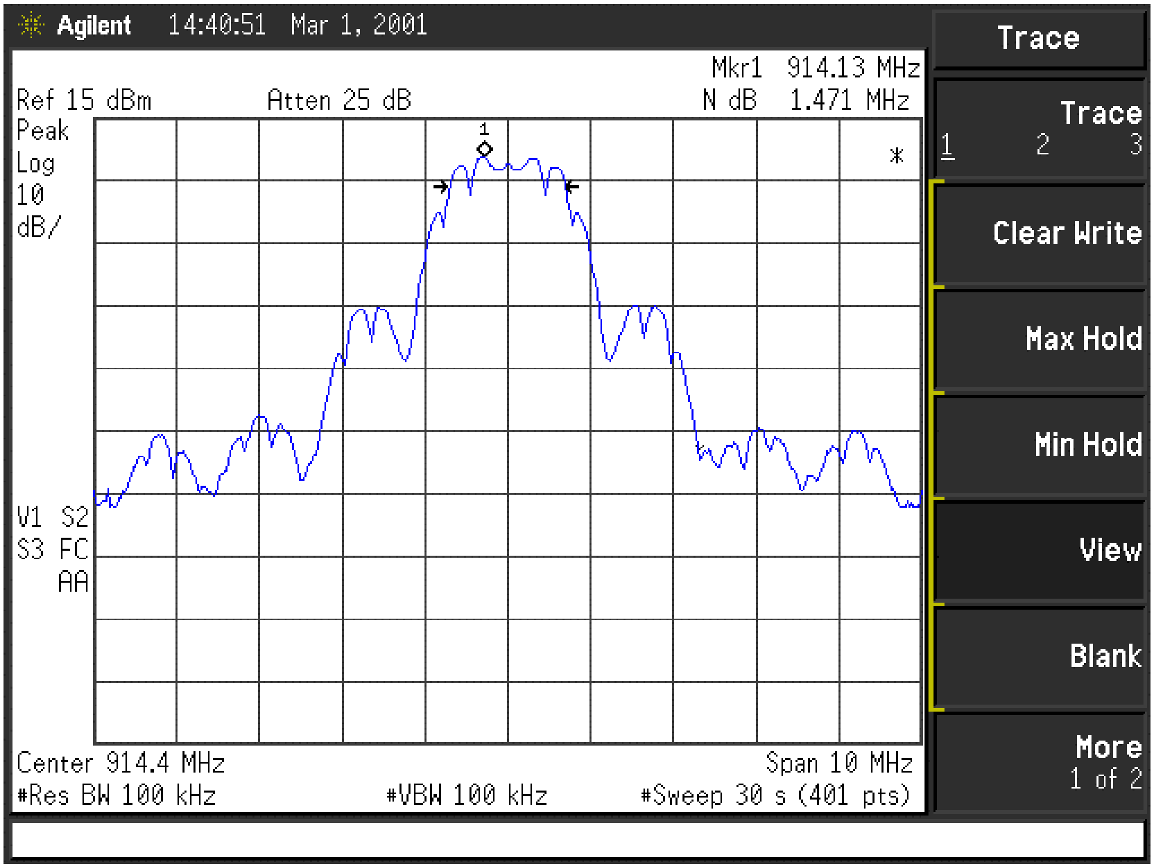


<u>Test Condition:</u> Channel 1: 904.80 MHz

<u>Test Limit:</u> 500 kHz, minimum.

<u>Test Indication:</u> 1.546 MHz

<u>Test Outcome:</u> 1.546 MHz > 500 kHz → <u>PASS</u>

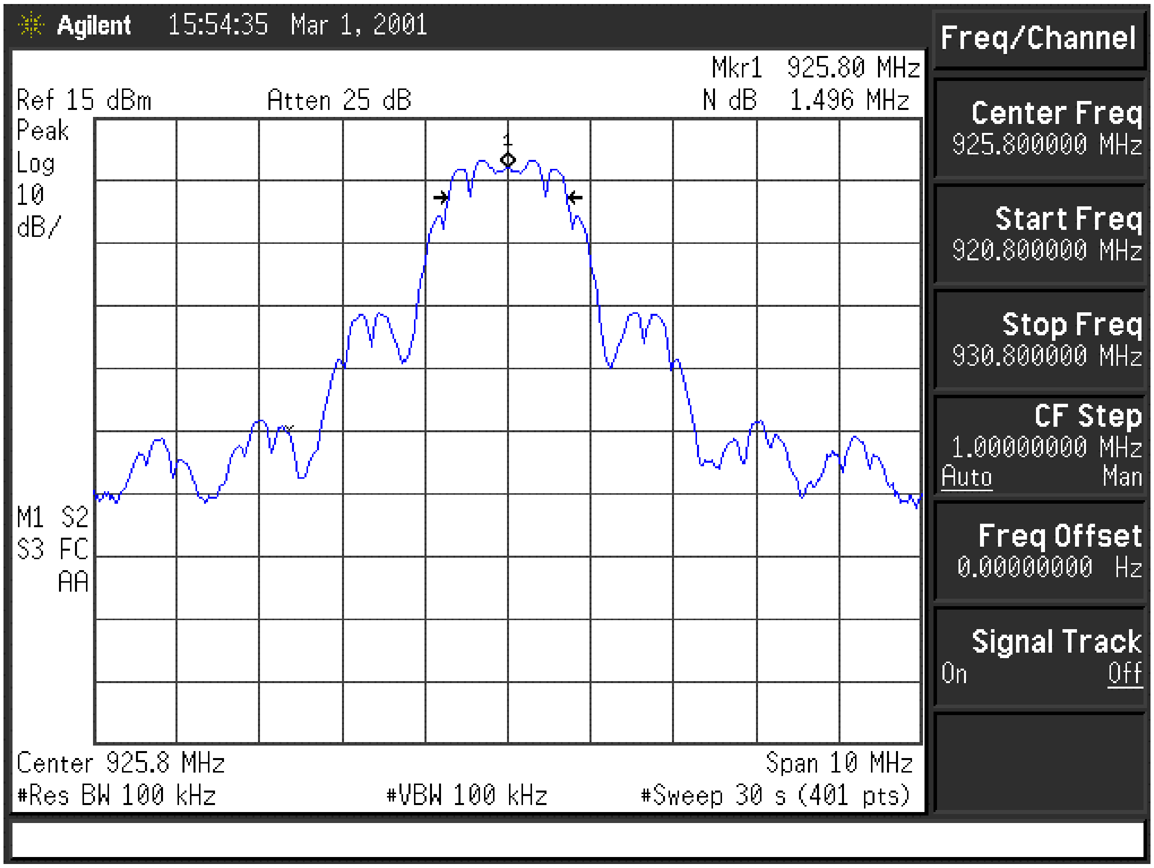


<u>Test Condition:</u> Channel 9: 914.5 MHz

<u>Test Limit:</u> 500 kHz, minimum.

<u>Test Indication:</u> 1.471 MHz

<u>Test Outcome:</u> 1.471 MHz > 500 kHz → <u>PASS</u>



Test Condition: Channel 13: 925.8 MHz

Test Limit: 500 kHz, minimum.

Test Indication: 1.496 MHz

Test Outcome: 1.496 MHz > 500 kHz → PASS

2. 15.247 (b) (1) Output Power

a) Test Requirement

The conducted output power of the Equipment emission must be less than 1 W (30 dBm).

$$P_O < 30\ dBm$$

b) Test Configuration

The test configuration is presented in section II-A-1b.

c) Test Conditions: Equipment Under Test

The equipment under test is tunable and is set to 3 different channels, one representing the minimum tunable frequency, one representing a mid-band frequency and one representing the maximum tunable frequency. The frequencies and their hexadecimal channel designators are presented below for reference.

Channel 1: 904.8 MHz

Channel 9: 914.5 MHz

Channel 13: 925.8 MHz

Test indications under these three frequency conditions are presented.

d) Test Conditions: Instrumentation Conditions

The readings indicated on the spectrum analyzer are a result of a direct spectrum analyzer measurement where the indications are a result of a measurement function which detects the integrated channel power between the indicated frequency limits.

<u>Center:</u> Center Frequency

<u>Span:</u> Frequency Span

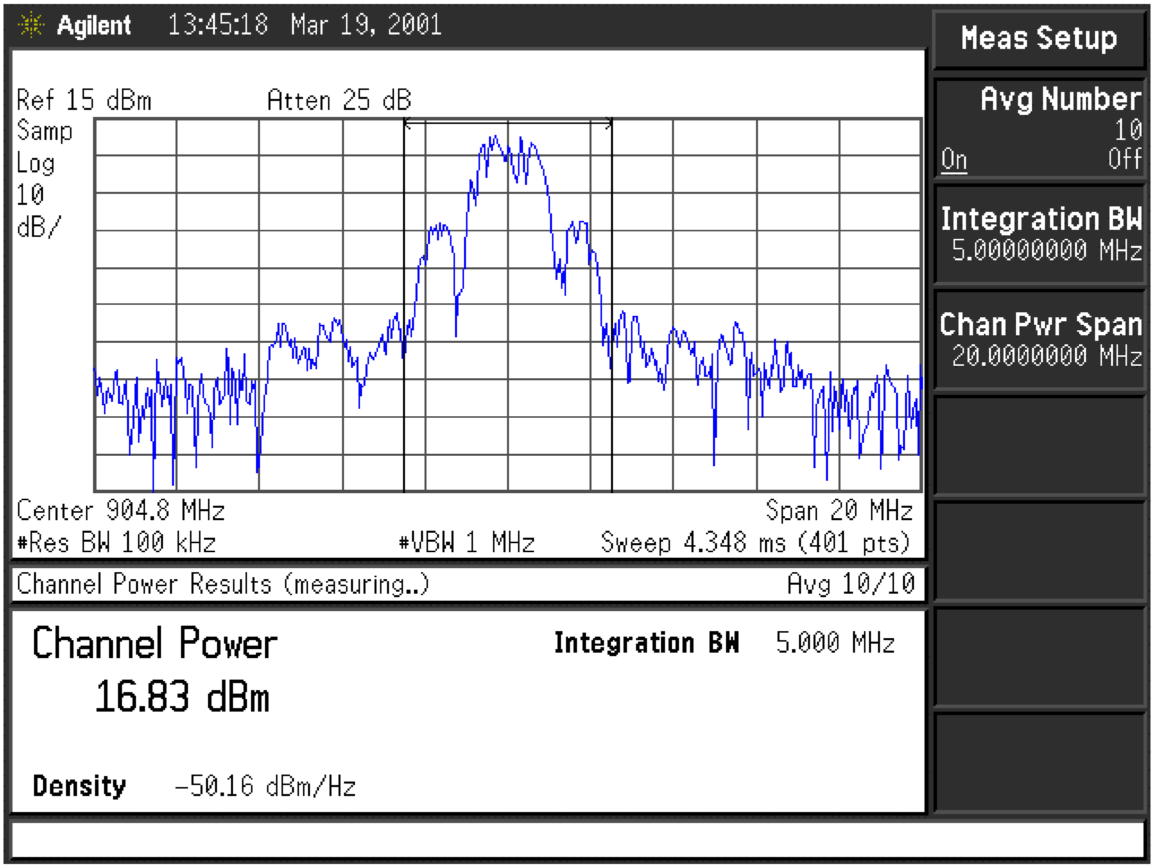
<u>Res BW:</u> Resolution Bandwidth

<u>VBW:</u> Video (averaging) Bandwidth

<u>Sweep:</u> Frequency Sweep time over indicated frequency Span.

<u>Integration BW:</u> Bandwidth over which power spectral density is integrated to determine integrated channel power.

e) Test Indications

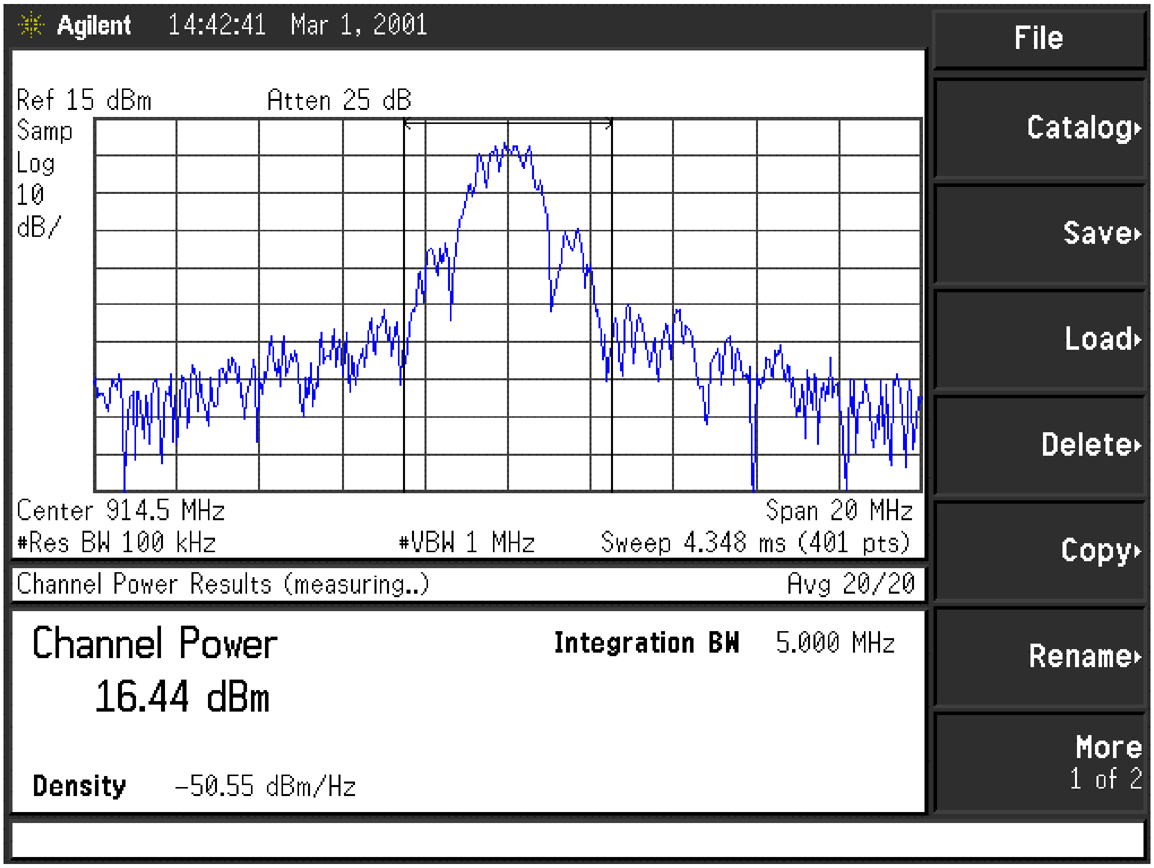


Test Condition: Channel 1: 904.8 MHz

Test Limit: 30 dBm, Maximum.

