

TEST RESULT SUMMARY

FCC PART 90

MANUFACTURER'S NAME	ADC, Incorporated
NAME OF EQUIPMENT	Digivance LRCS SMR Dual Band System
TYPE OF EQUIPMENT	Transports RF between a remote antenna and base station
MODEL NUMBER	DGVL-901600SYS DGVL-901900SYS
MANUFACTURER'S ADDRESS	P. O. Box 1101 Minneapolis MN 55440-1101
TEST REPORT NUMBER	WC404953
TEST DATE	28 October 2004

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 90.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 90.

Date: 08 November 2004



Location: Taylors Falls MN
USA

J. C. Sausen
Test Engineer

T. K. Swanson
Technical Writer

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports.

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Not Transferable

EMC EMISSION - TEST REPORT

Test Report File Number: WC404953

Date of Issue: 08 November 2004

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Effective Isotropic Radiated Power Test for ADC Inc.
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS

*Note: The EUT is a fixed repeater and not a base station.

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected to the spectrum analyzer. The carrier output, below, was conducted using a single CW signal generator. The spectrum analyzer level was offset to compensate for attenuators and cable loss between the EUT and the analyzer.

A CW signal was used at the low, mid and high parts of the selected band. The spectrum analyzer level was offset by 51.0 dB to compensate for attenuators and cable loss between the EUT and the analyzer.

Band SMR (800 MHz)

Carrier Frequency	Carrier Output
851.0 MHz	<u>41.67</u> dBm
858.5 MHz	<u>43.17</u> dBm
869.0 MHz	<u>40.17</u> dBm

Band SMR (900 MHz)

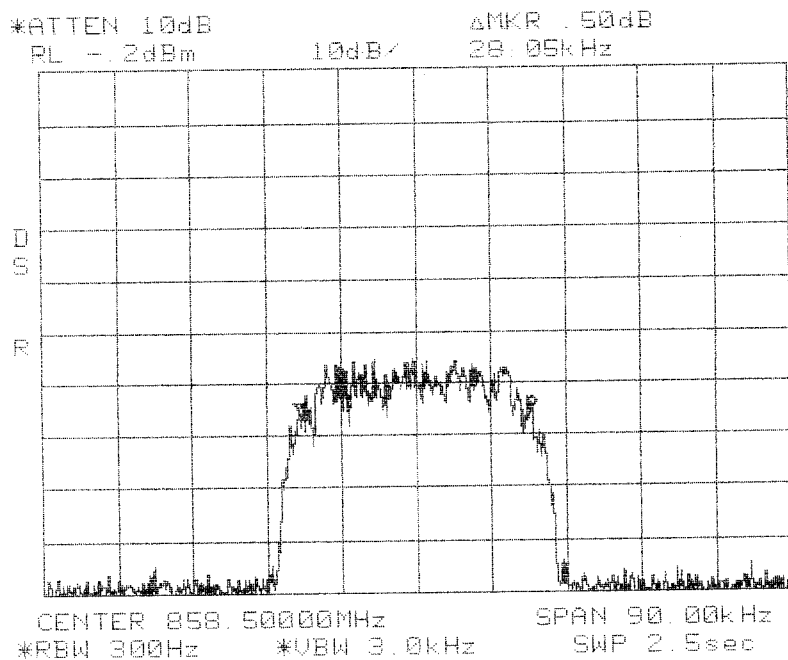
Carrier Frequency	Carrier Output
935.0 MHz	<u>41.33</u> dBm
937.5 MHz	<u>42.67</u> dBm
940.0 MHz	<u>40.33</u> dBm

**Occupied Bandwidth Modulation Test for ADC Inc.
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS**

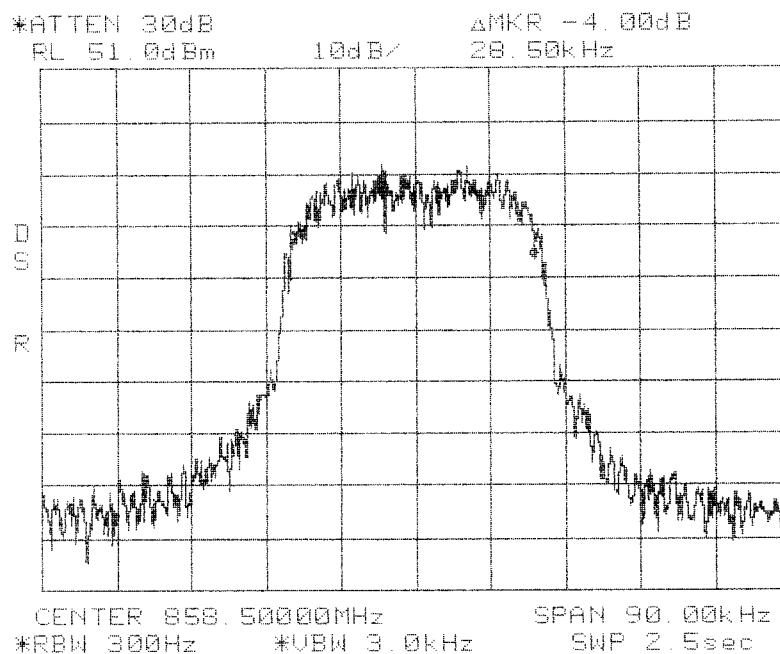
An input/output Occupied Bandwidth test was done with modulation type: 16QAM. The purpose was to determine the amount of distortion added to different types of modulation schemes by the EUT. The following plots show input signals vs. output signals.

Results:

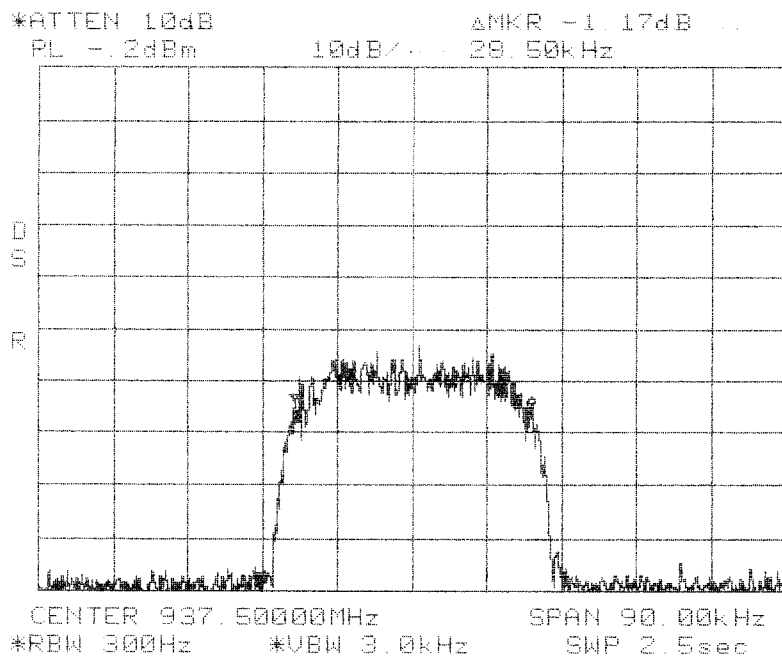
Pass (see plots)



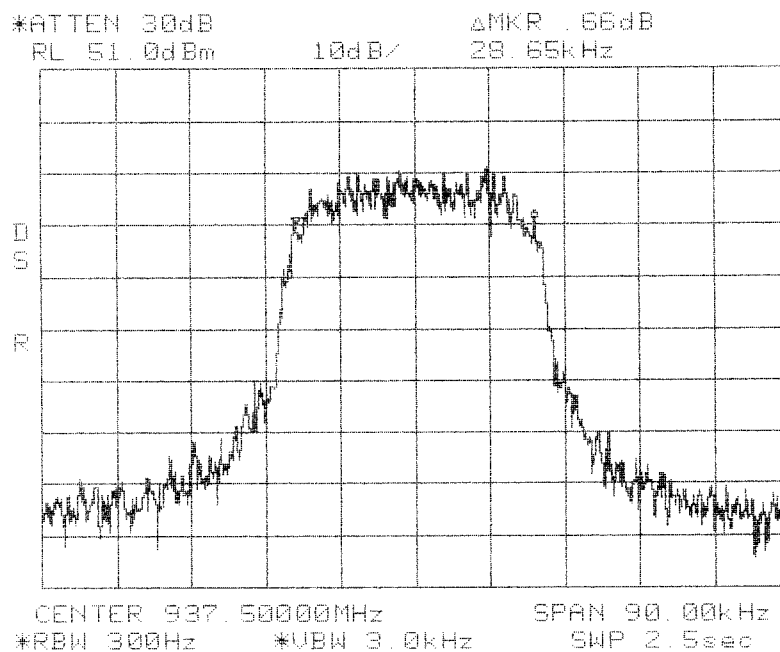
Occupied Bandwidth
16 QAM In
Band SMR
800 MHz



Occupied Bandwidth
16 QAM Out
Band SMR
800 MHz



Occupied Bandwidth
16 QAM In
Band SMR
900 MHz



Occupied Bandwidth
16 QAM Out
Band SMR
900 MHz

Conducted Emission Limits Test for ADC Inc.
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS

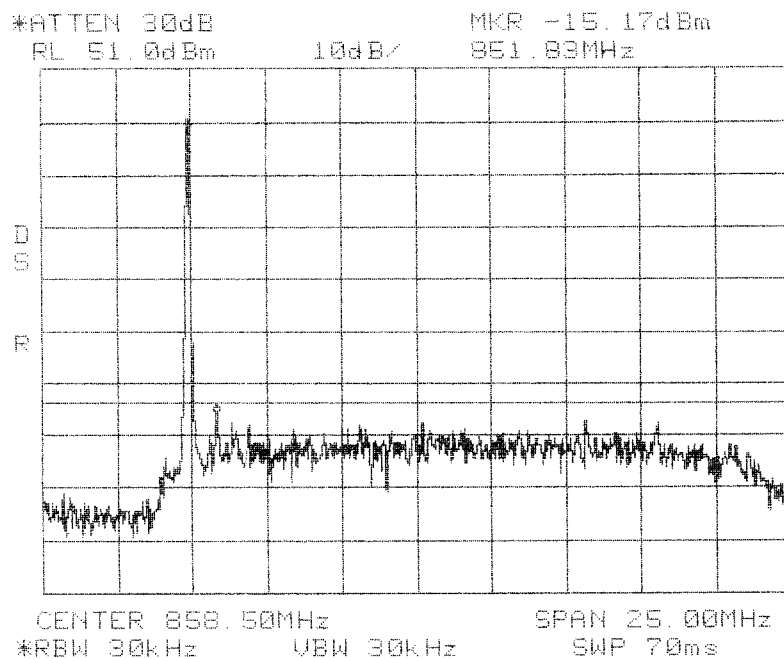
The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10th harmonic of the highest carrier frequency. Test signals used are 16 QAM. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13dBm from the equation

$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

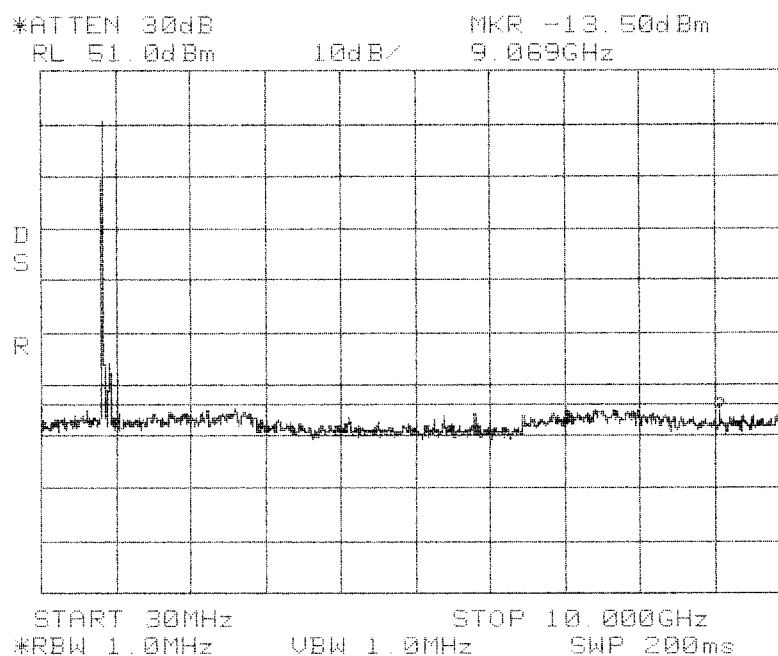
Band edge compliance is also demonstrated using a 16 QAM signal at the upper and lower limits of the band and a resolution bandwidth of 300 Hz.