Test Indication: 16.8 dBm

Test Outcome: 16.8 dBm < 30 dBm → PASS

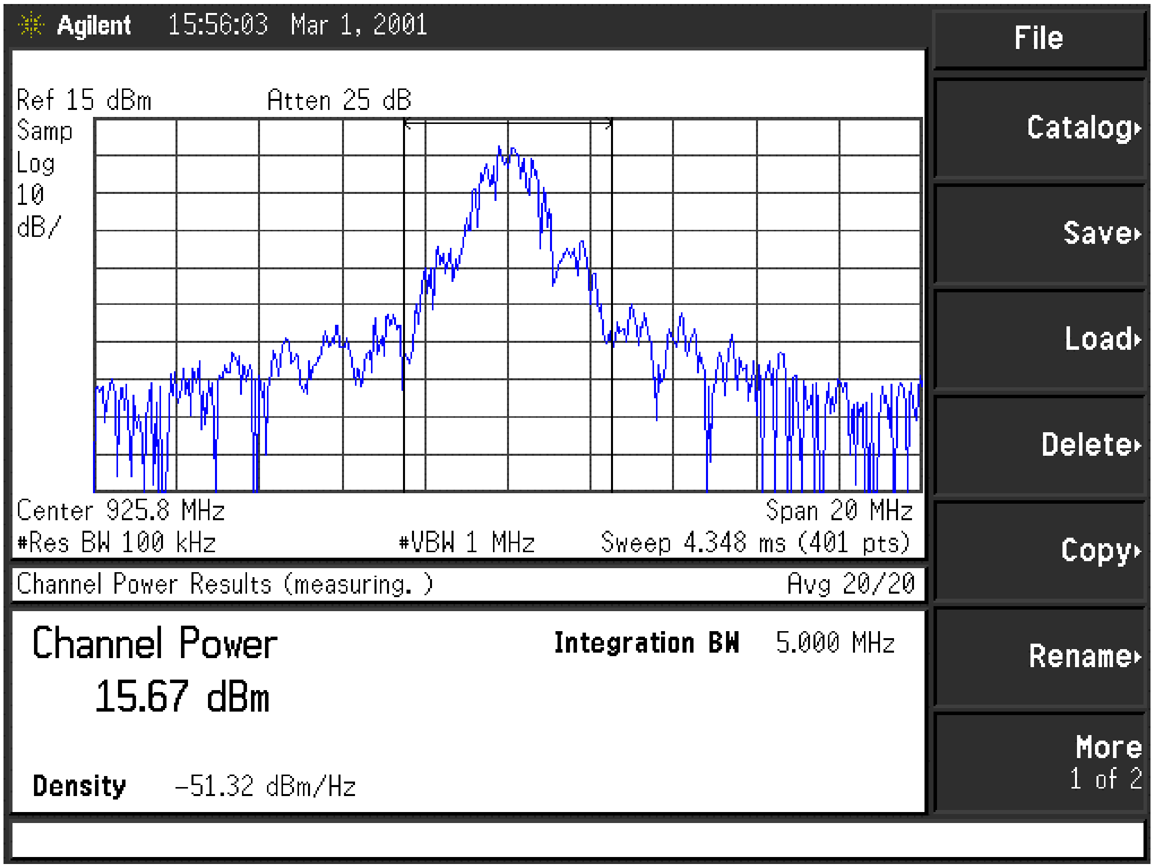


Test Condition: Channel 9: 914.5 MHz, Integrated Power

Test Limit: 30 dBm, Maximum.

Test Indication: 16.4 dBm

Test Outcome: 16.4 dBm < 30 dBm → PASS



Test Condition: Channel 13: 925.8 MHz

Test Limit: 30 dBm, Maximum.

Test Indication: 15.7 dBm

Test Outcome: 15.7 dBm < 30 dBm → PASS

3. 15.247 (b) (3) Effective Radiated Power

The indicated conducted power is connected to folded, wire monopole. The expected power gain of the monopole antenna is less than 0 dBi. Given the maximum conducted output power and the fact that the antenna exhibits no power or directive gain, the device will comply with the ERP requirement

4. 15.247 (c) Spurious Modulation Products

a) Test Requirement

The conducted spurious modulation products outside of the authorized band measured within a 100 kHz bandwidth shall be 20 dB below the authorized band peak emission measured within a 100 kHz bandwidth.

$$10\ \log_{10}\left(\frac{P_{Authorized}/100\,kHz}{P_{spurious}/100kHz}\right) > 20\ dBc$$

b) Test Configuration

The test configuration is presented in section II-A-1b.

c) Test Conditions: Equipment Under Test

The equipment under test is tunable and is set to 3 different channels, one representing the minimum tunable frequency, one representing a midband frequency and one representing the maximum tunable frequency. The frequencies and their hexadecimal channel designators are presented below for reference.

Channel 1: 904.8 MHz

Channel 9: 914.5 MHz

Channel 13: 925.8 MHz

Test indications under these three frequency conditions are presented.

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d) Test Conditions: Instrumentation Conditions

The following conducted spurious emissions are measured for each channel setting:

Wide-band Scan of Emissions with peak emission table, 9 kHz to 10 GHz in continuous transmission and in packet mode transmission. Peak Hold Mode.

In-band Scan of Emissions showing band-edge compliance in both continuous transmission and in packet mode transmission. Peak Hold Mode.

Center: Center Frequency

Span: Frequency Span

Res BW: Resolution Bandwidth

VBW: Video (averaging) Bandwidth

Sweep: Frequency Sweep time over indicated frequency Span.

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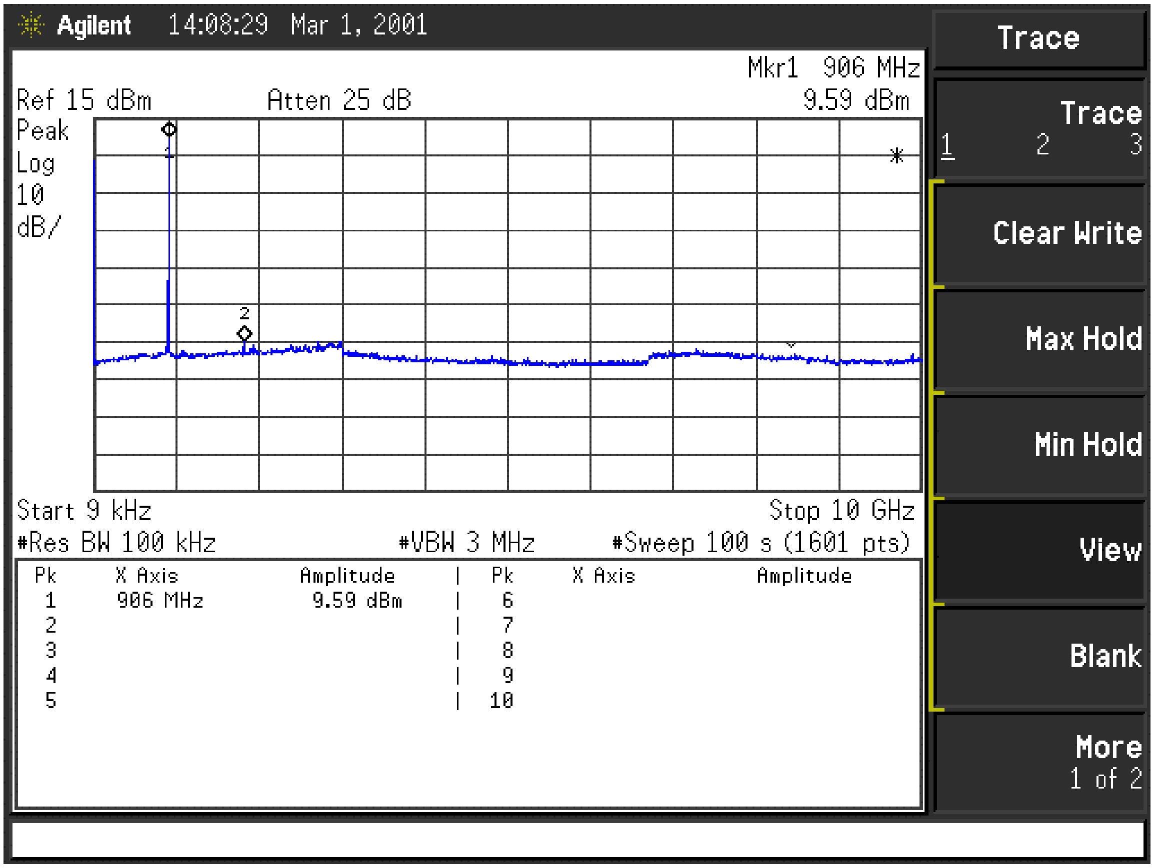
e) Test Indications:



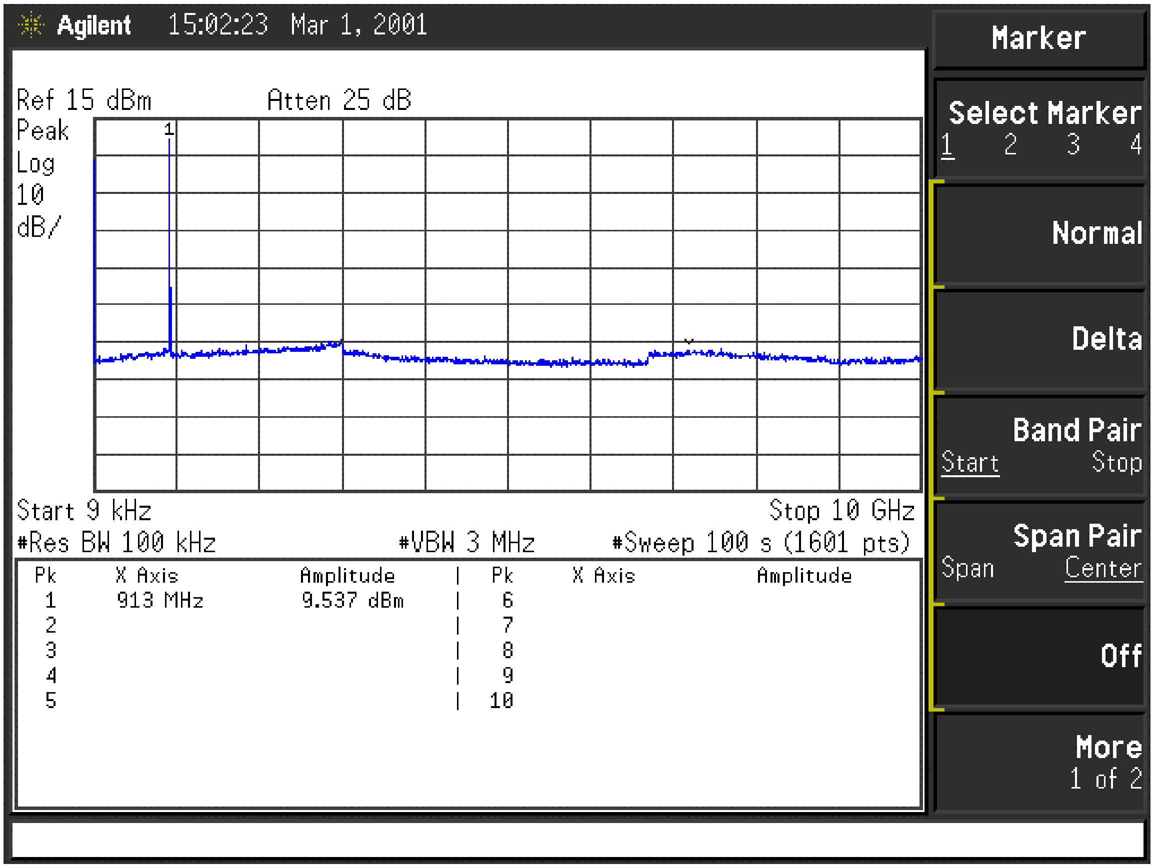
Test Condition: Channel 1: 904.8 MHz, CW

Test Limit: 20 dBc, Minimum.

Test Indication: 9.6 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.6 dBc

Test Outcome: 54.6 dBc > 20 dBc → PASS



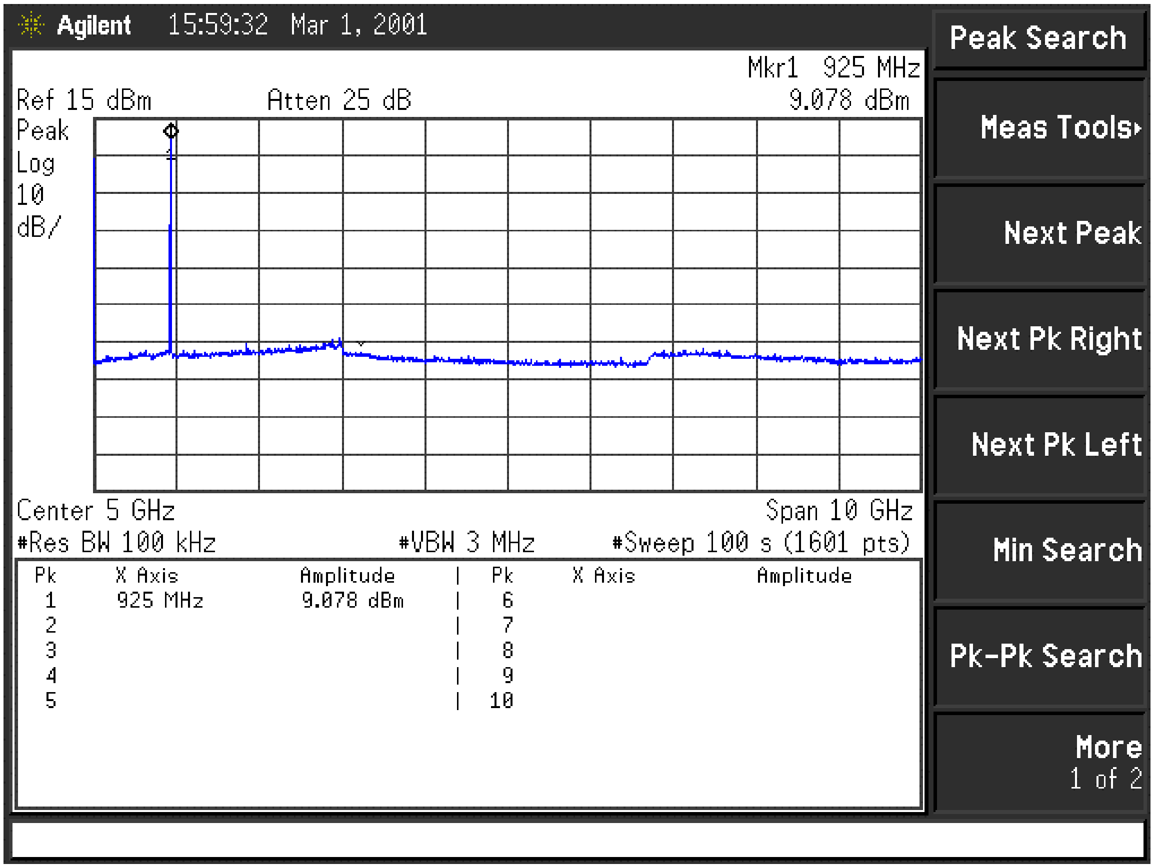
<u>Test Condition:</u> Channel 9: 914.5 MHz, CW

<u>Test Limit:</u> 20 dBc, Minimum.