Results:

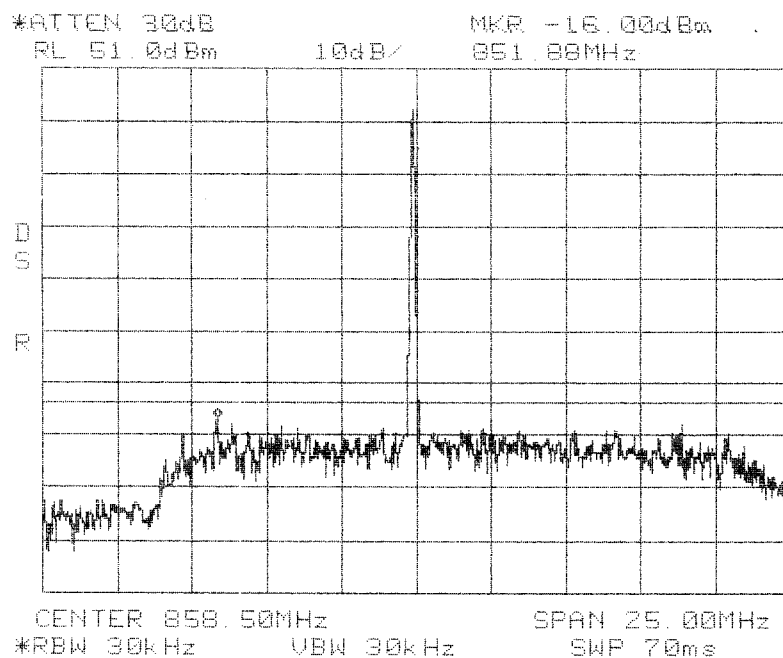
Pass (See plots)



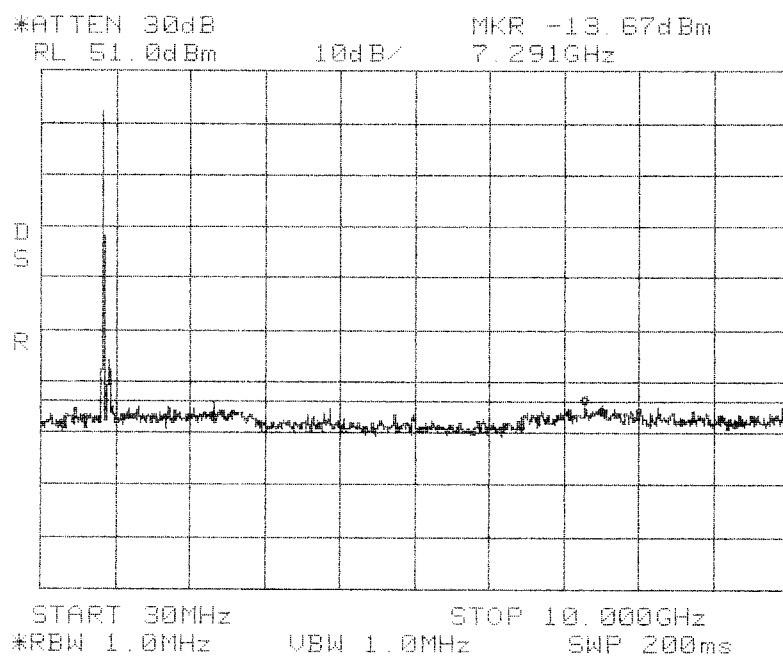
**Conducted Emissions
Low
Band SMR
800 MHz**



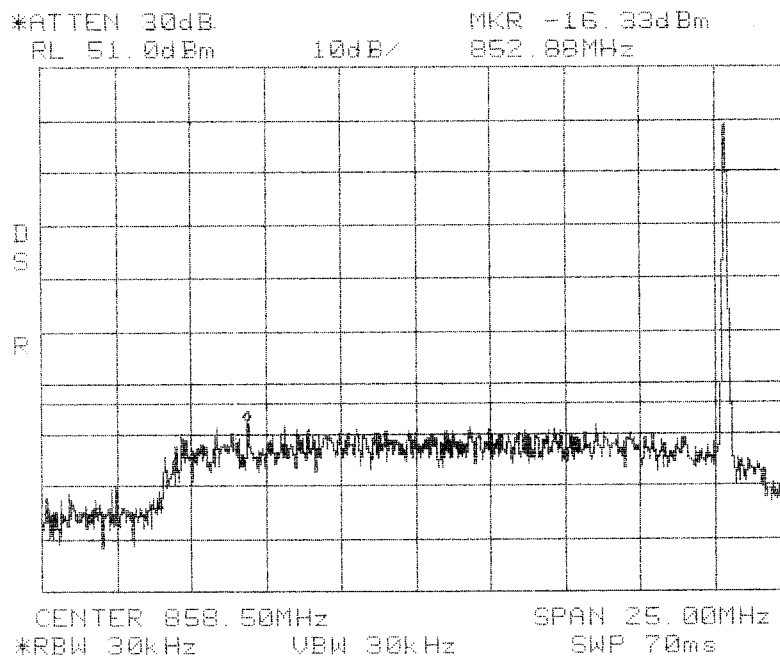
**Conducted Emissions
Low
Band SMR
800 MHz**



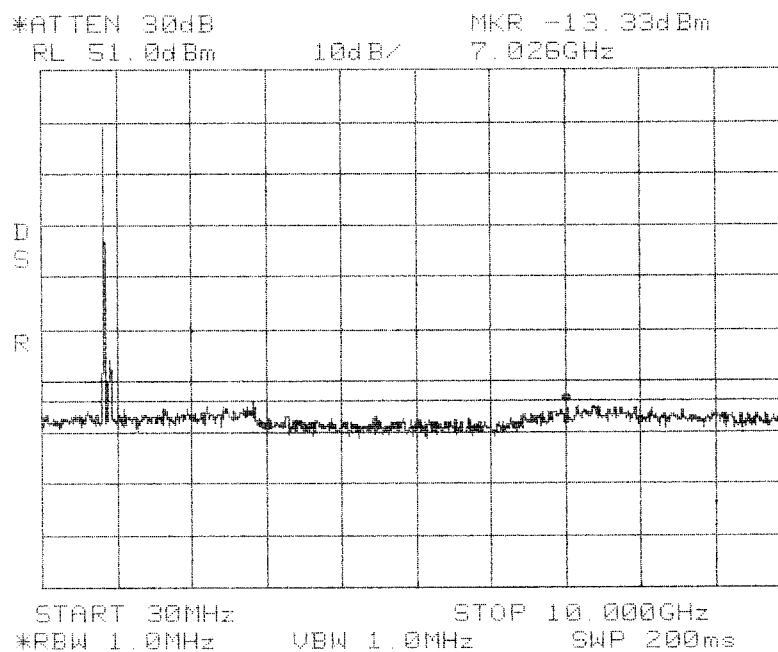
**Conducted Emissions
 Mid
 Band SMR
 800 MHz**



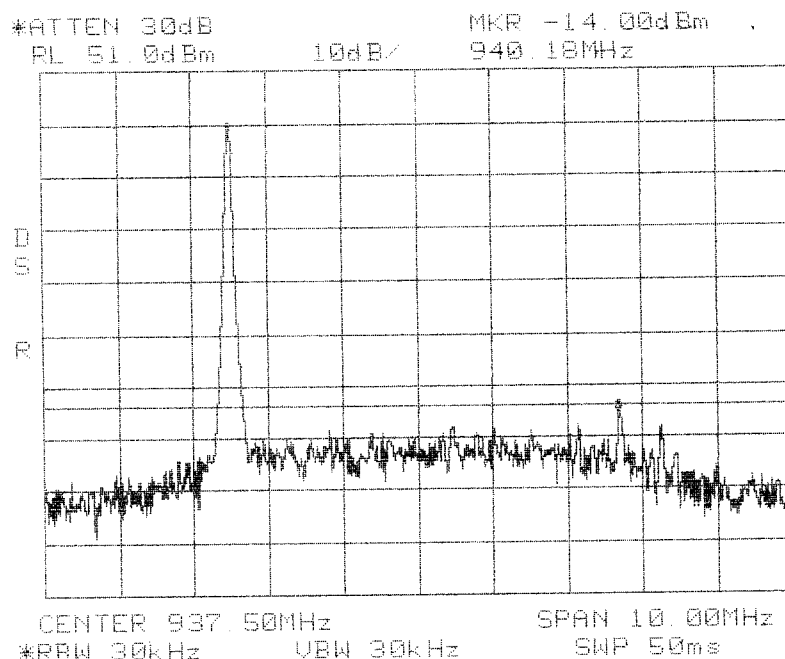
**Conducted Emissions
 Mid
 Band SMR
 800 MHz**



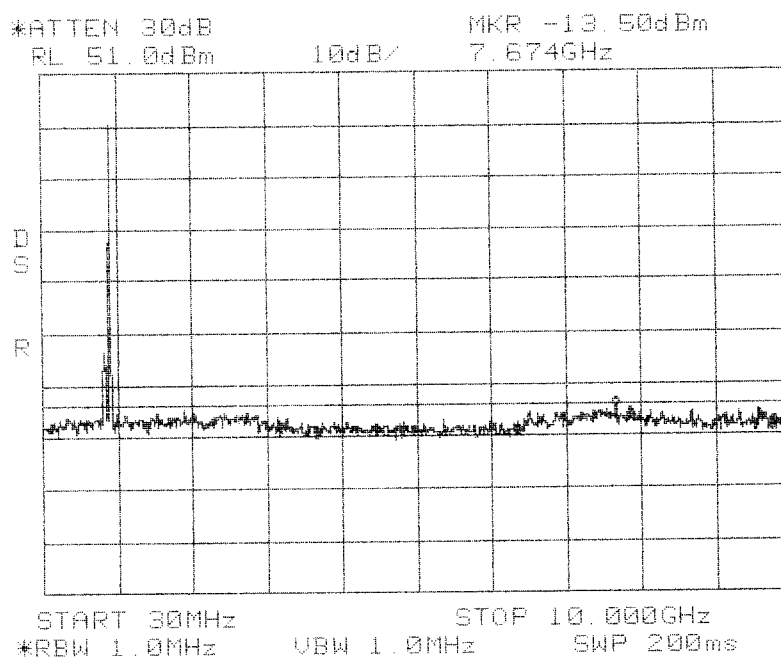
**Conducted Emissions
High
Band SMR
800 MHz**



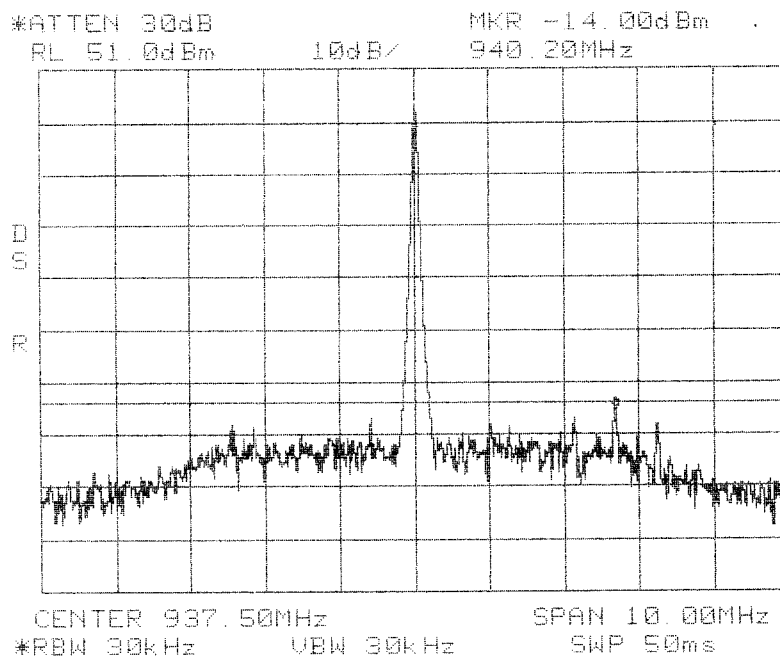
**Conducted Emissions
High
Band SMR
800 MHz**



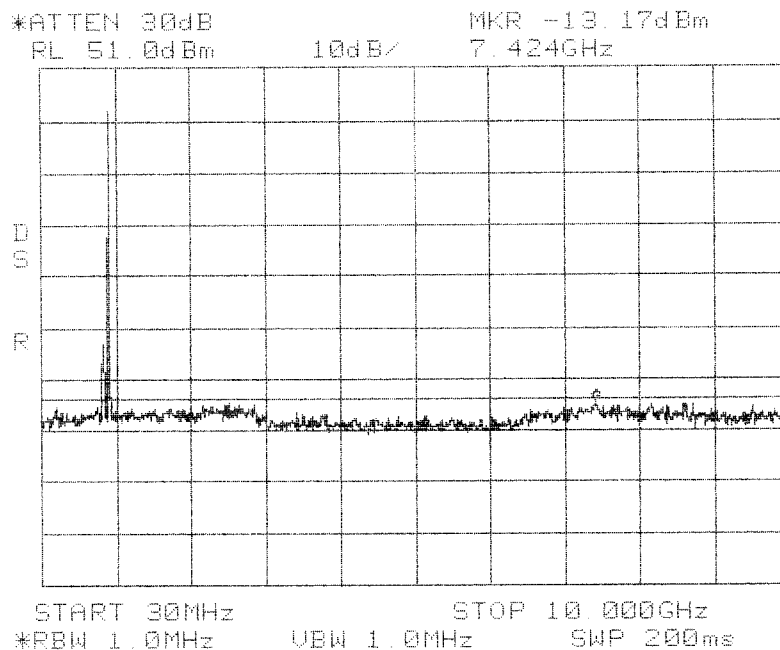
**Conducted Emissions
 Low
 Band SMR
 900 MHz**



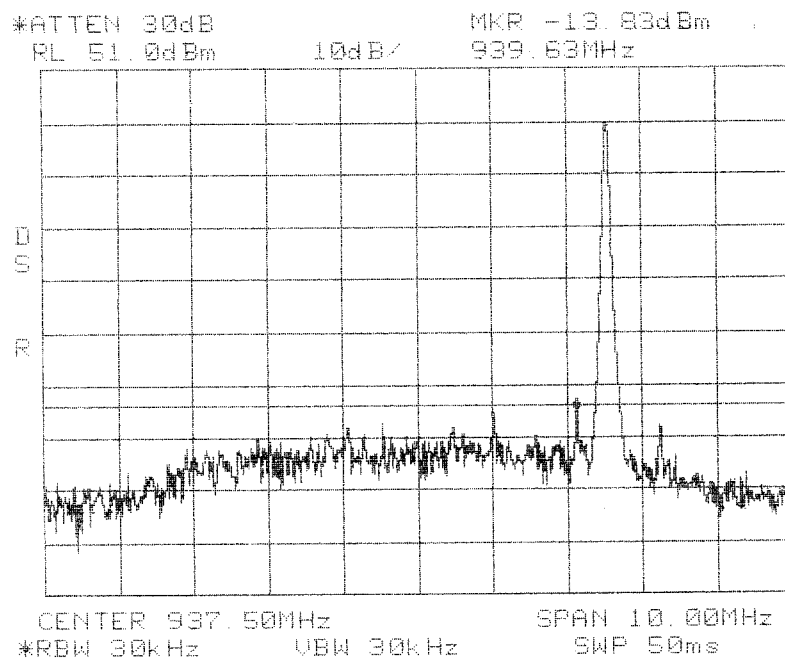
**Conducted Emissions
 Low
 Band SMR
 900 MHz**



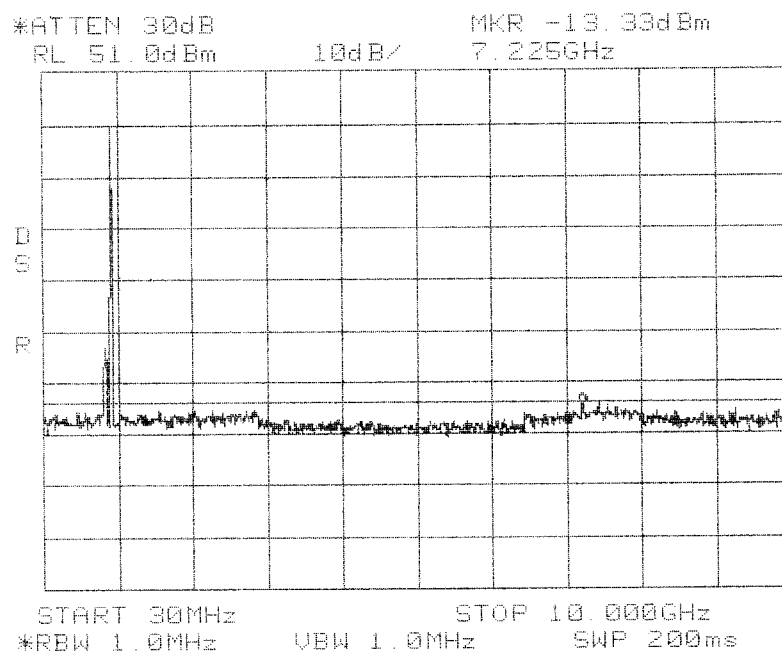
**Conducted Emissions
Mid
Band SMR
900 MHz**



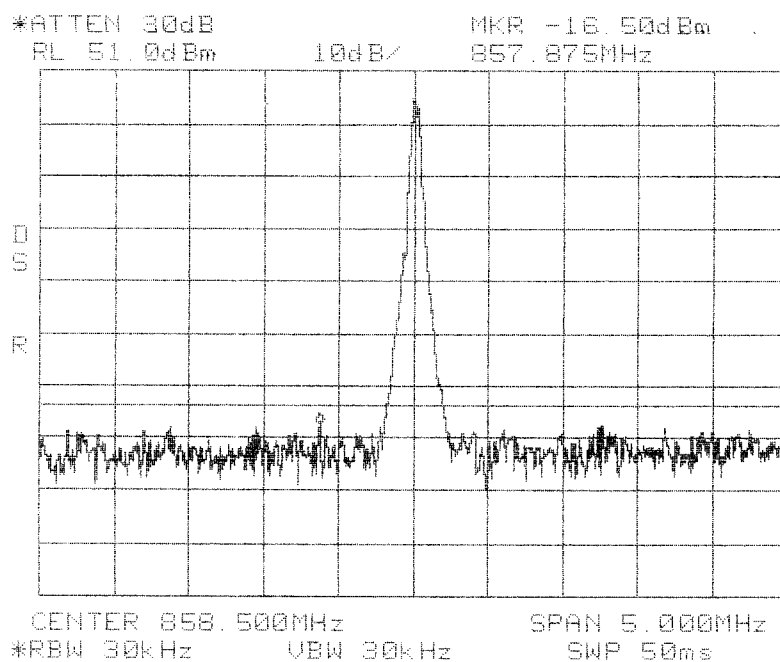
**Conducted Emissions
Mid
Band SMR
900 MHz**



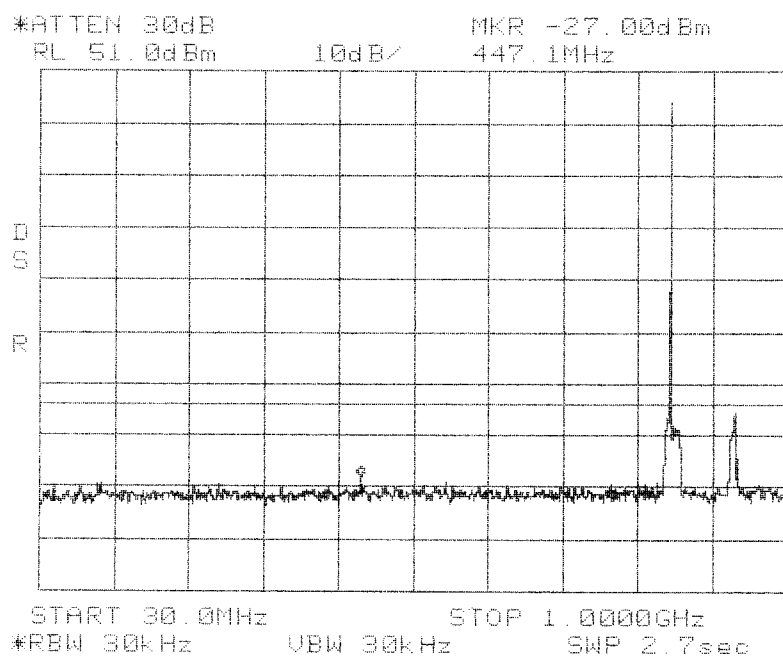
**Conducted Emissions
High
Band SMR
900 MHz**



**Conducted Emissions
High
Band SMR
900 MHz**

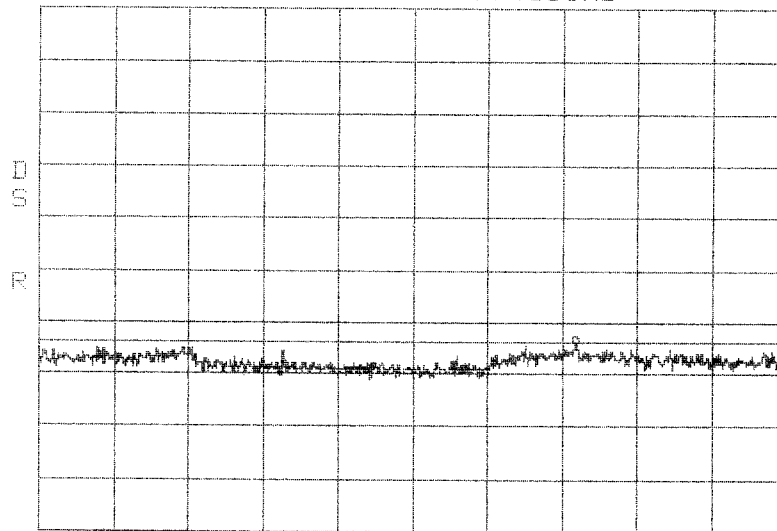


Conducted Emissions
16 QAM
Band SMR
800 MHz



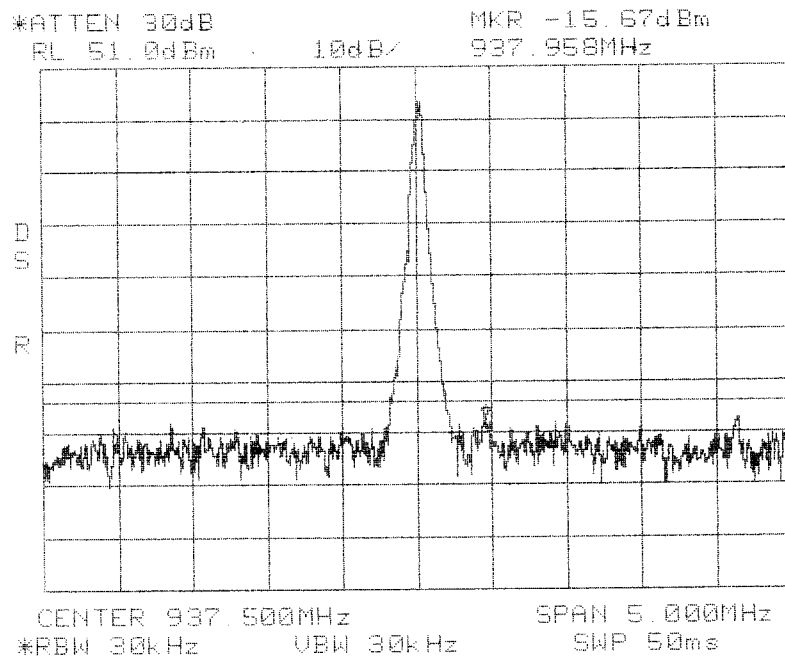
Conducted Emissions
16 QAM
Band SMR
800 MHz