<u>Test Indication:</u> 9.6 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.6 dBc

<u>Test Outcome:</u> 54.6 dBc > 20 dBc → <u>PASS</u>



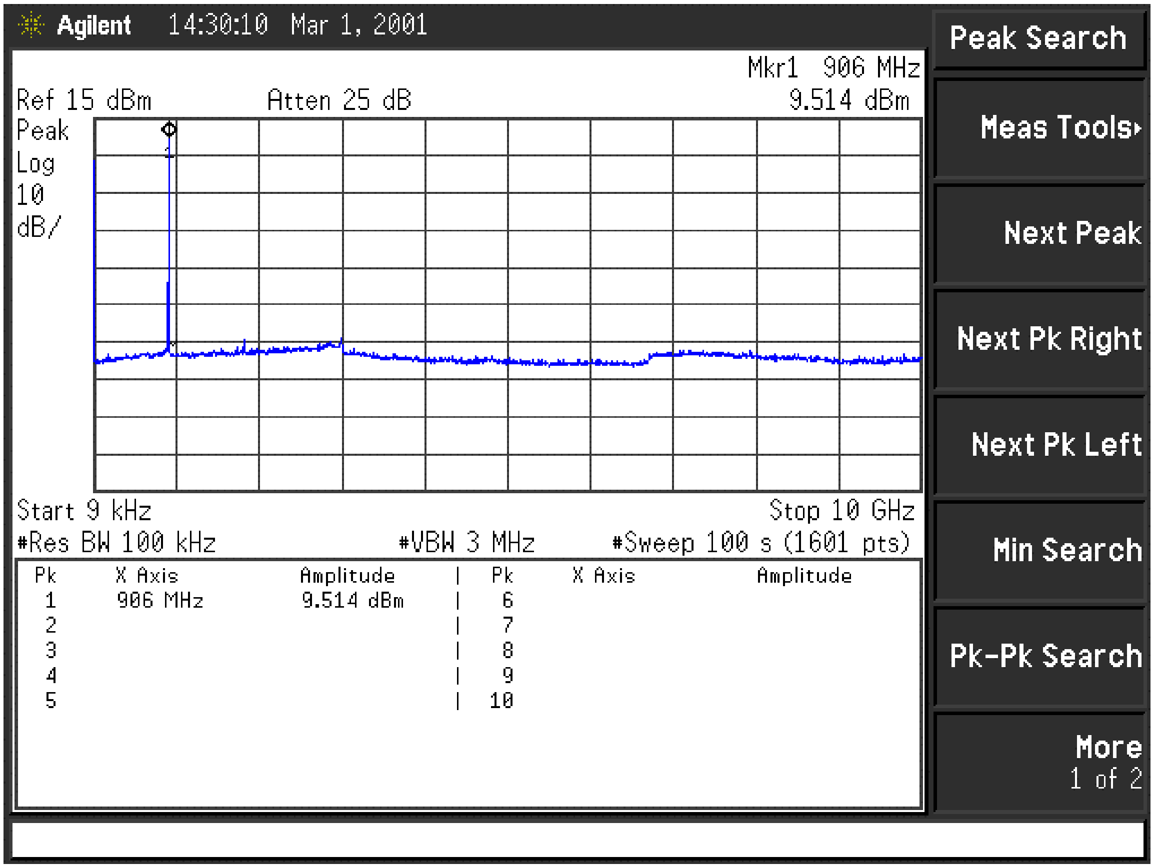
Test Condition: Channel 13: 925.8 MHz, CW

Test Limit: 20 dBc, Minimum.

Test Indication: 9.1 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.1 dBc

Test Outcome: 52.1 dBc > 20 dBc → PASS



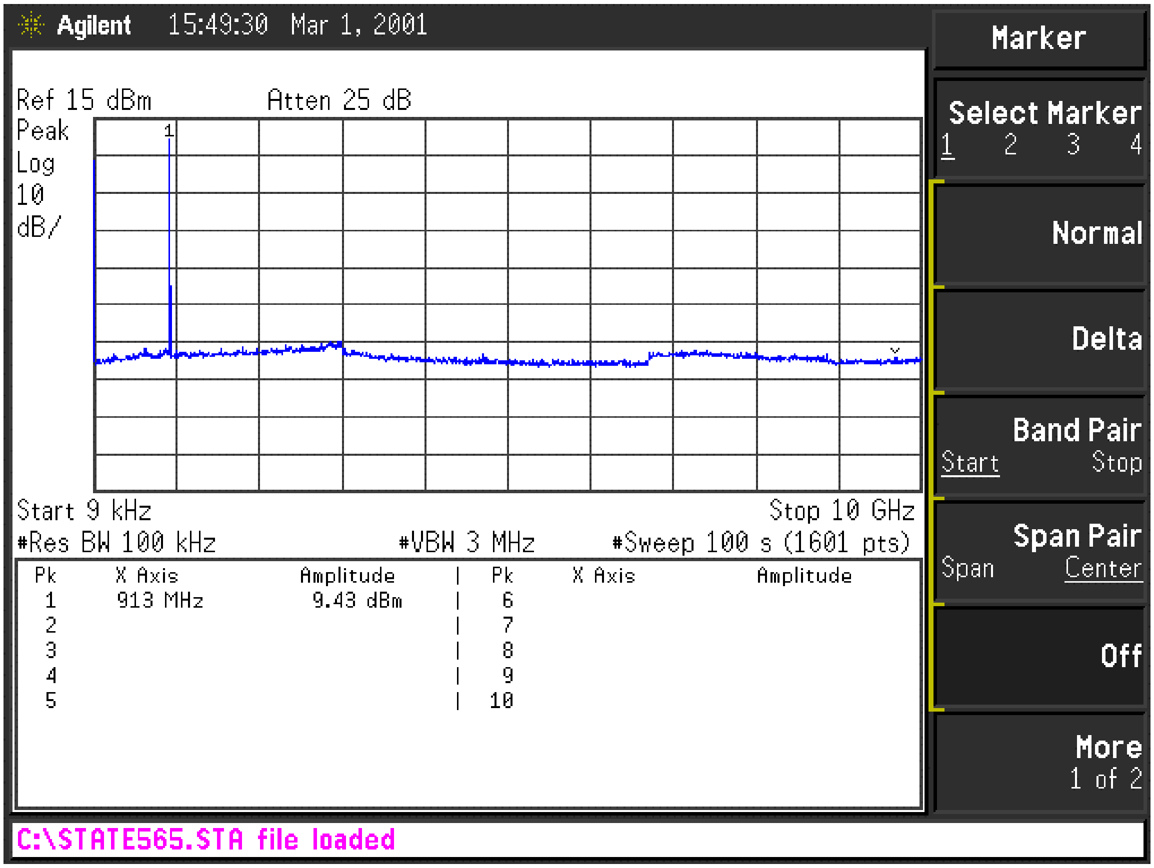
Test Condition: Channel 1: 904.8 MHz, Packet Mode

Test Limit: 20 dBc, Minimum.

Test Indication: 9.5 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.5dBc

Test Outcome: 54.5 dBc > 20 dBc → PASS



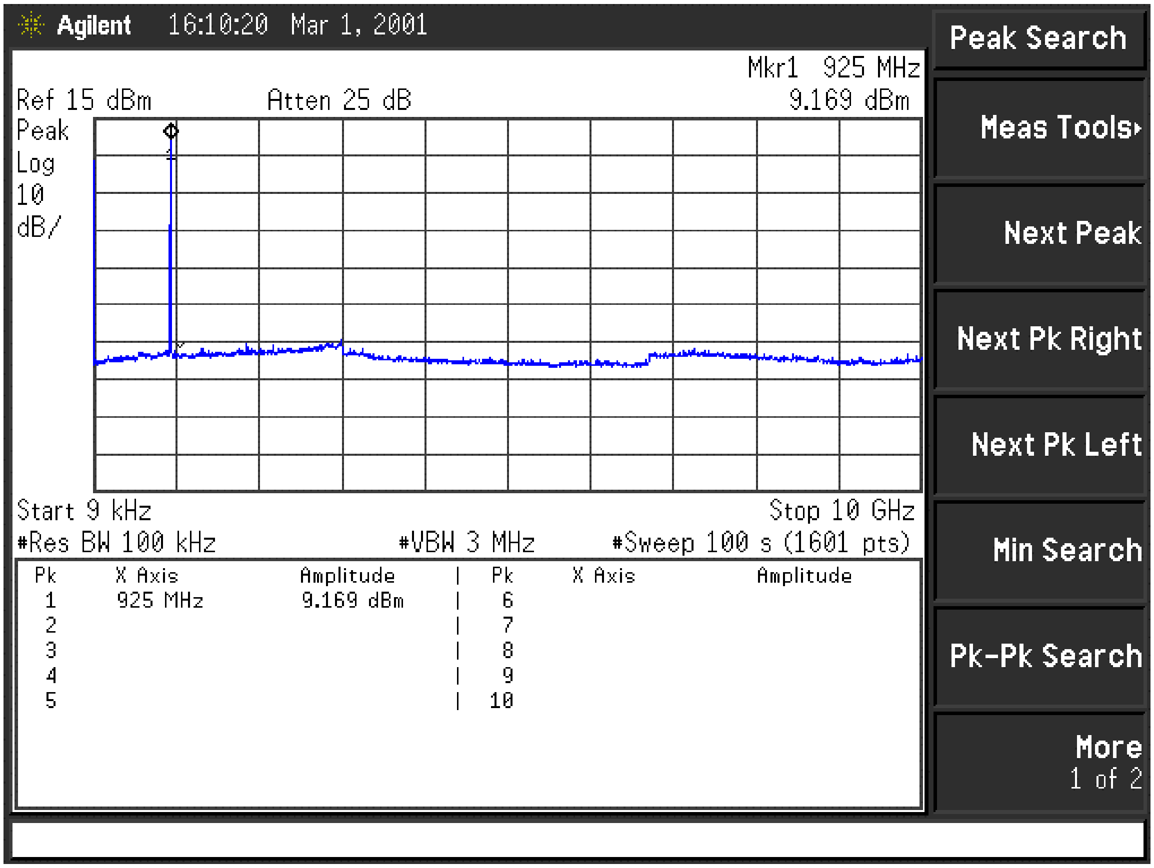
<u>Test Condition:</u> Channel 9: 914.5 MHz, Packet Mode

<u>Test Limit:</u> 20 dBc, Minimum.

<u>Test Indication:</u> 9.4 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.4 dBc

<u>Test Outcome:</u> 54.4 dBc > 20 dBc → <u>PASS</u>



<u>Test Condition:</u> Channel 13: 925.8 MHz, Packet Mode

<u>Test Limit:</u> 20 dBc, Minimum.

<u>Test Indication:</u> 9.2 dBm/100 kHz-(-45 dBm/100 kHz)

= 54.2 dBc

<u>Test Outcome:</u> 54.2 dBc > 20 dBc → <u>PASS</u>

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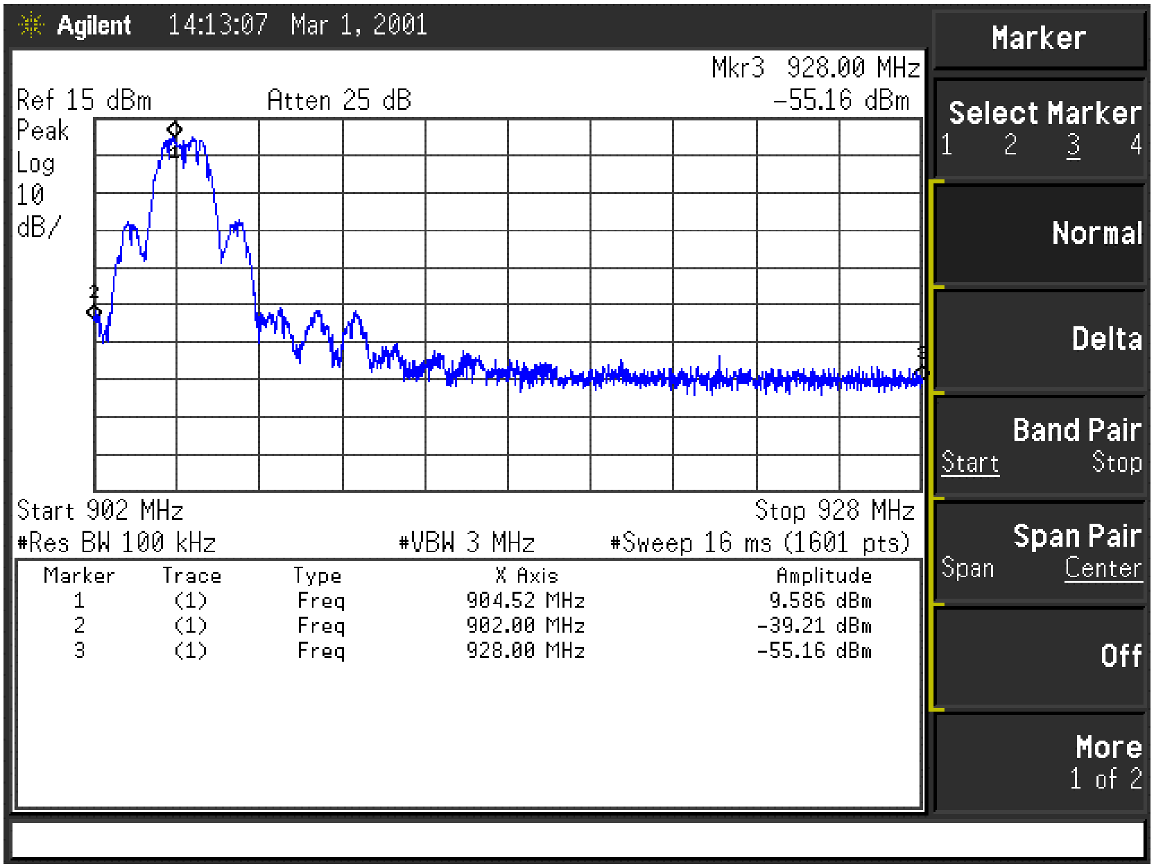

<u>Test Condition:</u> Channel 1: 904.8 MHz, CW

<u>Test Limit:</u> 20 dBc, Minimum.