*ATTEN 30dB MKR -13.50dBm
RL 51.0dBm 10dB/ 7.465GHz

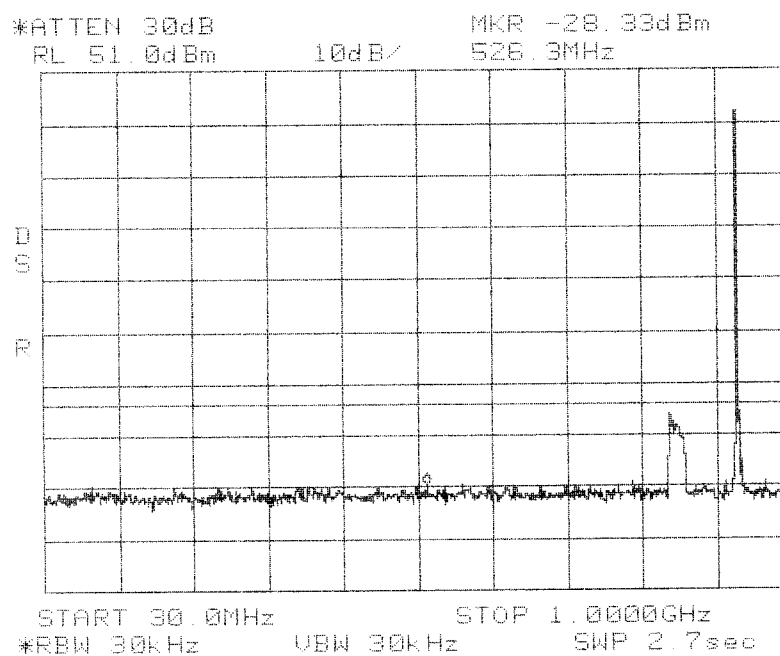


START 1.000GHz STOP 10.000GHz
*RBW 1.0MHz VBW 1.0MHz SWP 180ms

Conducted Emissions
16 QAM
Band SMR
800 MHz

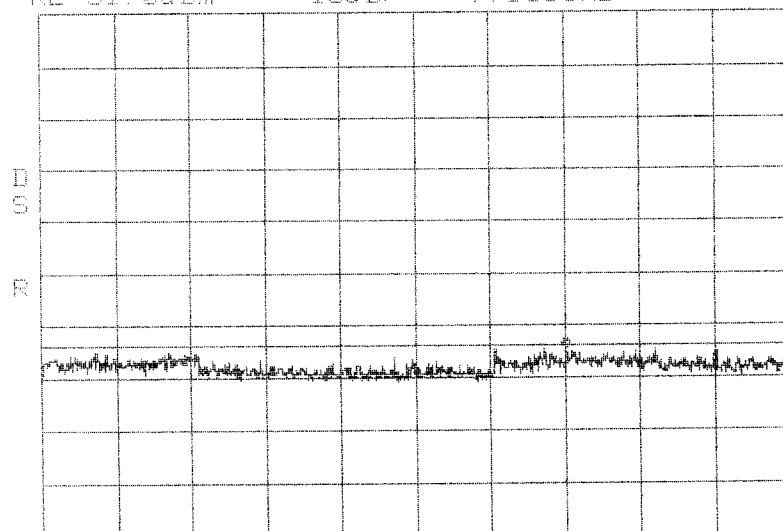


Conducted Emissions
16 QAM
Band SMR
900 MHz



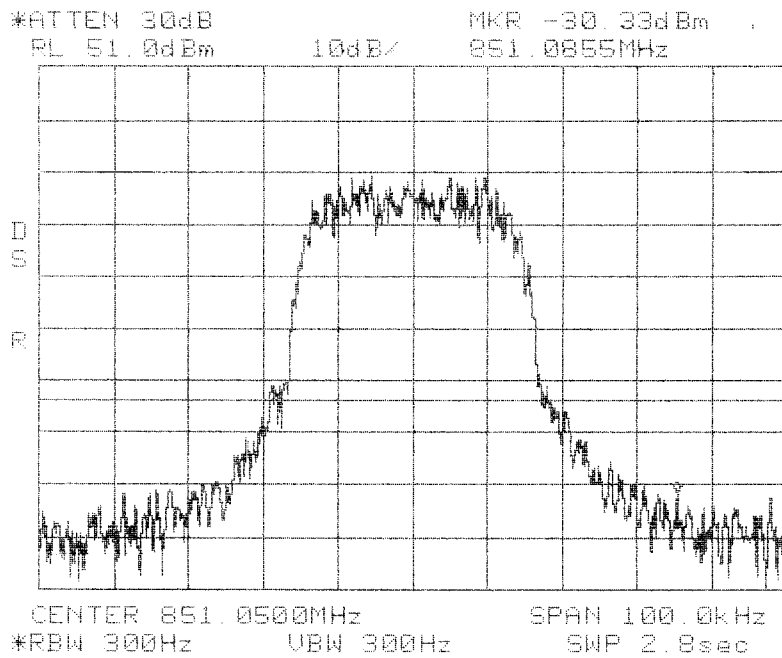
Conducted Emissions
16 QAM
Band SMR
900 MHz

*ATTEN 30dB MKR -13.50dBm ...
RL 51.0dBm -10dB/ 7.315GHz

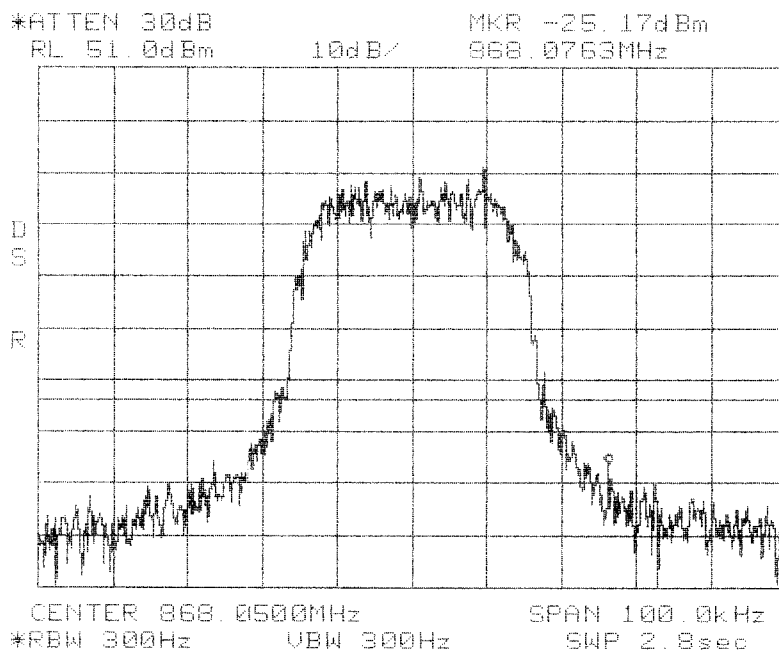


START 1.000GHz STOP 10.000GHz
*RBW 1.0MHz VBW 1.0MHz SWP 180ms

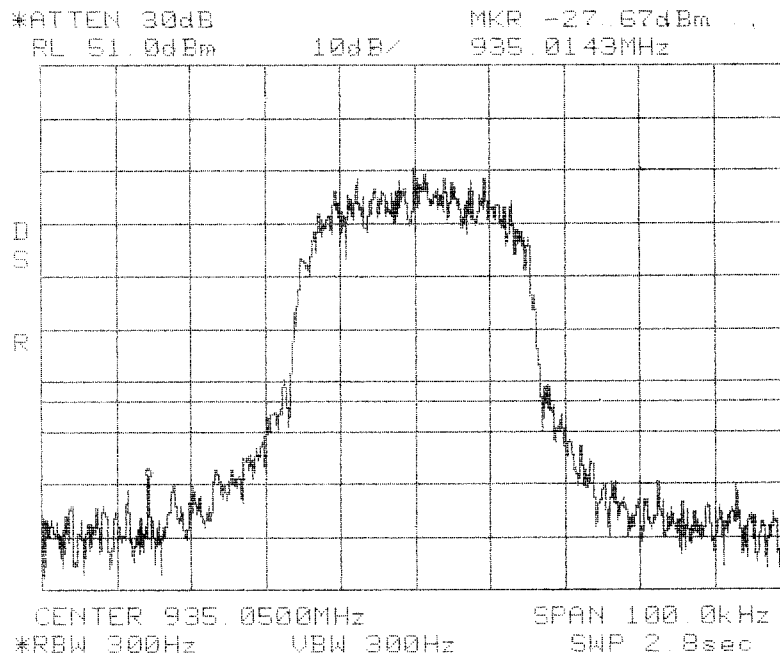
Conducted Emissions
16 QAM
Band SMR
900 MHz



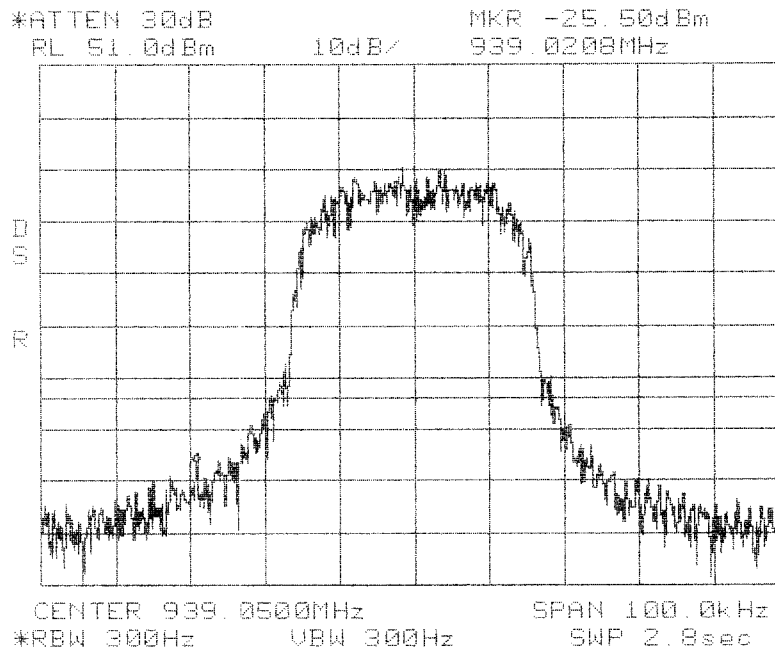
**Conducted Emissions
Band Edge
16 QAM
Band SMR
800 MHz**



**Conducted Emissions
Band Edge
16 QAM
Band SMR
800 MHz**



**Conducted Emissions
Band Edge
16 QAM
Band SMR
900 MHz**



**Conducted Emissions
Band Edge
16 QAM
Band SMR
900 MHz**

RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 1 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
SUBSTITUTION PERFORMED AT FREQUENCY OF HIGHEST EMISSION						
213 MHz final level of 63.78 dBuV/m matches signal generator level of -28 dBm.						
-28 - cable loss + ant gain or -28 - (1) + (-6.2) = -35.2						
Final level of 63.78 dBuV/m = -35.2 dBm						
substitution factor of -98.98 dB is used to calculate final dBm power levels for other spurious emissions.						
LOW CHANNEL 851MHz.						
30.51 MHz	50.35 Qp	0.43 / 20.2 / 25.9 / -98.98	-53.9	V / 1.00 / 0	-40.9	n/a
39.366 MHz	57.15 Qp	0.5 / 17.18 / 25.9 / -98.98	-50.05	V / 1.00 / 0	-37.05	n/a
50.976 MHz	62.85 Qp	0.6 / 13.9 / 25.9 / -98.98	-47.53	V / 1.00 / 0	-34.53	n/a
52.596 MHz	63.5 Qp	0.6 / 13.43 / 25.9 / -98.98	-47.35	V / 1.00 / 0	-34.35	n/a
63.198 MHz	57.45 Qp	0.66 / 10.74 / 25.9 / -98.98	-56.03	V / 1.00 / 0	-43.03	n/a
77.082 MHz	64.3 Qp	0.75 / 7.91 / 25.8 / -98.98	-51.82	V / 1.00 / 0	-38.82	n/a
79.308 MHz	64.45 Qp	0.79 / 7.71 / 25.8 / -98.98	-51.83	V / 1.00 / 0	-38.83	n/a
81.54 MHz	63.6 Qp	0.8 / 7.51 / 25.8 / -98.98	-52.87	V / 1.00 / 0	-39.87	n/a
83.178 MHz	63.05 Qp	0.8 / 7.37 / 25.8 / -98.98	-53.56	V / 1.00 / 0	-40.56	n/a
113.089 MHz	53.4 Qp	0.9 / 9.44 / 25.92 / -98.98	-61.17	V / 1.00 / 0	-48.17	n/a
120.589 MHz	52.25 Qp	0.9 / 9.02 / 25.97 / -98.98	-62.78	V / 1.00 / 0	-49.78	n/a
156.031 MHz	53.05 Qp	1.0 / 8.7 / 25.94 / -98.98	-62.17	V / 1.00 / 0	-49.17	n/a
175.765 MHz	52.95 Qp	1.1 / 9.12 / 26.11 / -98.98	-61.93	V / 1.00 / 0	-48.93	n/a
184.926 MHz	54.15 Qp	1.11 / 9.85 / 26.19 / -98.98	-60.06	V / 1.00 / 0	-47.06	n/a
213.018 MHz	70.6 Qp	1.21 / 10.62 / 26.3 / -98.98	-42.85	V / 1.00 / 0	-29.85	n/a
227.04 MHz	46.45 Qp	1.3 / 10.94 / 26.3 / -98.98	-66.59	V / 1.00 / 0	-53.59	n/a
284.01 MHz	63.05 Qp	1.5 / 12.52 / 26.51 / -98.98	-48.42	V / 1.00 / 0	-35.42	n/a
331.771 MHz	44.8 Qp	1.55 / 14.06 / 26.7 / -98.98	-65.27	V / 1.00 / 0	-52.27	n/a

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 2 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
355.009 MHz	60.25 Qp	1.6 / 14.8 / 26.67 / -98.98	-49.0	V / 1.00 / 0	-36.0	n/a
360.127 MHz	43.95 Qp	1.6 / 14.84 / 26.65 / -98.98	-65.25	V / 1.00 / 0	-52.25	n/a
426.001 MHz	60.4 Qp	1.71 / 16.37 / 26.79 / -98.98	-47.29	V / 1.00 / 0	-34.29	n/a
497.0 MHz	58.25 Qp	1.9 / 17.29 / 27.07 / -98.98	-48.62	V / 1.00 / 0	-35.62	n/a
568.001 MHz	51.35 Qp	2.03 / 18.32 / 27.01 / -98.98	-54.29	V / 1.00 / 0	-41.29	n/a
638.999 MHz	55.05 Qp	2.1 / 19.39 / 27.05 / -98.98	-49.49	V / 1.00 / 0	-36.49	n/a
709.997 MHz	42.25 Qp	2.3 / 20.52 / 26.82 / -98.98	-60.73	V / 1.00 / 0	-47.73	n/a
720.269 MHz	41.0 Qp	2.3 / 20.67 / 26.76 / -98.98	-61.77	V / 1.00 / 0	-48.77	n/a
780.989 MHz	47.45 Qp	2.39 / 21.43 / 26.66 / -98.98	-54.37	V / 1.00 / 0	-41.37	n/a
978.985 MHz	45.3 Qp	2.71 / 23.35 / 26.43 / -98.98	-54.04	V / 1.00 / 0	-41.04	n/a
993.982 MHz	43.55 Qp	2.73 / 23.22 / 26.4 / -98.98	-55.88	V / 1.00 / 0	-42.88	n/a
30.51 MHz	50.7 Qp	0.43 / 20.2 / 25.9 / -98.98	-53.55	V / 1.00 / 90	-40.55	n/a
39.366 MHz	57.2 Qp	0.5 / 17.18 / 25.9 / -98.98	-50.0	V / 1.00 / 90	-37.0	n/a
79.308 MHz	65.9 Qp	0.79 / 7.71 / 25.8 / -98.98	-50.38	V / 1.00 / 90	-37.38	n/a
81.54 MHz	67.4 Qp	0.8 / 7.51 / 25.8 / -98.98	-49.07	V / 1.00 / 90	-36.07	n/a
83.178 MHz	65.15 Qp	0.8 / 7.37 / 25.8 / -98.98	-51.46	V / 1.00 / 90	-38.46	n/a
113.089 MHz	55.6 Qp	0.9 / 9.44 / 25.92 / -98.98	-58.97	V / 1.00 / 90	-45.97	n/a
227.04 MHz	47.6 Qp	1.3 / 10.94 / 26.3 / -98.98	-65.44	V / 1.00 / 90	-52.44	n/a
497.0 MHz	60.2 Qp	1.9 / 17.29 / 27.07 / -98.98	-46.67	V / 1.00 / 90	-33.67	n/a
638.999 MHz	55.25 Qp	2.1 / 19.39 / 27.05 / -98.98	-49.29	V / 1.00 / 90	-36.29	n/a
720.269 MHz	41.1 Qp	2.3 / 20.67 / 26.76 / -98.98	-61.67	V / 1.00 / 90	-48.67	n/a
780.989 MHz	47.5 Qp	2.39 / 21.43 / 26.66 / -98.98	-54.32	V / 1.00 / 90	-41.32	n/a
978.985 MHz	48.35 Qp	2.71 / 23.35 / 26.43 / -98.98	-50.99	V / 1.00 / 90	-37.99	n/a
30.51 MHz	50.9 Qp	0.43 / 20.2 / 25.9 / -98.98	-53.35	V / 1.00 / 180	-40.35	n/a

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 3 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
79.308 MHz	65.95 Qp	0.79 / 7.71 / 25.8 / -98.98	-50.33	V / 1.00 / 180	-37.33	n/a
113.089 MHz	57.85 Qp	0.9 / 9.44 / 25.92 / -98.98	-56.72	V / 1.00 / 180	-43.72	n/a
156.031 MHz	54.85 Qp	1.0 / 8.7 / 25.94 / -98.98	-60.37	V / 1.00 / 180	-47.37	n/a
213.018 MHz	72.1 Qp	1.21 / 10.62 / 26.3 / -98.98	-41.35	V / 1.00 / 180	-28.35	n/a
284.01 MHz	63.95 Qp	1.5 / 12.52 / 26.51 / -98.98	-47.52	V / 1.00 / 180	-34.52	n/a
426.001 MHz	61.85 Qp	1.71 / 16.37 / 26.79 / -98.98	-45.84	V / 1.00 / 180	-32.84	n/a
568.001 MHz	52.9 Qp	2.03 / 18.32 / 27.01 / -98.98	-52.74	V / 1.00 / 180	-39.74	n/a
709.997 MHz	43.2 Qp	2.3 / 20.52 / 26.82 / -98.98	-59.78	V / 1.00 / 180	-46.78	n/a
978.985 MHz	49.55 Qp	2.71 / 23.35 / 26.43 / -98.98	-49.79	V / 1.00 / 180	-36.79	n/a
993.982 MHz	48.55 Qp	2.73 / 23.22 / 26.4 / -98.98	-50.88	V / 1.00 / 180	-37.88	n/a
30.51 MHz	51.1 Qp	0.43 / 20.2 / 25.9 / -98.98	-53.15	V / 1.00 / 270	-40.15	n/a
355.009 MHz	63.05 Qp	1.6 / 14.8 / 26.67 / -98.98	-46.2	V / 1.00 / 270	-33.2	n/a
709.997 MHz	43.3 Qp	2.3 / 20.52 / 26.82 / -98.98	-59.68	V / 1.00 / 270	-46.68	n/a
720.269 MHz	44.7 Qp	2.3 / 20.67 / 26.76 / -98.98	-58.07	V / 1.00 / 270	-45.07	n/a
213.018 MHz	75.05 Qp	1.21 / 10.62 / 26.3 / -98.98	-38.4	V / 1.00 / 270	-25.4	n/a
NO HIGHER EMISSIONS FOUND AT 0 DEGREES 3 m HEIGHT V						
63.198 MHz	58.75 Qp	0.66 / 10.74 / 25.9 / -98.98	-54.73	V / 3.00 / 90	-41.73	n/a
227.04 MHz	48.8 Qp	1.3 / 10.94 / 26.3 / -98.98	-64.24	V / 3.00 / 180	-51.24	n/a
NO HIGHER EMISSIONS FOUND AT 270 DEGREES 3m HEIGHT V						
MAXIMIZED						
213.018 MHz	75.1 Qp	1.21 / 10.62 / 26.3 / -98.98	-38.35	V / 1.00 / 260	-25.35	n/a

Tested by: RMJ

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 4 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
497.0 MHz	62.55 Qp	1.9 / 17.29 / 27.07 / -98.98	-44.32	H / 1.00 / 0	-31.32	n/a
638.999 MHz	56.55 Qp	2.1 / 19.39 / 27.05 / -98.98	-47.99	H / 1.00 / 0	-34.99	n/a
780.989 MHz	60.55 Qp	2.39 / 21.43 / 26.66 / -98.98	-41.27	H / 1.00 / 0	-28.27	n/a
993.982 MHz	49.85 Qp	2.73 / 23.22 / 26.4 / -98.98	-49.58	H / 1.00 / 0	-36.58	n/a
284.01 MHz	65.35 Qp	1.5 / 12.52 / 26.51 / -98.98	-46.12	H / 1.00 / 90	-33.12	n/a
360.127 MHz	46.05 Qp	1.6 / 14.84 / 26.65 / -98.98	-63.15	H / 1.00 / 90	-50.15	n/a
638.999 MHz	57.8 Qp	2.1 / 19.39 / 27.05 / -98.98	-46.74	H / 1.00 / 90	-33.74	n/a
709.997 MHz	45.7 Qp	2.3 / 20.52 / 26.82 / -98.98	-57.28	H / 1.00 / 90	-44.28	n/a
284.01 MHz	66.45 Qp	1.5 / 12.52 / 26.51 / -98.98	-45.02	H / 1.00 / 180	-32.02	n/a
638.999 MHz	65.75 Qp	2.1 / 19.39 / 27.05 / -98.98	-38.79	H / 1.00 / 180	-25.79	n/a
355.009 MHz	71.05 Qp	1.6 / 14.8 / 26.67 / -98.98	-38.2	H / 1.00 / 270	-25.2	n/a
360.127 MHz	48.5 Qp	1.6 / 14.84 / 26.65 / -98.98	-60.7	H / 1.00 / 270	-47.7	n/a
213.018 MHz	75.6 Qp	1.21 / 10.62 / 26.3 / -98.98	-37.85	H / 1.00 / 270	-24.85	n/a
426.001 MHz	62.6 Qp	1.71 / 16.37 / 26.79 / -98.98	-45.09	H / 3.00 / 270	-32.09	n/a
355.009 MHz	66.1 Qp	1.6 / 14.8 / 26.67 / -98.98	-43.15	H / 3.00 / 270	-30.15	n/a
213.018 MHz	68.05 Qp	1.21 / 10.62 / 26.3 / -98.98	-45.4	H / 3.00 / 270	-32.4	n/a
MAXIMIZED						
213.018 MHz	78.25 Qp	1.21 / 10.62 / 26.3 / -98.98	-35.2	H / 3.00 / 270	-22.2	n/a

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 5 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
355.009 MHz	71.45 Qp	1.6 / 14.8 / 26.67 / -98.98	-37.8	H / 3.00 / 270	-24.8	n/a
HIGH CHANNEL 869 MHZ						
30.51 MHz	52.9 Qp	0.43 / 20.2 / 25.9 / -98.98	-51.35	V / 1.00 / 0	-38.35	n/a
63.198 MHz	60.4 Qp	0.66 / 10.74 / 25.9 / -98.98	-53.08	V / 1.00 / 0	-40.08	n/a
30.51 MHz	53.1 Qp	0.43 / 20.2 / 25.9 / -98.98	-51.15	V / 1.00 / 90	-38.15	n/a
63.198 MHz	63.2 Qp	0.66 / 10.74 / 25.9 / -98.98	-50.28	V / 1.00 / 90	-37.28	n/a
83.178 MHz	66.85 Qp	0.8 / 7.37 / 25.8 / -98.98	-49.76	V / 1.00 / 90	-36.76	n/a
79.308 MHz	66.55 Qp	0.79 / 7.71 / 25.8 / -98.98	-49.73	V / 1.00 / 180	-36.73	n/a
81.54 MHz	67.55 Qp	0.8 / 7.51 / 25.8 / -98.98	-48.92	V / 1.00 / 180	-35.92	n/a
NO HIGHER EMISSIONS FOUND WITH ANTENNA Vert 3m AND TABLE ROTATED 360 DEGREES						
245.029 MHz	47.2 Qp	1.31 / 11.47 / 26.3 / -98.98	-65.29	V / 1.00 / 0	-52.29	n/a
245.029 MHz	48.3 Qp	1.31 / 11.47 / 26.3 / -98.98	-64.19	H / 1.00 / 0	-51.19	n/a
978.985 MHz	49.7 Qp	2.71 / 23.35 / 26.43 / -98.98	-49.64	H / 1.00 / 0	-36.64	n/a
245.029 MHz	53.75 Qp	1.31 / 11.47 / 26.3 / -98.98	-58.74	H / 1.00 / 180	-45.74	n/a
360.127 MHz	49.85 Qp	1.6 / 14.84 / 26.65 / -98.98	-59.35	H / 1.00 / 270	-46.35	n/a
133.789 MHz	58.7 Qp	1.0 / 8.35 / 26.08 / -98.98	-57.01	H / 3.00 / 270	-44.01	n/a