<u>Test Indication:</u> 9.6 dBm/100 kHz-(-39.2 dBm/100 kHz)

= 48.8 dBc

<u>Test Outcome:</u> 48.8 dBc > 20 dBc → <u>PASS</u>

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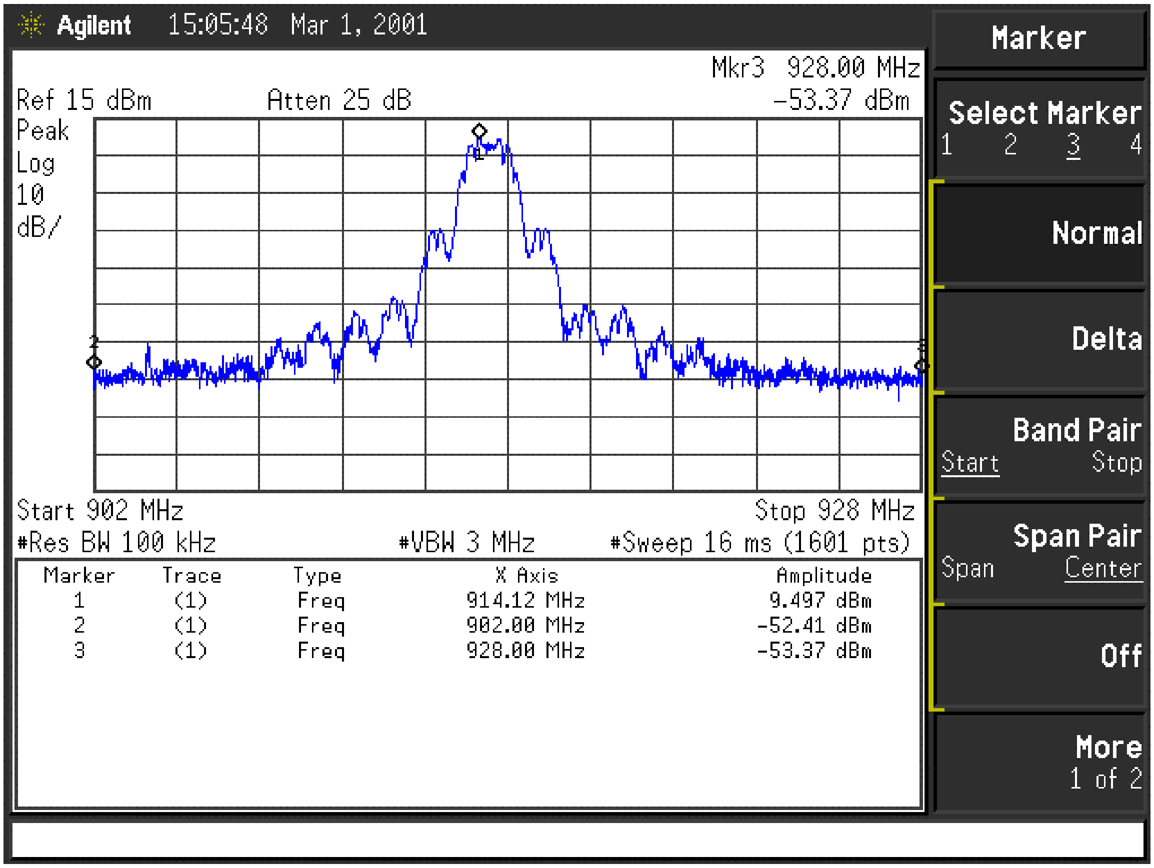


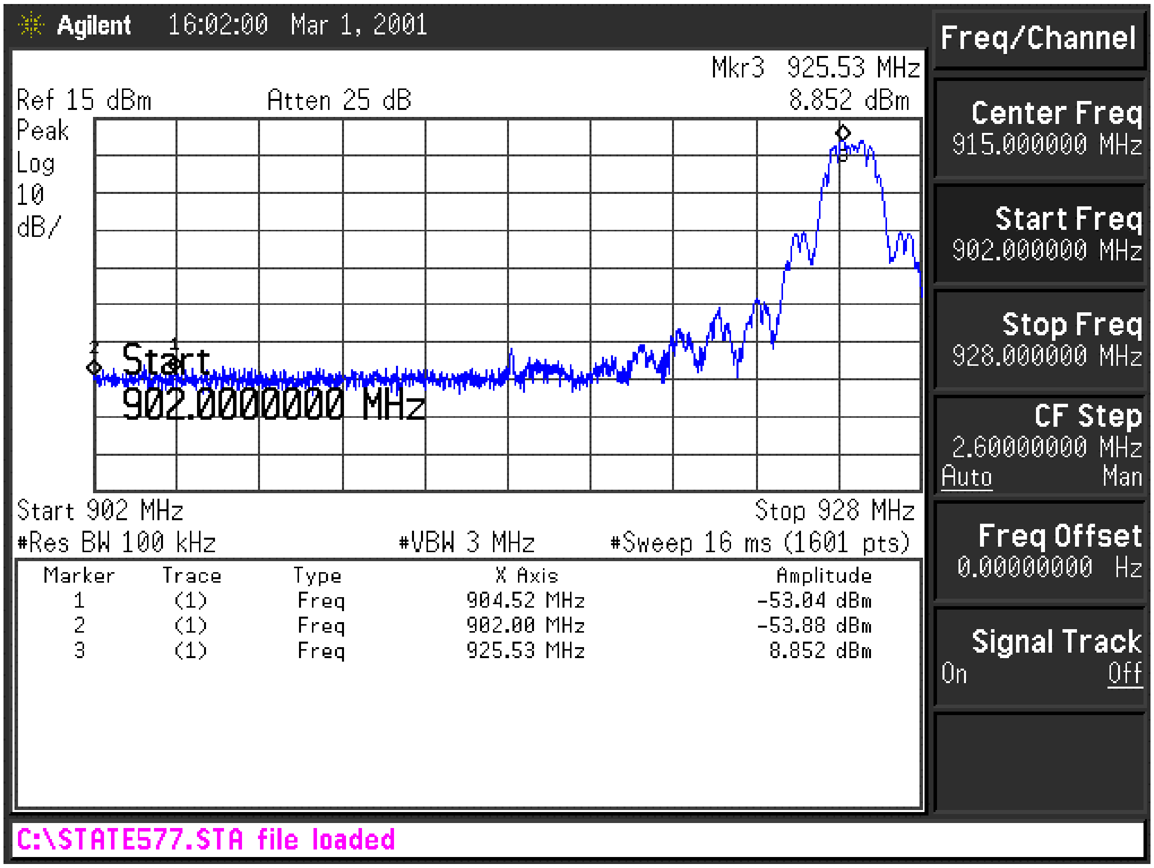
Test Condition: Channel 9: 914.5 MHz, CW

Test Limit: 20 dBc, Minimum.

Test Indication: 9.5 dBm/100 kHz-(-52.4 dBm/100 kHz)

= 61.9 dBc

Test Outcome: 61.9 dBc > 20 dBc → PASS



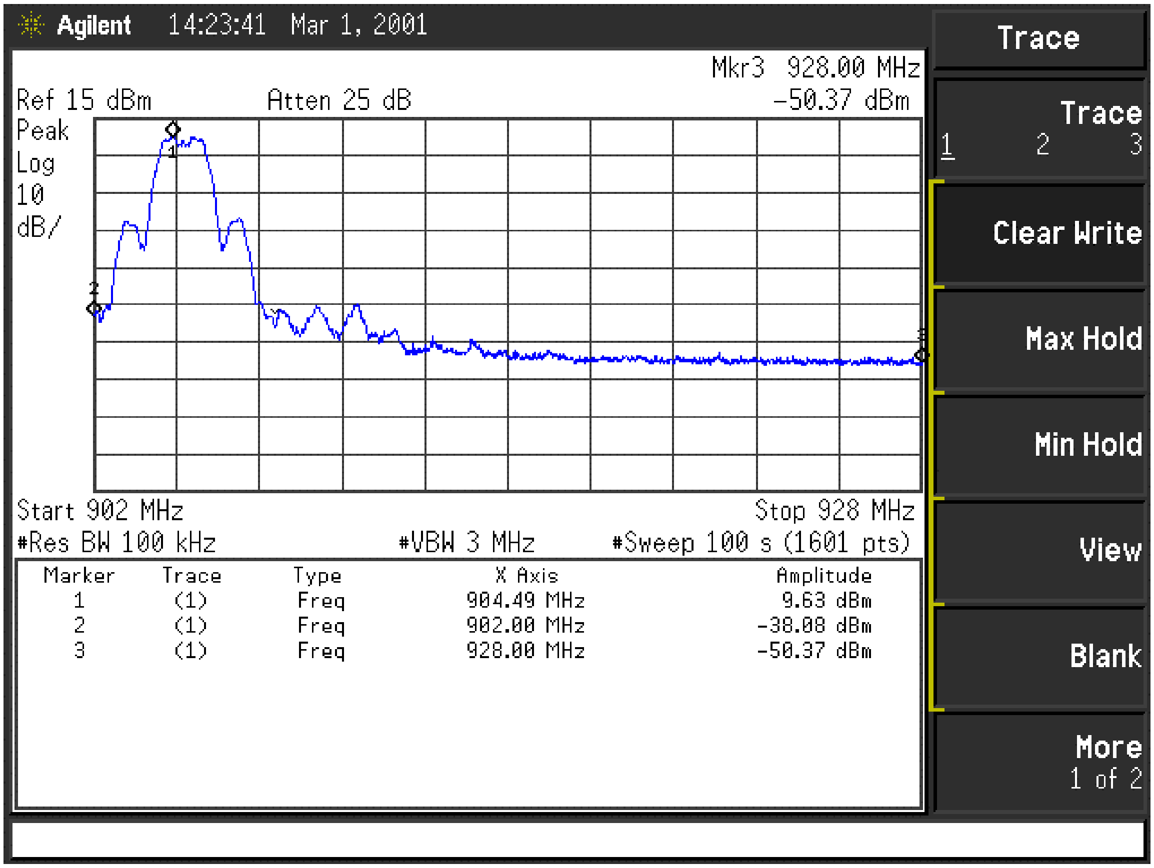
Test Condition: Channel 13: 925.8 MHz, CW

Test Limit: 20 dBc, Minimum.

Test Indication: 8.9 dBm/100 kHz-(-25 dBm/100 kHz)

= 33.9 dBc

Test Outcome: 33.9 dBc > 20 dBc → PASS



Test Condition: Channel 1: 904.8 MHz, Packet Mode

Test Limit: 20 dBc, Minimum.

Test Indication: 9.6 dBm/100 kHz-(-38.1 dBm/100 kHz)

= 47.7 dBc

Test Outcome: 47.7 dBc > 20 dBc → PASS

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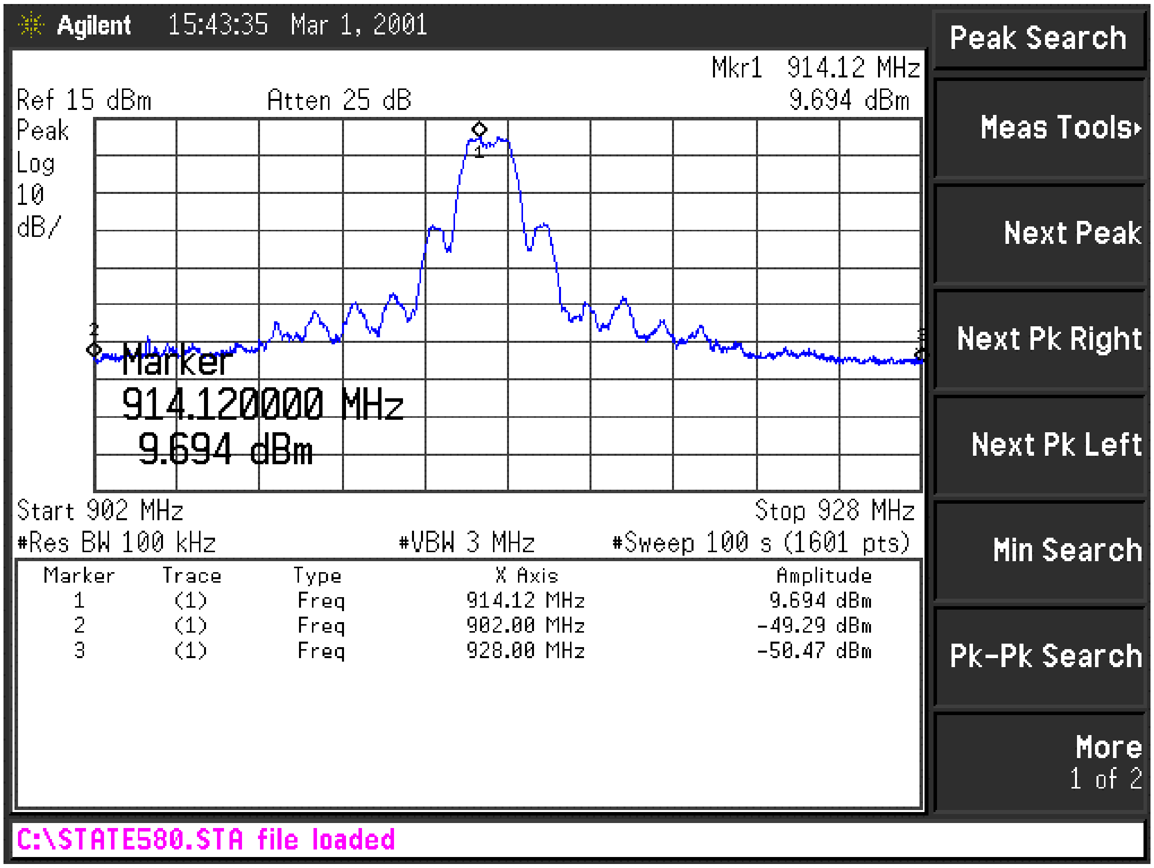


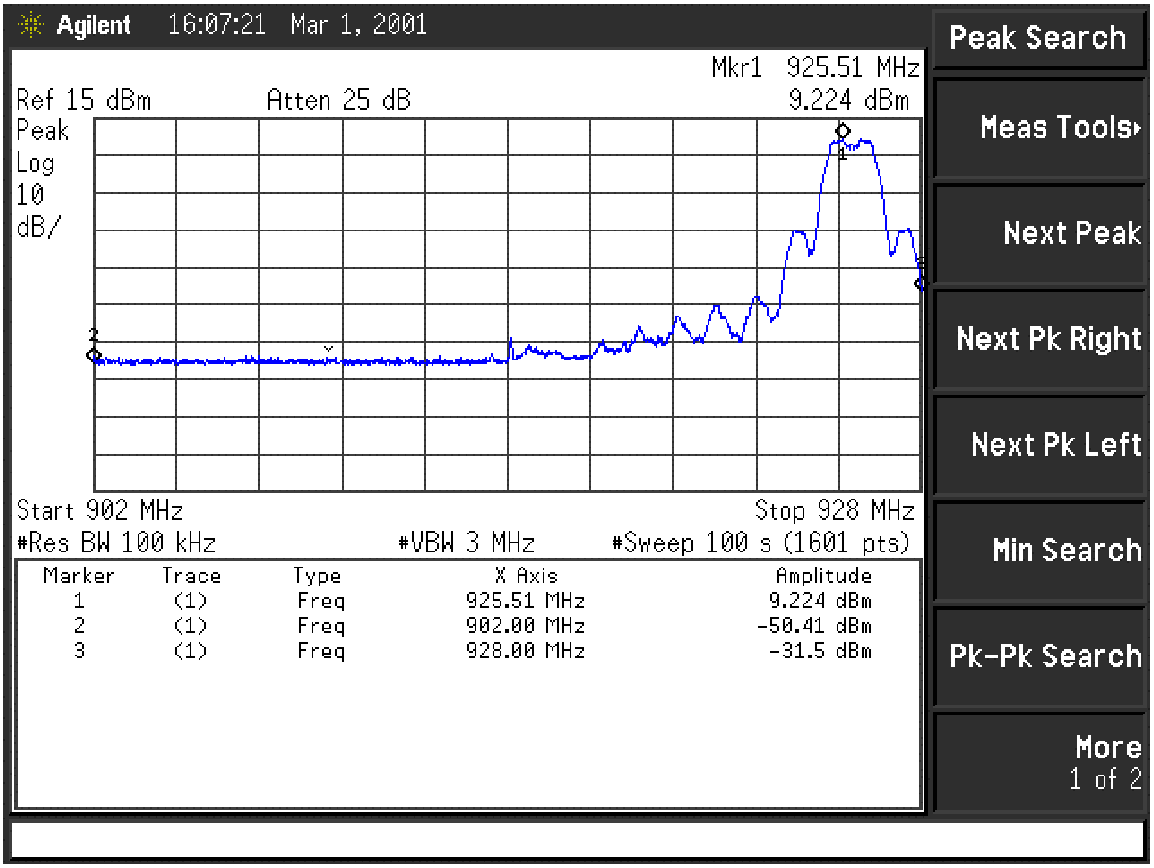
Test Condition: Channel 9: 914.5 MHz, Packet Mode

Test Limit: 20 dBc, Minimum.

Test Indication: 9.7 dBm/100 kHz-(-49.3/100 kHz)

= 59 dBc

Test Outcome: 59 dBc > 20 dBc → PASS



Test Condition: Channel 13: 925.8 MHz, Packet Mode

Test Limit: 20 dBc, Minimum.

Test Indication: 9.2 dBm/100 kHz-(-31.5 dBm/100 kHz)

= 40.7 dBc

Test Outcome: 40.7 dBc > 20 dBc → PASS

5. 15.247 (d) Power Spectral Density

a) Test Requirement

The maximum power spectral density allowed in the authorized band is 8 dBm/3kHz.

$$P_{authorized} \big/ 3kHz < 8\ dBm/3kHz$$

b) Test Configuration

The test configuration is presented in section II-A-1b.

c) Test Conditions: Equipment Under Test

The equipment under test is tunable and is set to 3 different channels, one representing the minimum tunable frequency, one representing a mid-band frequency and one representing the maximum tunable frequency. The frequencies and their hexadecimal channel designators are presented below for reference.

Channel 1: 904.8 MHz

Channel 9: 914.5 MHz

Channel 13: 925.8 MHz

Test indications under these three frequency conditions are presented.

The following conducted power spectral densities are measured for each channel setting:

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d) Test Conditions: Instrumentation

The localized peak in the emission spectrum is examined using the noise marker function implemented by the spectrum analyzer. The noise marker method is chosen, since the spectral lines of the emission are not resolvable and have noise-like properties. The power spectral density as indicated is measured in a 1 Hz bandwidth and is corrected for measurement artifacts such as noise bandwidth, and logarithmic amplification weighting. The test indication is then re-normalized to a 3 kHz bandwidth by adding the following correction factor:

$$10\ \log_{10}\left(\frac{3\ kHz}{1\ Hz}\right)=34.8\ dB$$

Center: Center Frequency

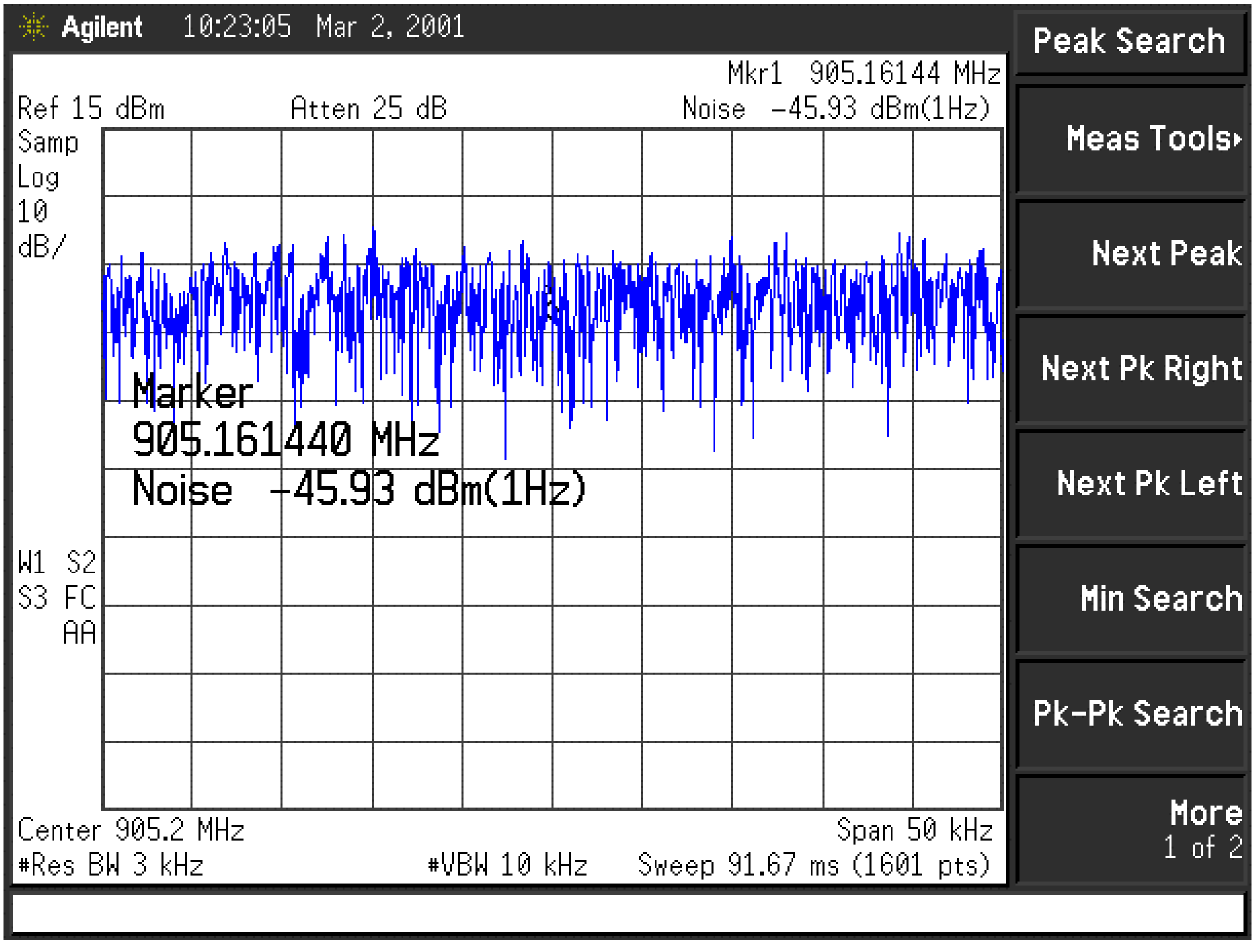
Span: Frequency Span

Res BW: Resolution Bandwidth

VBW: Video (averaging) Bandwidth

Sweep: Frequency Sweep time over indicated frequency Span.

e) Test Indications

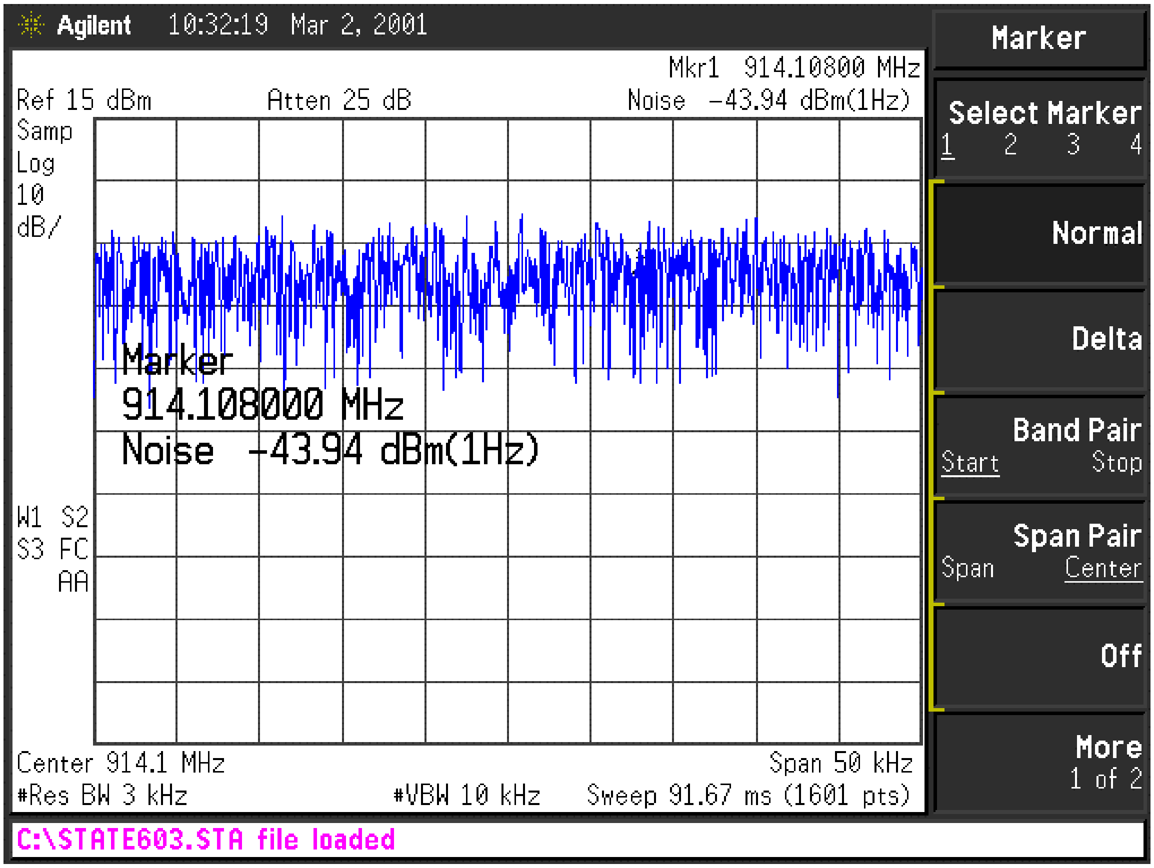


Test Condition: Channel 1: 904.8 MHz

Test Limit: 8 dBm/3 kHz, Maximum.

Test Indication: -45.9 dBm/Hz + 34.8 dB = -11.1 dBm/3kHz

Test Outcome: -11.1 dBm/3kHz < 8 dBm/3kHz → PASS

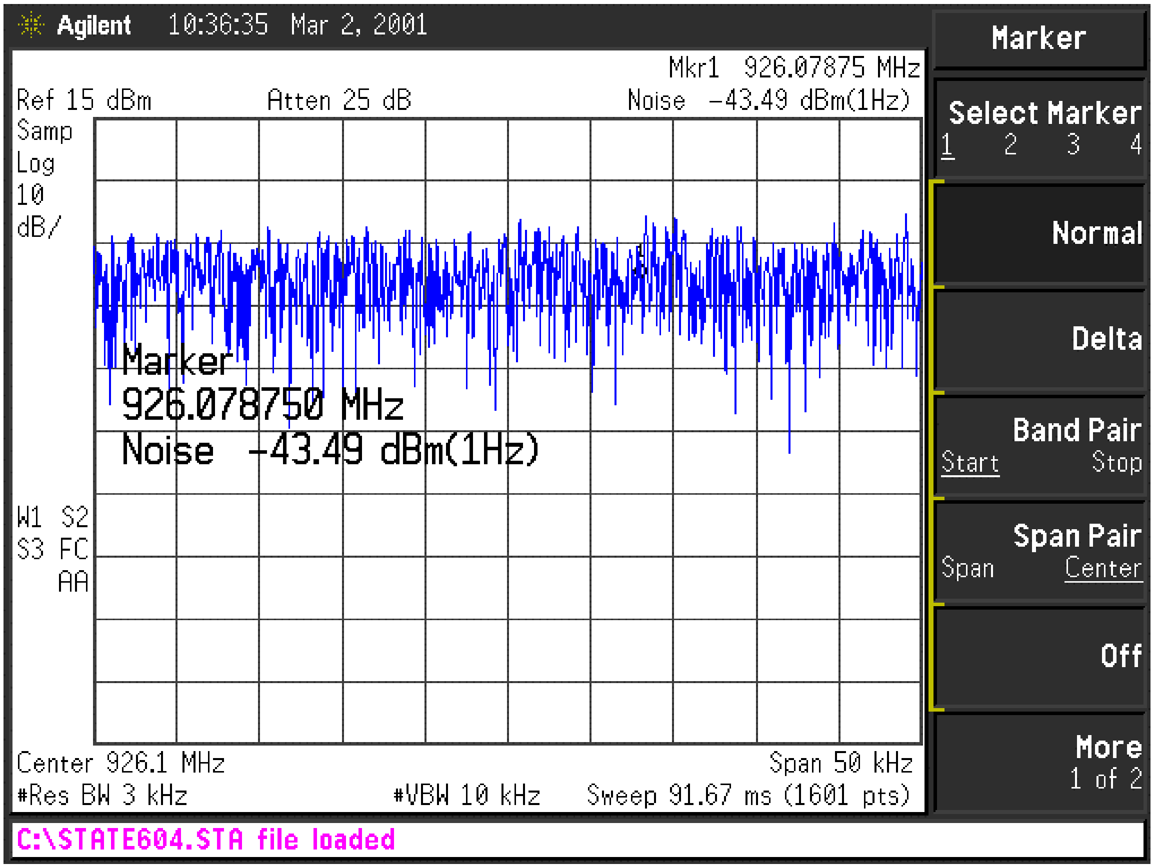


<u>Test Condition:</u> Channel 9: 914.5 MHz

<u>Test Limit:</u> 8 dBm/3 kHz, Maximum.