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 6 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
HIGH CHANNEL 940 MHZ						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 1m Vert AND TABLE ROTATED 360 DEGREES						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 3m Vert AND TABLE ROTATED 360 DEGREES						
LOW CHANNEL 935MHz.						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 1m Vert AND TABLE ROTATED 360 DEGREES						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 3m Vert AND TABLE ROTATED 360 DEGREES						
NO NEW OR HIGHER EMISSIONS FOUND WITH HORIZONTAL POLARIZATION AT ALL AZIMUTHS.						
LOW CHANNEL 851MHz.						
1.065 GHz	42.4 Pk	2.83 / 26.44 / 39.78 / -98.98	-67.08	V / 1.00 / 0	-54.08	n/a
1.207 GHz	46.25 Pk	3.01 / 26.52 / 40.81 / -98.98	-64.0	V / 1.00 / 0	-51.0	n/a
1.136 GHz	46.15 Pk	2.93 / 26.48 / 40.48 / -98.98	-63.91	V / 1.00 / 0	-50.91	n/a
1.278 GHz	43.45 Pk	3.1 / 26.57 / 40.95 / -98.98	-66.82	V / 1.00 / 0	-53.82	n/a
1.349 GHz	48.7 Pk	3.18 / 26.61 / 41.16 / -98.98	-61.65	V / 1.00 / 0	-48.65	n/a
1.42 GHz	53.4 Pk	3.3 / 26.65 / 41.53 / -98.98	-57.16	V / 1.00 / 0	-44.16	n/a
1.491 GHz	46.25 Pk	3.42 / 26.69 / 41.95 / -98.98	-64.57	V / 1.00 / 0	-51.57	n/a
1.562 GHz	49.6 Pk	3.49 / 27.06 / 42.19 / -98.98	-61.02	V / 1.00 / 0	-48.02	n/a
1.633 GHz	42.6 Pk	3.55 / 27.47 / 42.32 / -98.98	-67.68	V / 1.00 / 0	-54.68	n/a
1.704 GHz	49.65 Pk	3.62 / 27.88 / 42.5 / -98.98	-60.33	V / 1.00 / 0	-47.33	n/a
1.846 GHz	46.65 Pk	3.83 / 28.71 / 43.1 / -98.98	-62.9	V / 1.00 / 0	-49.9	n/a
1.958 GHz	45.35 Pk	3.9 / 29.36 / 43.34 / -98.98	-63.71	V / 1.00 / 0	-50.71	n/a
1.988 GHz	50.65 Pk	3.9 / 29.53 / 43.38 / -98.98	-58.28	V / 1.00 / 0	-45.28	n/a
2.13 GHz	47.85 Pk	3.97 / 29.89 / 43.76 / -98.98	-61.04	V / 1.00 / 0	-48.04	n/a

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 7 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
2.414 GHz	46.65 Pk	4.31 / 30.51 / 44.41 / -98.98	-61.92	V / 1.00 / 0	-48.92	n/a
2.556 GHz	51.7 Pk	4.4 / 30.81 / 44.5 / -98.98	-56.57	V / 1.00 / 0	-43.57	n/a
2.84 GHz	47.65 Pk	4.6 / 31.38 / 44.91 / -98.98	-60.26	V / 1.00 / 0	-47.26	n/a
3.266 GHz	45.8 Pk	5.0 / 32.39 / 45.2 / -98.98	-60.99	V / 1.00 / 0	-47.99	n/a
3.692 GHz	47.55 Pk	5.56 / 33.46 / 45.2 / -98.98	-57.61	V / 1.00 / 0	-44.61	n/a
3.916 GHz	53.85 Pk	5.75 / 34.0 / 45.27 / -98.98	-50.65	V / 1.00 / 0	-37.65	n/a
4.544 GHz	41.25 Pk	6.15 / 33.82 / 44.82 / -98.98	-62.57	V / 1.00 / 0	-49.57	n/a
5.874 GHz	41.85 Pk	7.02 / 36.57 / 44.81 / -98.98	-58.35	V / 1.00 / 0	-45.35	n/a
7.832 GHz	45.75 Pk	8.27 / 37.6 / 44.42 / -98.98	-51.78	V / 1.00 / 0	-38.78	n/a
1.065 GHz	48.5 Pk	2.83 / 26.44 / 39.78 / -98.98	-60.98	V / 1.00 / 90	-47.98	n/a
1.42 GHz	62.85 Pk	3.3 / 26.65 / 41.53 / -98.98	-47.71	V / 1.00 / 90	-34.71	n/a
1.491 GHz	55.2 Pk	3.42 / 26.69 / 41.95 / -98.98	-55.62	V / 1.00 / 90	-42.62	n/a
2.556 GHz	53.55 Pk	4.4 / 30.81 / 44.5 / -98.98	-54.72	V / 1.00 / 90	-41.72	n/a
5.874 GHz	47.1 Pk	7.02 / 36.57 / 44.81 / -98.98	-53.1	V / 1.00 / 90	-40.1	n/a
1.065 GHz	52.5 Pk	2.83 / 26.44 / 39.78 / -98.98	-56.98	V / 1.00 / 180	-43.98	n/a
1.278 GHz	48.75 Pk	3.1 / 26.57 / 40.95 / -98.98	-61.52	V / 1.00 / 180	-48.52	n/a
1.562 GHz	55.35 Pk	3.49 / 27.06 / 42.19 / -98.98	-55.27	V / 1.00 / 180	-42.27	n/a
1.633 GHz	48.1 Pk	3.55 / 27.47 / 42.32 / -98.98	-62.18	V / 1.00 / 180	-49.18	n/a
1.704 GHz	50.4 Pk	3.62 / 27.88 / 42.5 / -98.98	-59.58	V / 1.00 / 180	-46.58	n/a
2.13 GHz	55.6 Pk	3.97 / 29.89 / 43.76 / -98.98	-53.29	V / 1.00 / 180	-40.29	n/a
2.84 GHz	54.45 Pk	4.6 / 31.38 / 44.91 / -98.98	-53.46	V / 1.00 / 180	-40.46	n/a
7.832 GHz	49.45 Pk	8.27 / 37.6 / 44.42 / -98.98	-48.08	V / 1.00 / 180	-35.08	n/a
1.136 GHz	48.1 Pk	2.93 / 26.48 / 40.48 / -98.98	-61.96	V / 1.00 / 270	-48.96	n/a

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 8 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
MAXIMIZED.						
1.42 GHz	67.05 Pk	3.3 / 26.65 / 41.53 / -98.98	-43.51	V / 2.40 / 0	-30.51	n/a
7.832 GHz	51.8 Pk	8.27 / 37.6 / 44.42 / -98.98	-45.73	V / 1.00 / 190	-32.73	n/a
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
5.874 GHz	52.5 Pk	7.02 / 36.57 / 44.81 / -98.98	-47.7	H / 1.00 / 0	-34.7	n/a
4.544 GHz	48.35 Pk	6.15 / 33.82 / 44.82 / -98.98	-55.47	H / 1.45 / 180	-42.47	n/a
5.874 GHz	54.1 Pk	7.02 / 36.57 / 44.81 / -98.98	-46.1	H / 1.00 / 180	-33.1	n/a
1.846 GHz	49.45 Pk	3.83 / 28.71 / 43.1 / -98.98	-60.1	H / 1.00 / 180	-47.1	n/a
1.958 GHz	46.55 Pk	3.9 / 29.36 / 43.34 / -98.98	-62.51	H / 1.00 / 180	-49.51	n/a
2.414 GHz	51.2 Pk	4.31 / 30.51 / 44.41 / -98.98	-57.37	H / 1.00 / 270	-44.37	n/a
MAXIMIZED.						
5.874 GHz	57.65 Pk	7.02 / 36.57 / 44.81 / -98.98	-42.55	H / 1.00 / 60	-29.55	n/a
4.544 GHz	48.65 Pk	6.15 / 33.82 / 44.82 / -98.98	-55.17	H / 1.00 / 0	-42.17	n/a
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
HIGH CHANNEL 869MHz.						
1.207 GHz	49.75 Pk	3.01 / 26.52 / 40.81 / -98.98	-60.5	V / 1.00 / 90	-47.5	n/a
1.065 GHz	54.15 Pk	2.83 / 26.44 / 39.78 / -98.98	-55.33	V / 1.00 / 180	-42.33	n/a

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS
EUT Model #: DGVL-901X00SYS Date: 10/28/2004
EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C
Test Method: FCC PART 90 Air Pressure: 97.0 kPa
Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 9 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
1.278 GHz	50.8 Pk	3.1 / 26.57 / 40.95 / -98.98	-59.47	V / 1.00 / 180	-46.47	n/a
1.562 GHz	57.0 Pk	3.49 / 27.06 / 42.19 / -98.98	-53.62	V / 1.00 / 180	-40.62	n/a
MAXIMIZED.						
1.562 GHz	57.35 Pk	3.49 / 27.06 / 42.19 / -98.98	-53.27	V / 1.00 / 190	-40.27	n/a
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
3.916 GHz	57.3 Pk	5.75 / 34.0 / 45.27 / -98.98	-47.2	H / 1.00 / 180	-34.2	n/a
MAXIMIZED.						
3.916 GHz	57.8 Pk	5.75 / 34.0 / 45.27 / -98.98	-46.7	H / 1.00 / 330	-33.7	n/a
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
HIGH CHANNEL 940MHz.						
1.349 GHz	56.65 Pk	3.18 / 26.61 / 41.16 / -98.98	-53.7	V / 1.00 / 90	-40.7	n/a
2.556 GHz	56.05 Pk	4.4 / 30.81 / 44.5 / -98.98	-52.22	V / 1.00 / 180	-39.22	n/a
MAXIMIZED.						
2.556 GHz	56.8 Pk	4.4 / 30.81 / 44.5 / -98.98	-51.47	V / 1.00 / 210	-38.47	n/a
MAXED ANTENNA AND ROTATED EUT 360 DEGREES.						
LOW CHANNEL 935MHz.						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 1m Vert AND TABLE ROTATED 360 DEGREES						
NO HIGHER EMISSIONS FOUND WITH ANTENNA AT 3m Vert AND TABLE ROTATED 360 DEGREES						

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS
EUT Model #: DGVL-901X00SYS Date: 10/28/2004
EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C
Test Method: FCC PART 90 Air Pressure: 97.0 kPa
Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 10 of 13

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / Substitution factor (dB)	FINAL (dBm)	POL / HGT / AZ (m)(DEG)	DELTA1 dB	DELTA2
NO NEW OR HIGHER EMISSIONS FOUND WITH HORIZONTAL POLARIZATION AT ALL AZIMUTHS.						
END OF SCAN 30 - 10000MHz.						

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Reviewed by: TKS

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RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 11 of 13

Measurement summary for limit1: -13 dBm (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 dB
213.018 MHz	78.25 Qp	1.21 / 10.62 / 26.3 / -98.98	-35.2	H / 3.00 / 270	-22.2
355.009 MHz	71.45 Qp	1.6 / 14.8 / 26.67 / -98.98	-37.8	H / 3.00 / 270	-24.8
638.999 MHz	65.75 Qp	2.1 / 19.39 / 27.05 / -98.98	-38.79	H / 1.00 / 180	-25.79
780.989 MHz	60.55 Qp	2.39 / 21.43 / 26.66 / -98.98	-41.27	H / 1.00 / 0	-28.27
497.0 MHz	62.55 Qp	1.9 / 17.29 / 27.07 / -98.98	-44.32	H / 1.00 / 0	-31.32
284.01 MHz	66.45 Qp	1.5 / 12.52 / 26.51 / -98.98	-45.02	H / 1.00 / 180	-32.02
426.001 MHz	62.6 Qp	1.71 / 16.37 / 26.79 / -98.98	-45.09	H / 3.00 / 270	-32.09
52.596 MHz	63.5 Qp	0.6 / 13.43 / 25.9 / -98.98	-47.35	V / 1.00 / 0	-34.35
50.976 MHz	62.85 Qp	0.6 / 13.9 / 25.9 / -98.98	-47.53	V / 1.00 / 0	-34.53
81.54 MHz	67.55 Qp	0.8 / 7.51 / 25.8 / -98.98	-48.92	V / 1.00 / 180	-35.92
993.982 MHz	49.85 Qp	2.73 / 23.22 / 26.4 / -98.98	-49.58	H / 1.00 / 0	-36.58
978.985 MHz	49.7 Qp	2.71 / 23.35 / 26.43 / -98.98	-49.64	H / 1.00 / 0	-36.64
79.308 MHz	66.55 Qp	0.79 / 7.71 / 25.8 / -98.98	-49.73	V / 1.00 / 180	-36.73
83.178 MHz	66.85 Qp	0.8 / 7.37 / 25.8 / -98.98	-49.76	V / 1.00 / 90	-36.76
39.366 MHz	57.2 Qp	0.5 / 17.18 / 25.9 / -98.98	-50.0	V / 1.00 / 90	-37.0
63.198 MHz	63.2 Qp	0.66 / 10.74 / 25.9 / -98.98	-50.28	V / 1.00 / 90	-37.28
30.51 MHz	53.1 Qp	0.43 / 20.2 / 25.9 / -98.98	-51.15	V / 1.00 / 90	-38.15
77.082 MHz	64.3 Qp	0.75 / 7.91 / 25.8 / -98.98	-51.82	V / 1.00 / 0	-38.82
568.001 MHz	52.9 Qp	2.03 / 18.32 / 27.01 / -98.98	-52.74	V / 1.00 / 180	-39.74
113.089 MHz	57.85 Qp	0.9 / 9.44 / 25.92 / -98.98	-56.72	V / 1.00 / 180	-43.72
133.789 MHz	58.7 Qp	1.0 / 8.35 / 26.08 / -98.98	-57.01	H / 3.00 / 270	-44.01
709.997 MHz	45.7 Qp	2.3 / 20.52 / 26.82 / -98.98	-57.28	H / 1.00 / 90	-44.28
720.269 MHz	44.7 Qp	2.3 / 20.67 / 26.76 / -98.98	-58.07	V / 1.00 / 270	-45.07
245.029 MHz	53.75 Qp	1.31 / 11.47 / 26.3 / -98.98	-58.74	H / 1.00 / 180	-45.74
360.127 MHz	49.85 Qp	1.6 / 14.84 / 26.65 / -98.98	-59.35	H / 1.00 / 270	-46.35