<u>Test Indication:</u> -43.9 dBm/Hz + 34.8 dB = -9.1 dBm/3kHz

<u>Test Outcome:</u> -9.1 dBm/3kHz < 8 dBm/3kHz → <u>PASS</u>



Test Condition: Channel 13: 925.8 MHz

Test Limit: 8 dBm/3 kHz, Maximum.

Test Indication: -43.5 dBm/Hz + 34.8 dB = -8.7 dBm/3kHz

Test Outcome: -8.7dBm/3kHz < 8 dBm/3kHz → PASS

6. 15.247 (e) Processing Gain

a) Test Requirement

The minimum processing gain exhibited by the system must be at least 10 dB. The processing gain will be determined by measuring the jamming margin across the receiver pass-band in 50 kHz increments. The worst 20% of the jamming margin points are discarded for the determination of the processing gain. The worst case point elimination process is equivalent to the determination of the 20th percentile value for the processing gain data set.

The processing gain is related to the jamming margin as follows:

$$G_p = \frac{J}{S} + \left.\left(\frac{S}{N}\right)\right|_{BER\_REF} + 2\ dB(system\,loss)$$

$$G_p = \frac{J}{S} + \left.\left(\frac{S}{N}\right)\right|_{BER=1\times10^{-5}} + 2\ dB(system\,loss)$$

The demodulation process is coherent BPSK and its bit error ratio (BER) versus signal to noise ratio (S/N) performance characteritic is described by:

$$BER = erfc\left(\sqrt{\frac{S}{N}}\right) = 2\cdot\left\{1-\left[\int_{-\infty}^{\sqrt{\frac{2S}{N}}}\frac{1}{\sqrt{2\pi}}e^{-\left(\frac{x^2}{2}\right)}dx\right]\right\} = 2\cdot\left(1-G(\sqrt{\frac{2S}{N}})\right)$$

The error function complement function is represented in terms of the normalized Gaussian (normal) distribution function integral. This formulation is presented such that the required signal to noise ratio solution can be determined, given the reference bit error ratio.

The signal to noise ratio associated with the reference BER of 1X10^{-5} is:

$$10\log_{10}\left(\frac{S}{N}\right) = 10\log_{10}\left(\frac{\left\{G^{-1}\left[1-\left(\frac{1\times10^{-5}}{2}\right)\right]\right\}^2}{2}\right) = 9.9\,dB$$

Therefore, procesing gain and jamming margin are related by:

$$G_p = \frac{J}{S} \quad + \ 11.9 \ \ dB$$

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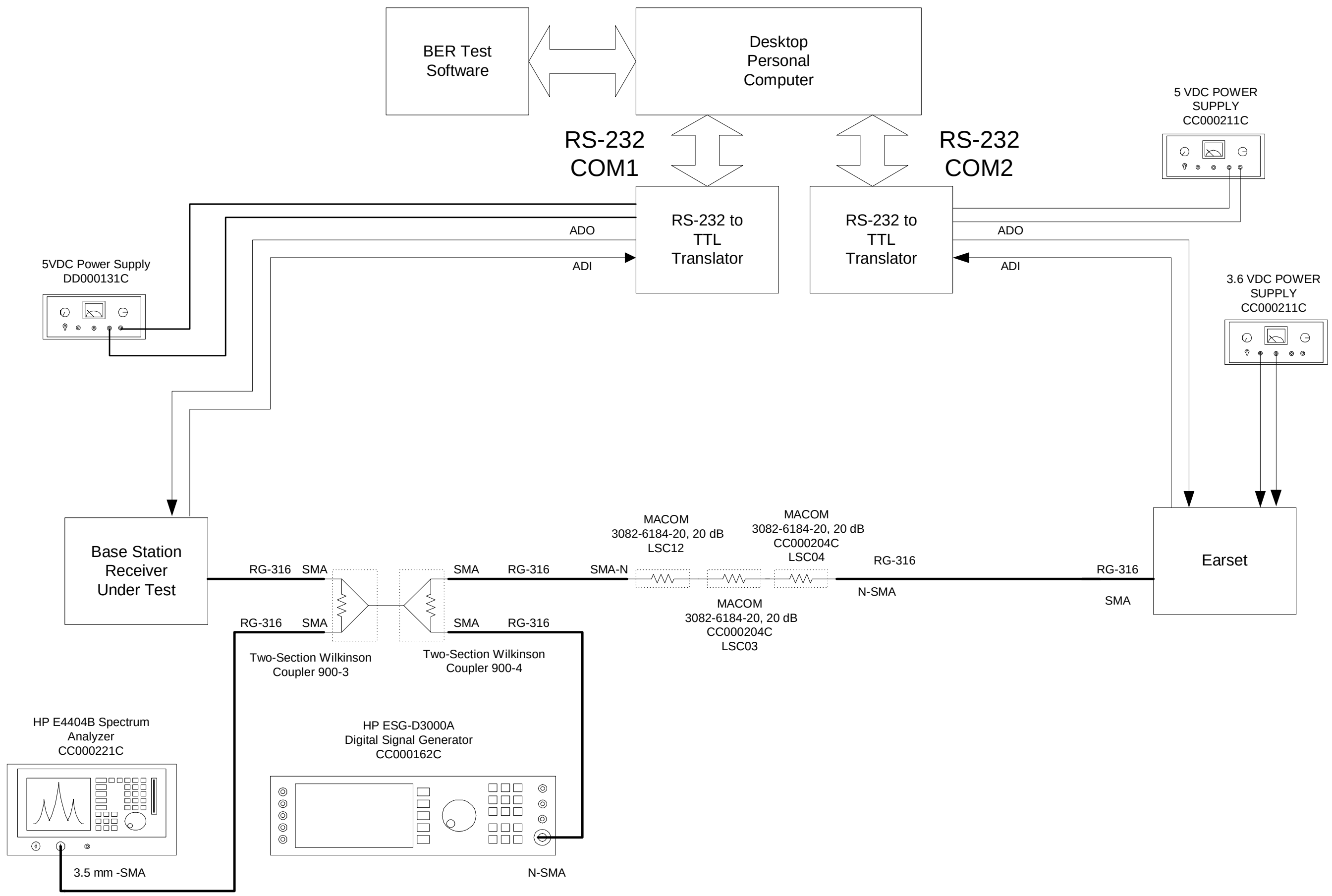
b) Test Configuration



c) Test Conditions: Equipment Under Test

The equipment under test is tunable and is set to 3 different channels, one representing the minimum tunable frequency, one representing a midband frequency and one representing the maximum tunable frequency. The frequencies and their hexadecimal channel designators are presented below for reference.

Channel 1: 904.8 MHz

Channel 9: 914.5 MHz

Channel 13: 925.8 MHz

Test indications under these three frequency conditions are presented.

The following processing gain tests are measured for each channel setting:

d) Test Conditions: Instrumentation

The bit error ratio (BER) software is run on a laptop PC to emulate the base-band packet protocol to be used over the radio link. A standard BER test set (FIREBERD 6000A) could not be used due to the fact that it could not support the communication protocol associated with the cordless telephone system.

The BER software generates a packet data stream and transmits it out of the one of the serial ports with RS-232 logic levels into the level translator board. The level translator board converts the RS-232 logic levels into a uni-polar TTL/CMOS signal which is fed to the transmitter. The transmitter signal is fed into the jamming margin test system as the desired signal. The receiver demodulates and de-spreads the signal back to its original base-band form and is available as a TTL/CMOS level. The TTL/CMOS signal is fed to the translator board, which converts the logic levels to RS-232 levels and feeds the received data stream into the PC's second serial port for processing.

The software performs a bit-by-bit comparison of the received packets and calculates the instantaneous bit-error-rate for the incoming packet and also calculates the cumulative BER over all the packets transmitted in the test interval.

The cumulative BER is used as a set-point in the adjustment of the jamming signal level (and consequently the J/S ratio). The set-point or reference BER is $1X10^{-5}$.

e) Procedure

1. Referring to the test set-up presented in part b of this sub-section, note that there are two Wilkinson couplers. These couplers have a maximum amplitude imbalance of 0.1 dB and maximum phase imbalance of 1 degree over the test frequency band (s-parameters on record).

2. The first coupler is used to combine the desired signal and the tone jamming signal.

3. The second coupler is used to sample the composite input signal to the receiver. The signal is sampled by a spectrum analyzer. The cable lengths on the output of the sampling coupler are of the same type (RG-316) and of equal length. However due to the amplitude balance of the coupler, the J/S ratio in each arm of the coupler will correlate to within 0.1 dB.

4. Using the integrated channel power measurement function, the desired signal power is set to about –50 dBm at the sampled port. The level at the receiver will be very close to this sampled level.. The desired signal is adjusted by means of the two step attenuators. The transmitter is placed in the CW mode during this step. Ensure that the jamming signal generator is disabled.

5. The transmitter is disabled and the jamming signal generator is enabled and set to the transmitter carrier frequency and is measured by the spectrum analyzer using the integrated channel power function. The jamming power is set to the exact level (to within 0.1 dB) of the previous reading of the desired signal. Since the desired and the jamming signal levels were measured under the same conditions, the J/S ratio at receiver given these settings is at 0 dB.

6. Given the jamming signal generator absolute amplitude reference setting established in step 5. The signal generator amplitude setting is normalized to this absolute level using the amplitude reference function on the signal generator. Therefore, the generators indicated setting is relative to the 0 dB J/S setting. Further settings are recorded as a test indications of the J/S ratio. With every set of test indication, the absolute reference indications are also presented to ensure the confidence of the 0 dB J/S setting.

7. With the jamming signal attenuated substantially (-30 dB J/S), enable transmission and reception of the packet data, the BER should indicate 0 (error free operation) over a short test interval of 20 seconds.

8. While monitoring the BER, increase the jamming signal level until the BER indicates 1 X 10^{-5} or less. Record the relative amplitude level setting on the jamming signal generator ,this is the J/S ratio per the normalization method presented earlier.

9. Repeat across the pass-band of the receiver in 50 kHz increments, recording the J/S ratio at every frequency. Repeat for minimum, mid-band, and maximum channel frequencies.

f) Test Indication Organization

For each channel setting, the test indications presented will be as follows:

1. Reference desired signal and jamming signal levels at 0 dB J/S.
2. Numerical J/S data and conversion to processing gain.
3. 20th percentile value for the processing gain data set for indication of processing gain for 20% of worst indications removed.
4. Plot of processing gain over pass-band of receiver.

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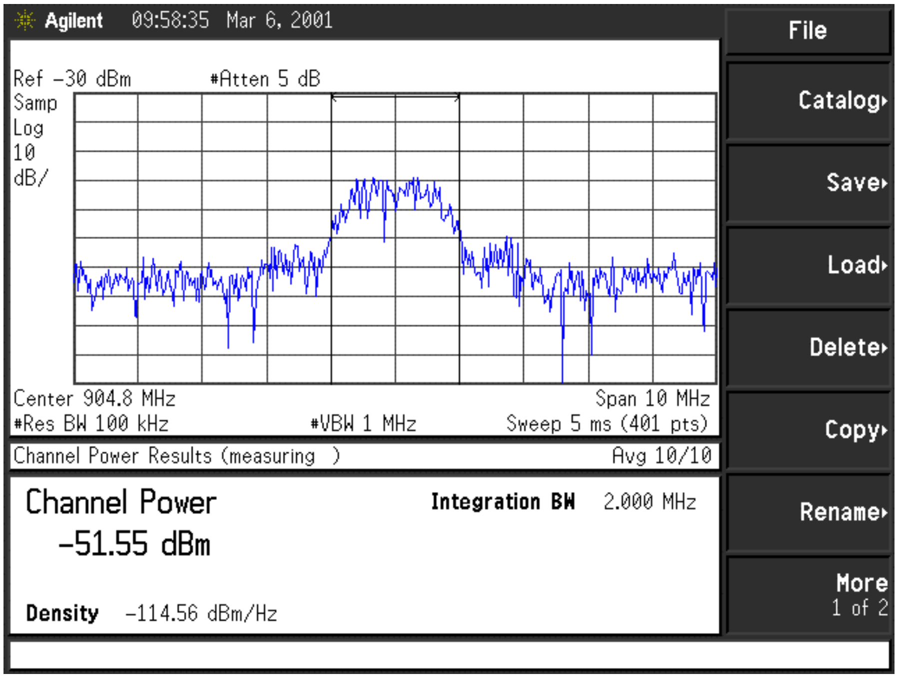
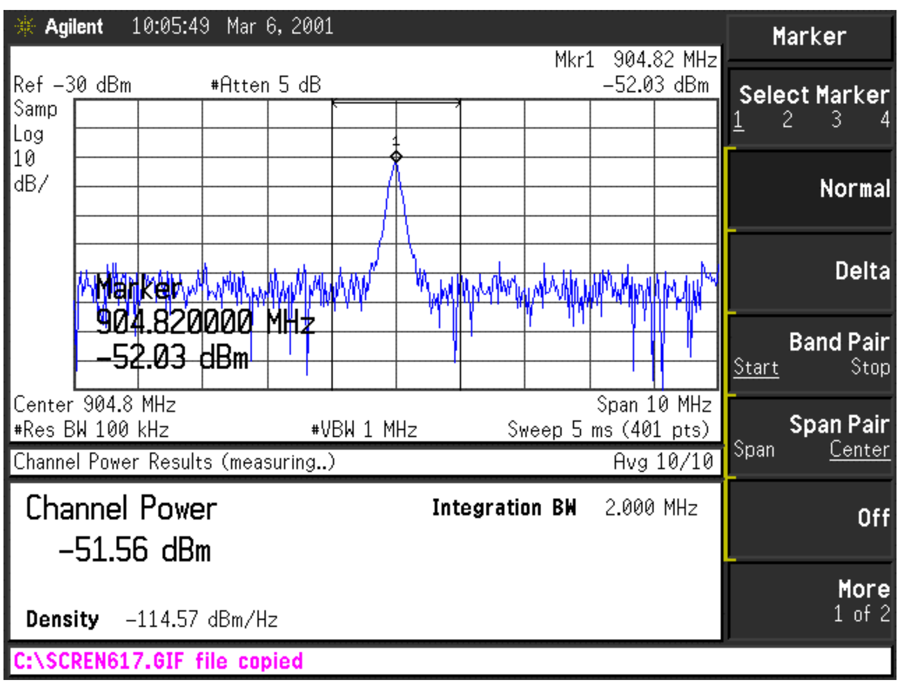
g) Test Indications Channel 1 (904.80 MHz)