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS

EUT Model #: DGVL-901X00SYS Date: 10/28/2004

EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C

Test Method: FCC PART 90 Air Pressure: 97.0 kPa

Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 12 of 13

Measurement summary for limit1: -13 dBm (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 dB
184.926 MHz	54.15 Qp	1.11 / 9.85 / 26.19 / -98.98	-60.06	V / 1.00 / 0	-47.06
156.031 MHz	54.85 Qp	1.0 / 8.7 / 25.94 / -98.98	-60.37	V / 1.00 / 180	-47.37
175.765 MHz	52.95 Qp	1.1 / 9.12 / 26.11 / -98.98	-61.93	V / 1.00 / 0	-48.93
120.589 MHz	52.25 Qp	0.9 / 9.02 / 25.97 / -98.98	-62.78	V / 1.00 / 0	-49.78
227.04 MHz	48.8 Qp	1.3 / 10.94 / 26.3 / -98.98	-64.24	V / 3.00 / 180	-51.24
331.771 MHz	44.8 Qp	1.55 / 14.06 / 26.7 / -98.98	-65.27	V / 1.00 / 0	-52.27
1.065 GHz	54.15 Pk	2.83 / 26.44 / 39.78 / -98.98	-55.33	V / 1.00 / 180	-42.33
1.207 GHz	49.75 Pk	3.01 / 26.52 / 40.81 / -98.98	-60.5	V / 1.00 / 90	-47.5
1.136 GHz	48.1 Pk	2.93 / 26.48 / 40.48 / -98.98	-61.96	V / 1.00 / 270	-48.96
1.278 GHz	50.8 Pk	3.1 / 26.57 / 40.95 / -98.98	-59.47	V / 1.00 / 180	-46.47
1.349 GHz	56.65 Pk	3.18 / 26.61 / 41.16 / -98.98	-53.7	V / 1.00 / 90	-40.7
1.42 GHz	67.05 Pk	3.3 / 26.65 / 41.53 / -98.98	-43.51	V / 2.40 / 0	-30.51
1.491 GHz	55.2 Pk	3.42 / 26.69 / 41.95 / -98.98	-55.62	V / 1.00 / 90	-42.62*
1.562 GHz	57.35 Pk	3.49 / 27.06 / 42.19 / -98.98	-53.27	V / 1.00 / 190	-40.27
1.633 GHz	48.1 Pk	3.55 / 27.47 / 42.32 / -98.98	-62.18	V / 1.00 / 180	-49.18
1.704 GHz	50.4 Pk	3.62 / 27.88 / 42.5 / -98.98	-59.58	V / 1.00 / 180	-46.58
1.846 GHz	49.45 Pk	3.83 / 28.71 / 43.1 / -98.98	-60.1	H / 1.00 / 180	-47.1
1.958 GHz	46.55 Pk	3.9 / 29.36 / 43.34 / -98.98	-62.51	H / 1.00 / 180	-49.51
1.988 GHz	50.65 Pk	3.9 / 29.53 / 43.38 / -98.98	-58.28	V / 1.00 / 0	-45.28
2.13 GHz	55.6 Pk	3.97 / 29.89 / 43.76 / -98.98	-53.29	V / 1.00 / 180	-40.29
2.414 GHz	51.2 Pk	4.31 / 30.51 / 44.41 / -98.98	-57.37	H / 1.00 / 270	-44.37
2.556 GHz	56.8 Pk	4.4 / 30.81 / 44.5 / -98.98	-51.47	V / 1.00 / 210	-38.47
2.84 GHz	54.45 Pk	4.6 / 31.38 / 44.91 / -98.98	-53.46	V / 1.00 / 180	-40.46
3.266 GHz	45.8 Pk	5.0 / 32.39 / 45.2 / -98.98	-60.99	V / 1.00 / 0	-47.99
3.692 GHz	47.55 Pk	5.56 / 33.46 / 45.2 / -98.98	-57.61	V / 1.00 / 0	-44.61
3.916 GHz	57.8 Pk	5.75 / 34.0 / 45.27 / -98.98	-46.7	H / 1.00 / 330	-33.7

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

RADIATED EMISSIONS



Test Report #: WC404953 Run 1 Test Area: LTS
EUT Model #: DGVL-901X00SYS Date: 10/28/2004
EUT Serial #: N/A EUT Power: 60Hz/110VAC Temperature: 22.0 °C
Test Method: FCC PART 90 Air Pressure: 97.0 kPa
Customer: ADC TELECOM Rel. Humidity: 50.0 %

EUT Description: DIGIVANCE LRCS SMR DUAL BAND SYSTEM

Notes: (SPURIOUS CASE RADIATION)

Data File Name: 4953.dat

Page: 13 of 13

Measurement summary for limit1: -13 dBm (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 dB
4.544 GHz	48.65 Pk	6.15 / 33.82 / 44.82 / -98.98	-55.17	H / 1.00 / 0	-42.17
5.874 GHz	57.65 Pk	7.02 / 36.57 / 44.81 / -98.98	-42.55	H / 1.00 / 60	-29.55
7.832 GHz	51.8 Pk	8.27 / 37.6 / 44.42 / -98.98	-45.73	V / 1.00 / 190	-32.73

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

**Frequency Tolerance Test for ADC Inc.
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS**

EUT SMR (800 MHz)

Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
102 VAC	851.000 MHz	851.000 MHz	Yes
120 VAC	851.000 MHz	851.000 MHz	Yes
138 VAC	851.000 MHz	851.000 MHz	Yes
102 VAC	858.500 MHz	858.500 MHz	Yes
120 VAC	858.500 MHz	858.500 MHz	Yes
138 VAC	858.500 MHz	858.500 MHz	Yes
102 VAC	869.000 MHz	869.000 MHz	Yes
120 VAC	869.000 MHz	869.000 MHz	Yes
138 VAC	869.000 MHz	869.000 MHz	Yes
Temperature	Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C	851.000 MHz	851.000 MHz	Yes
-20 Deg. C	851.000 MHz	851.000 MHz	Yes
-10 Deg. C	851.000 MHz	851.000 MHz	Yes
0 Deg. C	851.000 MHz	851.000 MHz	Yes
10 Deg. C	851.000 MHz	851.000 MHz	Yes
20 Deg. C	851.000 MHz	851.000 MHz	Yes
30 Deg. C	851.000 MHz	851.000 MHz	Yes
40 Deg. C	851.000 MHz	851.000 MHz	Yes
50 Deg. C	851.000 MHz	851.000 MHz	Yes
-30 Deg. C	858.500 MHz	858.500 MHz	Yes
-20 Deg. C	858.500 MHz	858.500 MHz	Yes
-10 Deg. C	858.500 MHz	858.500 MHz	Yes
0 Deg. C	858.500 MHz	858.500 MHz	Yes
10 Deg. C	858.500 MHz	858.500 MHz	Yes
20 Deg. C	858.500 MHz	858.500 MHz	Yes
30 Deg. C	858.500 MHz	858.500 MHz	Yes
40 Deg. C	858.500 MHz	858.500 MHz	Yes
50 Deg. C	858.500 MHz	858.500 MHz	Yes
-30 Deg. C	869.000 MHz	869.000 MHz	Yes
-20 Deg. C	869.000 MHz	869.000 MHz	Yes
-10 Deg. C	869.000 MHz	869.000 MHz	Yes
0 Deg. C	869.000 MHz	869.000 MHz	Yes
10 Deg. C	869.000 MHz	869.000 MHz	Yes
20 Deg. C	869.000 MHz	869.000 MHz	Yes
30 Deg. C	869.000 MHz	869.000 MHz	Yes
40 Deg. C	869.000 MHz	869.000 MHz	Yes
50 Deg. C	869.000 MHz	869.000 MHz	Yes

**Frequency Tolerance Test for ADC Inc.
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS**

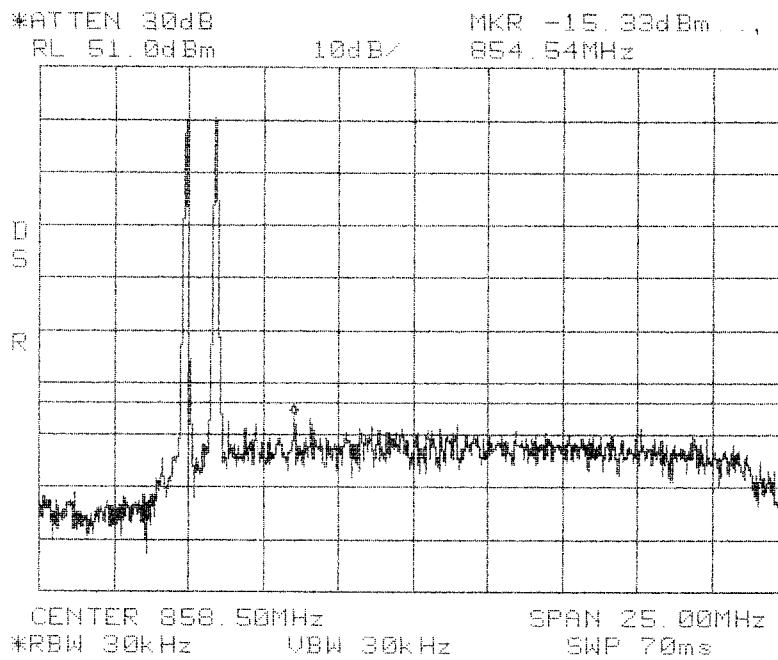
EUT SMR (900 MHz)

Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
102 VAC	935.000 MHz	935.000 MHz	Yes
120 VAC	935.000 MHz	935.000 MHz	Yes
138 VAC	935.000 MHz	935.000 MHz	Yes
102 VAC	937.500 MHz	937.500 MHz	Yes
120 VAC	937.500 MHz	937.500 MHz	Yes
138 VAC	937.500 MHz	937.500 MHz	Yes
102 VAC	940.000 MHz	940.000 MHz	Yes
120 VAC	940.000 MHz	940.000 MHz	Yes
138 VAC	940.000 MHz	940.000 MHz	Yes
Temperature	Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C	935.000 MHz	935.000 MHz	Yes
-20 Deg. C	935.000 MHz	935.000 MHz	Yes
-10 Deg. C	935.000 MHz	935.000 MHz	Yes
0 Deg. C	935.000 MHz	935.000 MHz	Yes
10 Deg. C	935.000 MHz	935.000 MHz	Yes
20 Deg. C	935.000 MHz	935.000 MHz	Yes
30 Deg. C	935.000 MHz	935.000 MHz	Yes
40 Deg. C	935.000 MHz	935.000 MHz	Yes
50 Deg. C	935.000 MHz	935.000 MHz	Yes
-30 Deg. C	937.500 MHz	937.500 MHz	Yes
-20 Deg. C	937.500 MHz	937.500 MHz	Yes
-10 Deg. C	937.500 MHz	937.500 MHz	Yes
0 Deg. C	937.500 MHz	937.500 MHz	Yes
10 Deg. C	937.500 MHz	937.500 MHz	Yes
20 Deg. C	937.500 MHz	937.500 MHz	Yes
30 Deg. C	937.500 MHz	937.500 MHz	Yes
40 Deg. C	937.500 MHz	937.500 MHz	Yes
50 Deg. C	937.500 MHz	937.500 MHz	Yes
-30 Deg. C	940.000 MHz	940.000 MHz	Yes
-20 Deg. C	940.000 MHz	940.000 MHz	Yes
-10 Deg. C	940.000 MHz	940.000 MHz	Yes
0 Deg. C	940.000 MHz	940.000 MHz	Yes
10 Deg. C	940.000 MHz	940.000 MHz	Yes
20 Deg. C	940.000 MHz	940.000 MHz	Yes
30 Deg. C	940.000 MHz	940.000 MHz	Yes
40 Deg. C	940.000 MHz	940.000 MHz	Yes
50 Deg. C	940.000 MHz	940.000 MHz	Yes