<u>Test Indication:</u> Channel 1: 904.8 MHz, Desired Signal Reference Level Setting



<u>Test Indication:</u> Channel 1: 908.5 MHz, Jamming Signal Reference Level Setting

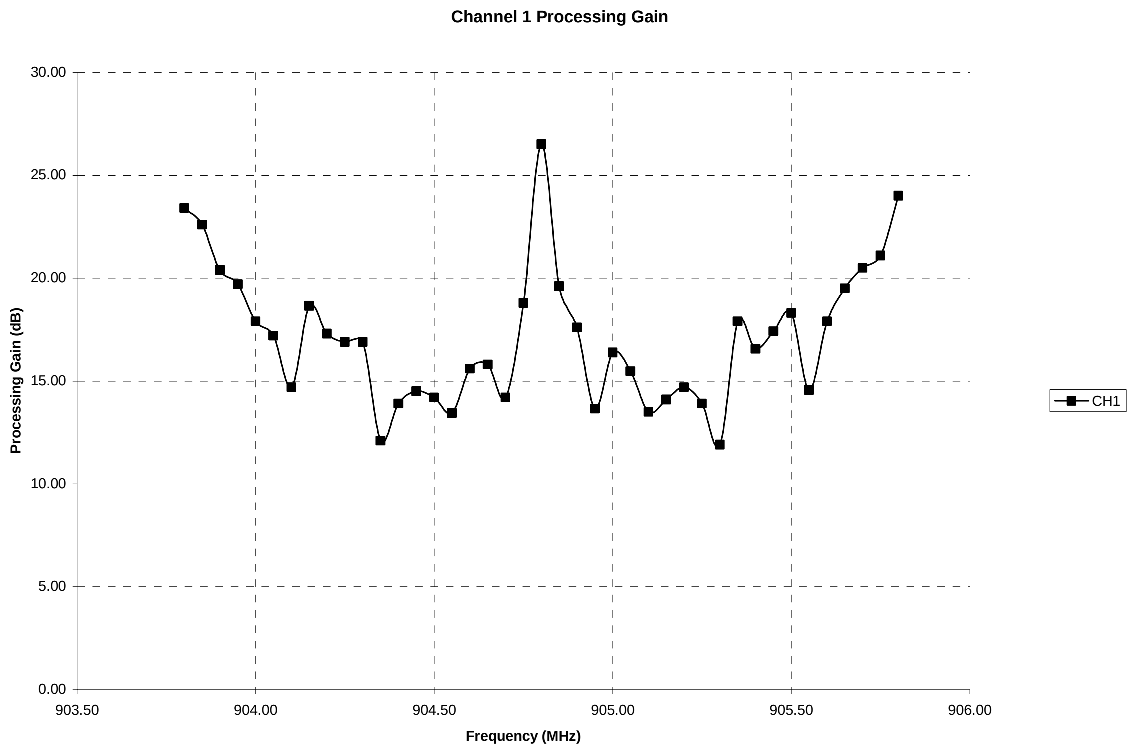
Frequency	J/S	Gp	
903.80	11.5	23.40	
903.85	10.7	22.60	
903.90	8.5	20.40	
903.95	7.8	19.70	
904.00	6	17.90	
904.05	5.3	17.20	
904.10	2.8	14.70	
904.15	6.76	18.66	
904.20	5.4	17.30	
904.25	5	16.90	
904.30	5	16.90	
904.35	0.2	12.10	
904.40	2	13.90	
904.45	2.6	14.50	
904.50	2.3	14.20	
904.55	1.55	13.45	
904.60	3.7	15.60	
904.65	3.9	15.80	
904.70	2.3	14.20	
904.75	6.9	18.80	
904.80	14.6	26.50	
904.85	7.7	19.60	
904.90	5.7	17.60	
904.95	1.76	13.66	
905.00	4.48	16.38	
905.05	3.58	15.48	
905.10	1.6	13.50	
905.15	2.2	14.10	
905.20	2.8	14.70	
905.25	2	13.90	
905.30	0	11.90	
905.35	6	17.90	
905.40	4.66	16.56	
905.45	5.52	17.42	
905.50	6.4	18.30	
905.55	2.66	14.56	
905.60	6	17.90	
905.65	7.6	19.50	
905.70	8.6	20.50	
905.75	9.2	21.10	
905.80	12.1	24.00	
CHANNEL	1	904.80	MHz
80% percentile	Gp	14.2	dB

Test Condition: Channel 1: 904.8 MHz, J/S and Processing Gain

Test Limit: 20th Percentile Processing Gain: 10 dB, minimum.

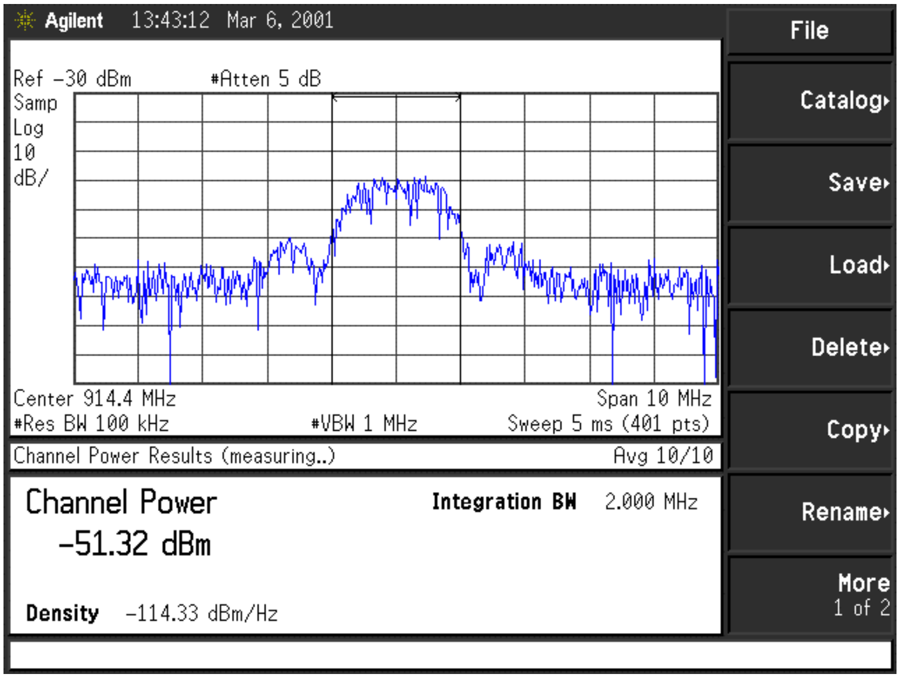
Test Indication: 20th Percentile Processing Gain = 14.2 dB

Test Outcome: 20th Percentile Processing Gain = 14.2 dB > 10 dB → PASS

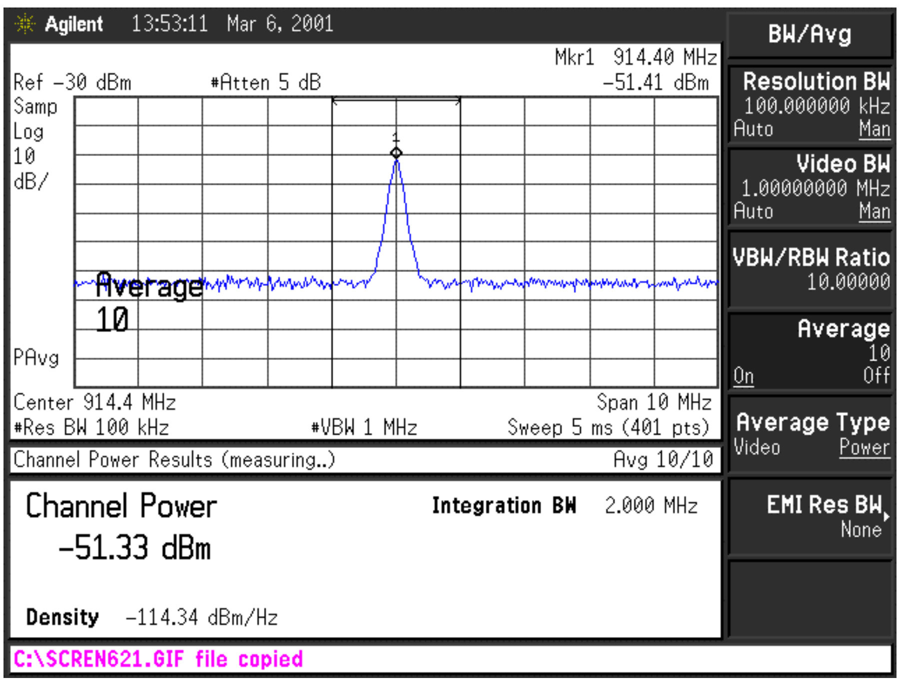


Test Indication: Channel 1 Processing Gain versus Frequency.

h) Test Indications Channel 9 (914.5 MHz)



Test Indication: Channel 9: 914.5 MHz, Desired Signal Reference Level Setting



Test Indication: Channel 9: 914.5 MHz,Jamming Signal Reference Level Setting

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Frequency	J/S	PG	
913.40	11.3	23.20	
913.45	10.94	22.84	
913.50	8.4	20.30	
913.55	7.5	19.40	
913.60	6.2	18.10	
913.65	5.3	17.20	
913.70	3.02	14.92	
913.75	6.6	18.50	
913.80	5.3	17.20	
913.85	4.7	16.60	
913.90	4.8	16.70	
913.95	0.2	12.10	
914.00	2.2	14.10	
914.05	2.9	14.80	
914.10	2.5	14.40	
914.15	1.5	13.40	
914.20	4.1	16.00	
914.25	3.7	15.60	
914.30	2.5	14.40	
914.35	6.7	18.60	
914.40	14.9	26.80	
914.45	8.5	20.40	
914.50	5.74	17.64	
914.55	1.8	13.70	
914.60	4.5	16.40	
914.65	3.5	15.40	
914.70	1.5	13.40	
914.75	2.9	14.80	
914.80	2	13.90	
914.85	0	11.90	
914.90	6.01	17.91	
914.95	5	16.90	
915.00	5.5	17.40	
915.05	6.2	18.10	
915.10	3	14.90	
915.15	5.9	17.80	
915.20	7.7	19.60	
915.25	8.8	20.70	
915.30	8.9	20.80	
915.35	12.3	24.20	
915.40	12.3	24.20	
CHANNEL	9	914.50	MHz
80% percentile	Gp	14.4	dB

Test Condition: Channel 9: 914.5 MHz, J/S and Processing Gain

Test Limit: 20th Percentile Processing Gain: 10 dB, minimum.

Test Indication: 20th Percentile Processing Gain = 14.4 dB

Test Outcome: 20th Percentile Processing Gain = 14.4 dB > 10 dB → PASS

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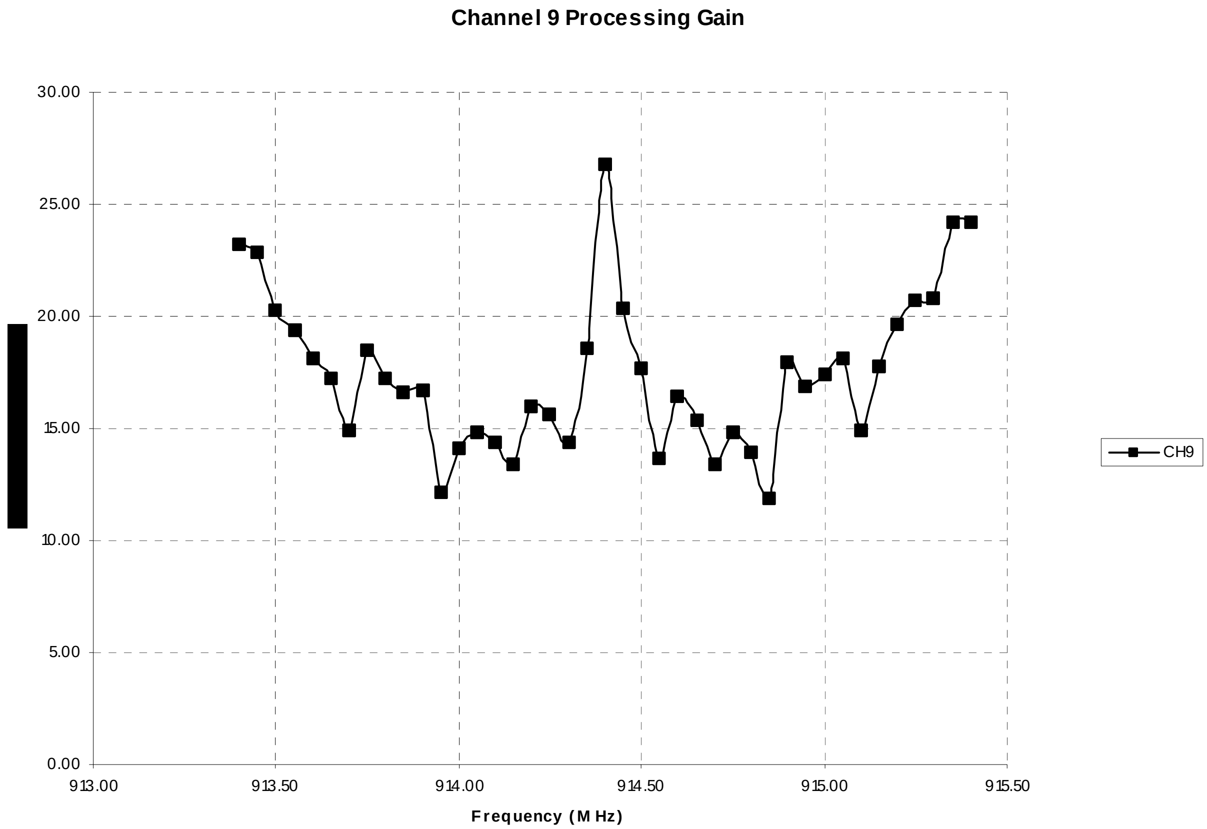

Test Indication: Channel 9 Processing Gain versus Frequency.

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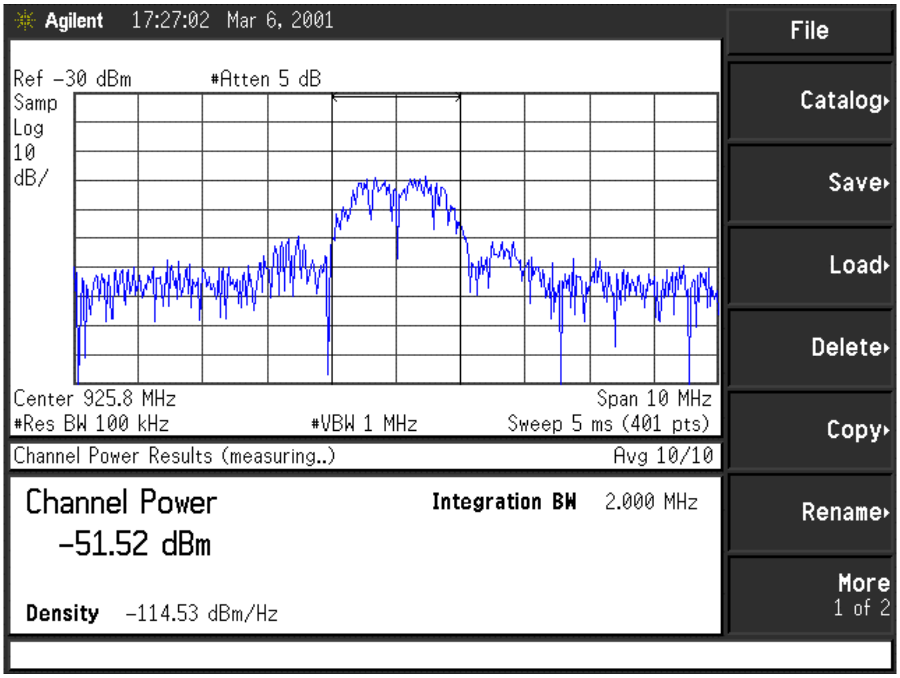
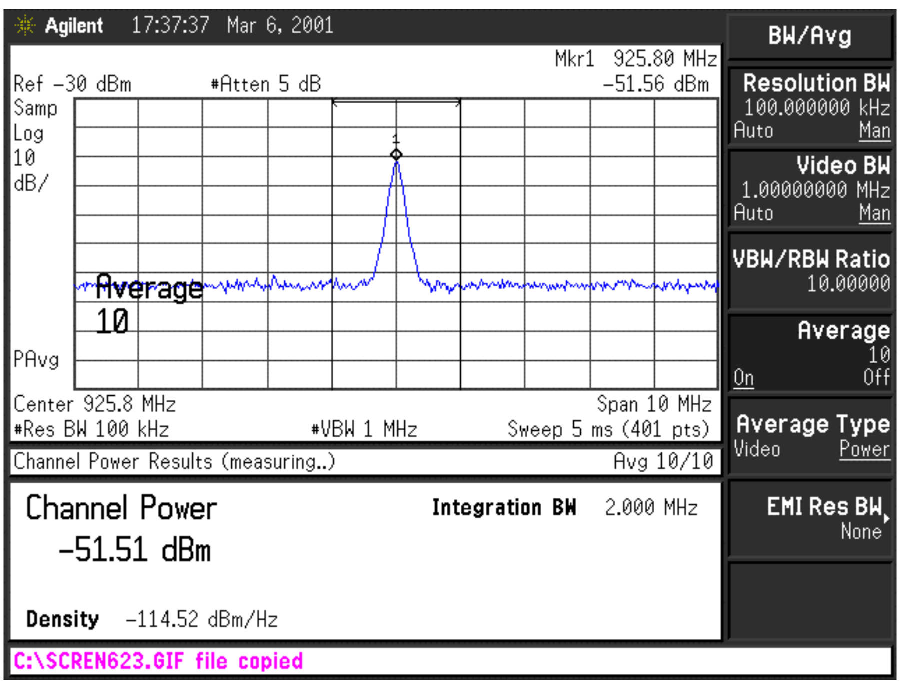
i) Test Indications Channel 13 (925.8 MHz)



Test Indication: Channel 13: 925.8 MHz, Desired Signal Reference Level Setting



Test Indication: Channel 13: 925.8 MHz, Jamming Signal Reference Level Setting

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Frequency	J/S	PG	
924.80	11	22.90	
924.85	10.8	22.70	
924.90	8.4	20.30	
924.95	7.8	19.70	
925.00	6.4	18.30	
925.05	5.7	17.60	
925.10	2.9	14.80	
925.15	7.1	19.00	
925.20	5.3	17.20	
925.25	4.9	16.80	
925.30	5	16.90	
925.35	0.3	12.20	
925.40	2.2	14.10	
925.45	2.8	14.70	
925.50	2.7	14.60	
925.55	1.8	13.70	
925.60	3.7	15.60	
925.65	4.5	16.40	
925.70	2.51	14.41	
925.75	6.7	18.60	
925.80	18.4	30.30	
925.85	8.9	20.80	
925.90	6	17.90	
925.95	2.2	14.10	
926.00	4.5	16.40	
926.05	4.1	16.00	
926.10	2	13.90	
926.15	2.5	14.40	
926.20	3	14.90	
926.25	2.4	14.30	
926.30	0.5	12.40	
926.35	6.2	18.10	
926.40	5.54	17.44	
926.45	6.2	18.10	
926.50	6.5	18.40	
926.55	3.46	15.36	
926.60	6.2	18.10	
926.65	8.6	20.50	
926.70	9.2	21.10	
926.75	10	21.90	
926.80	12.5	24.40	
CHANNEL	13	925.80	MHz
80% percentile	Gp	14.41	dB

Test Condition: Channel 13: 925.8 MHz, J/S and Processing Gain

Test Limit: 20th Percentile Processing Gain: 10 dB, minimum.

Test Indication: 20th Percentile Processing Gain = 14.4 dB

Test Outcome: 20th Percentile Processing Gain = 14.4 dB > 10 dB → PASS

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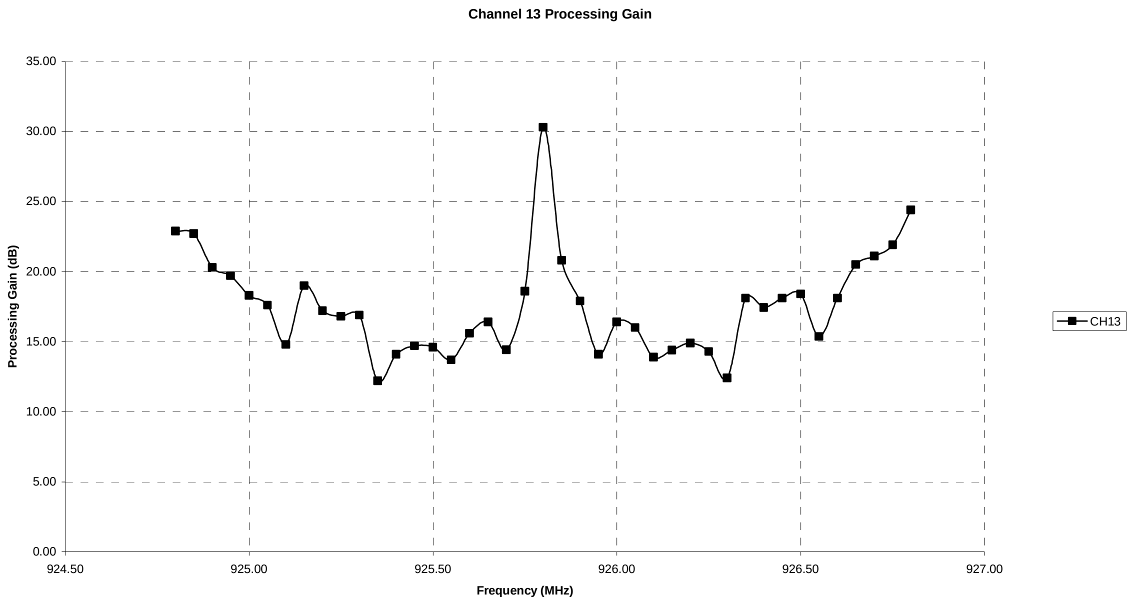
Email: eng@lsr.com www.lsr.com



Test Indication: Channel 13 Processing Gain versus Frequency.

j) Test Set-Up Photographs for Jamming Margin

Test Configuration

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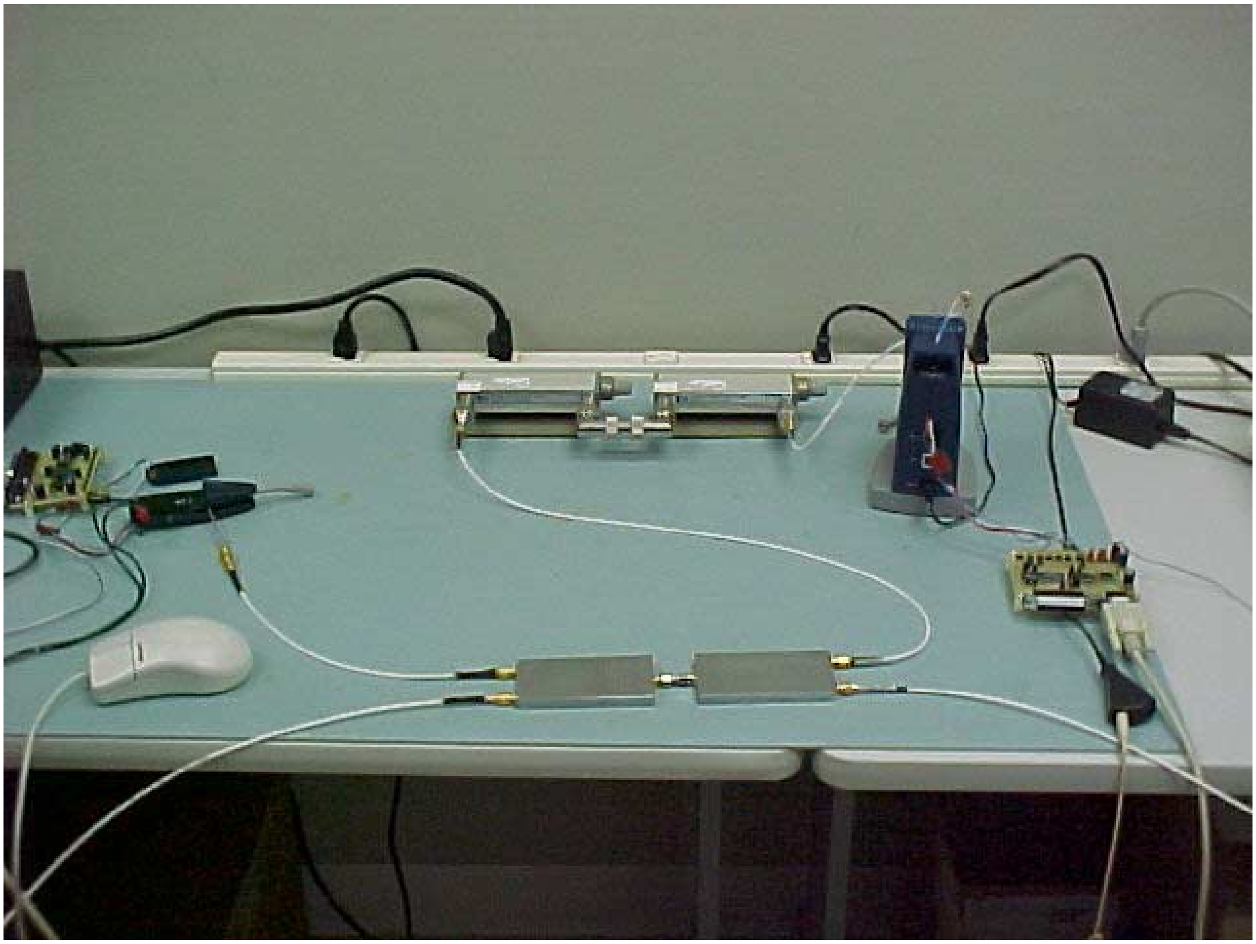

Test Configuration

III. Critical Equipment List

EQUIPMENT DESCRIPTION	LSR Serial Number	Serial Number	Calibration
Hewlett Packard ESG-D3000 Signal Generator	CC000162C	On Record	6/1/1997
Hewlett Packard E4404B Spectrum Analyzer	CC000221C	On Record	8/11/2000

IV. Equipment Uncertainties

Specified Characteristic	Specified Probability Density	Specified Uncertainty
HP EE4404B Spectrum Analyzer		
Total Absolute Amplitude Uncertainty	Uniform	+/-0.35 dB
Wilkinson Power Couplers		
Amplitude Imbalance	Uniform	+/-0.1 dB
HP ESG-D3000 Signal Generator		
Absolute Amplitude Accuracy	Uniform	+/- 0.5 dB

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V. Bit Error Ratio Test Software

The Bit Error Ratio Software is provided by Conexant, the radio and baseband chipset vendor. The software is named FCC_3v3, version 3.3.

The following settings were used during the test:

1. Protocol: S1-S2 Handset Master
2. Base station Transmit Power: Low
3. Handset Transmit Power: High
4. Base station LNA Attenuator: Off
5. Handset LNA Attenuator: ON
6. Power Control Handset and Base Station: Manual

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