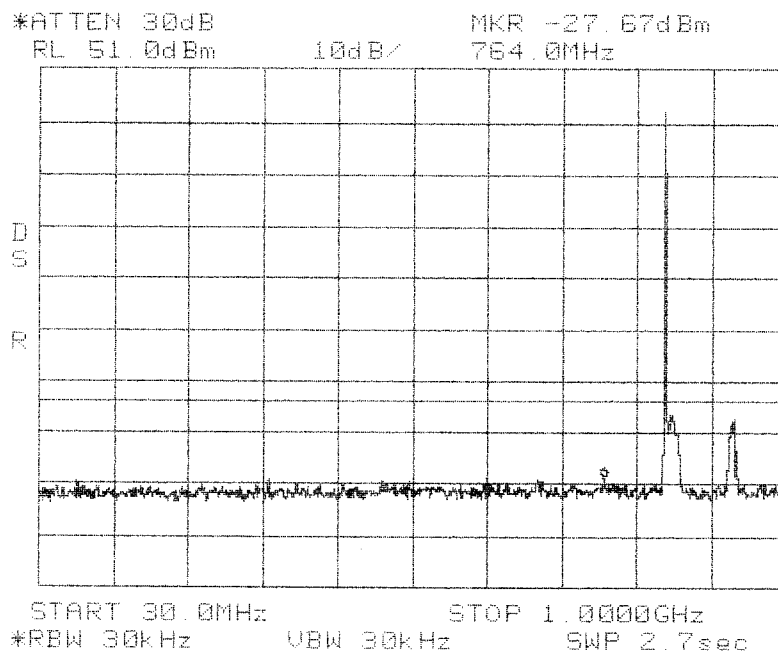
Inter-Modulation Test for ADC Inc
Digivance LRCS SMR Dual Band System
Model Numbers DGVL-901600SYS and DGVL-901900SYS

The intermodulation products test was performed for the EUT. Three tests were performed with the modulation type. Test 1 was with 2 signals input to the EUT at lower end channels. Test 2 was with 2 signals input to the EUT at upper end channels. Test 3 was with 2 signals, one at a lower end channel and one at a higher end channel. The modulation type tested was 16 QAM. An investigation was made from 30MHz to the 10th Harmonic of the highest fundamental frequency (~10GHz). The following plots show the results.

Results:
(See Plots)

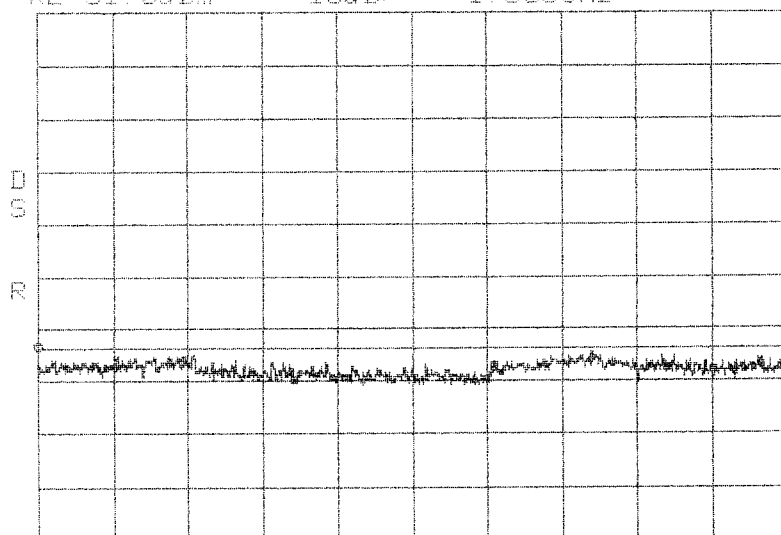


**Intermodulation
Close
Lower
16 QAM
BAND SMR
800 MHz**



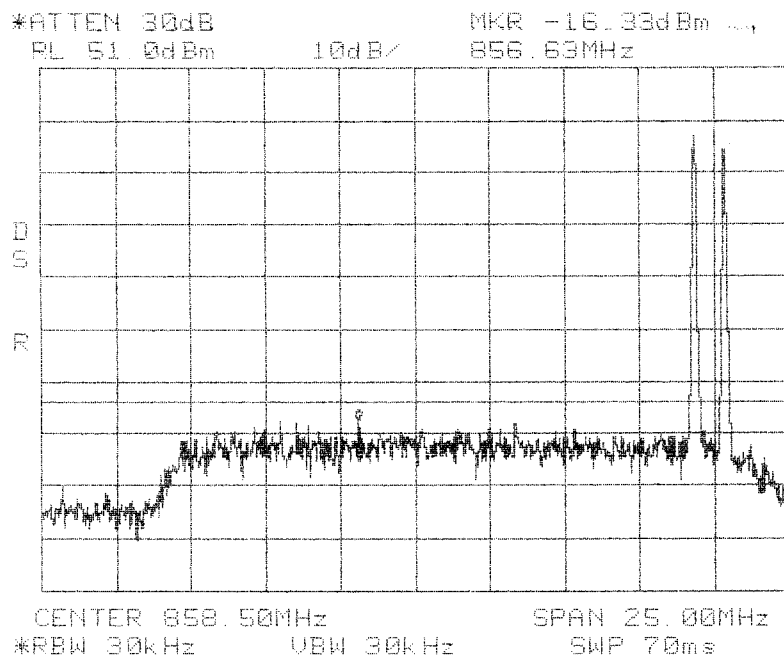
**Intermodulation
Close
Lower
16 QAM
BAND SMR
800 MHz**

*ATTEN 30dB MKR -13.50dBm
RL 51.0dBm 10dB/ 1.000GHz

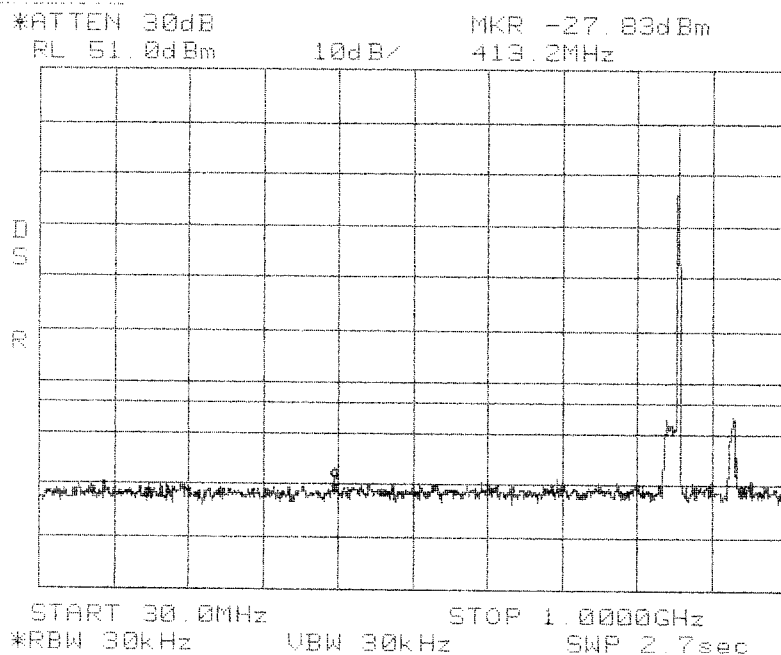


START 1.000GHz STOP 10.000GHz
*RBW 1.0MHz VBW 1.0MHz SWP 100ms

**Intermodulation
Close
Lower
16 QAM
BAND SMR
800 MHz**

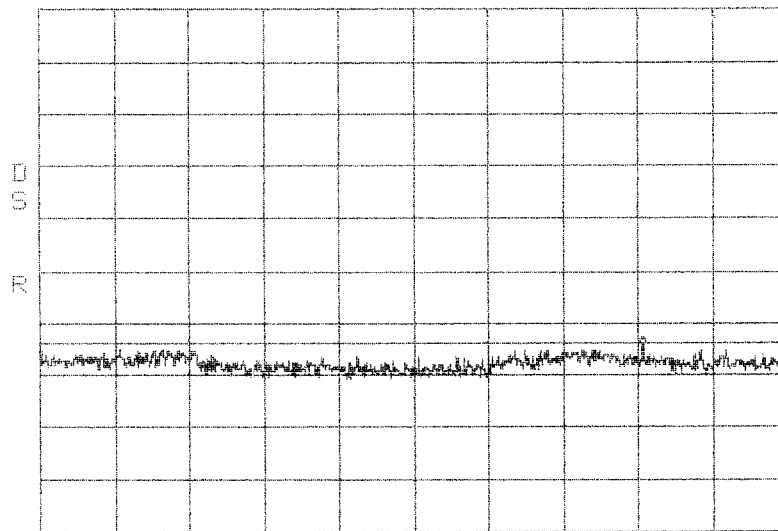


**Intermodulation
Close
Upper
16 QAM
BAND SMR
800 MHz**

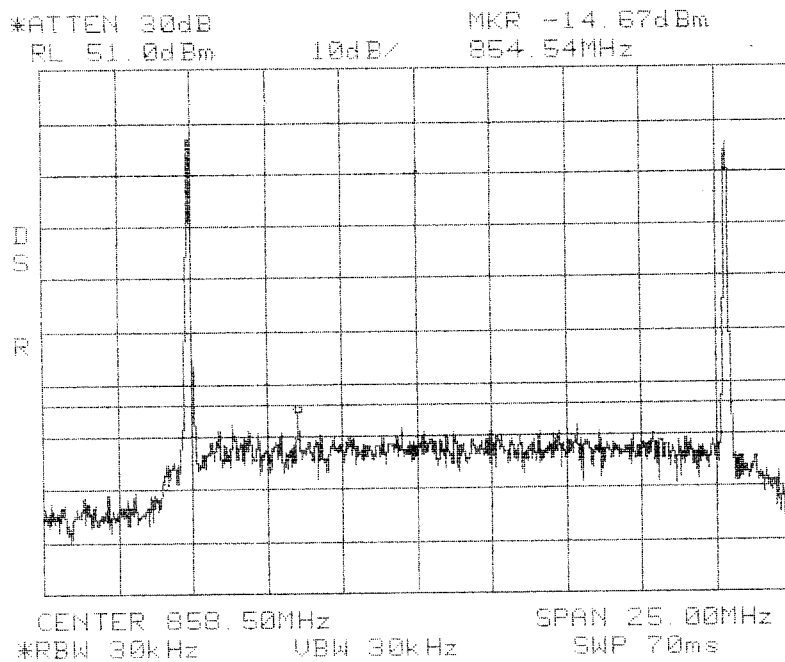


**Intermodulation
Close
Upper
16 QAM
BAND SMR
800 MHz**

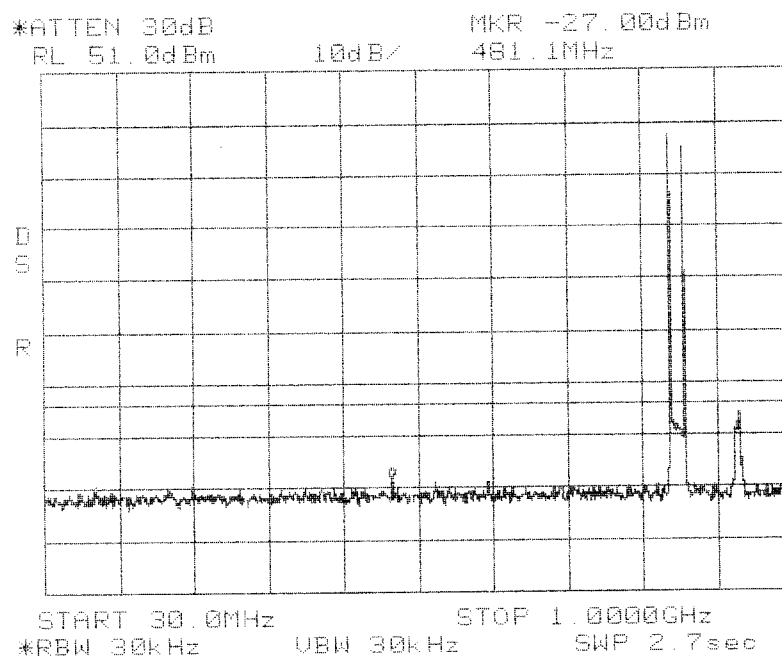
*ATTEN 30dB MKR -13.50dBm
PL 51.0dBm 10dB/ 8.260GHz



**Intermodulation
Close
Upper
16 QAM
BAND SMR
800 MHz**

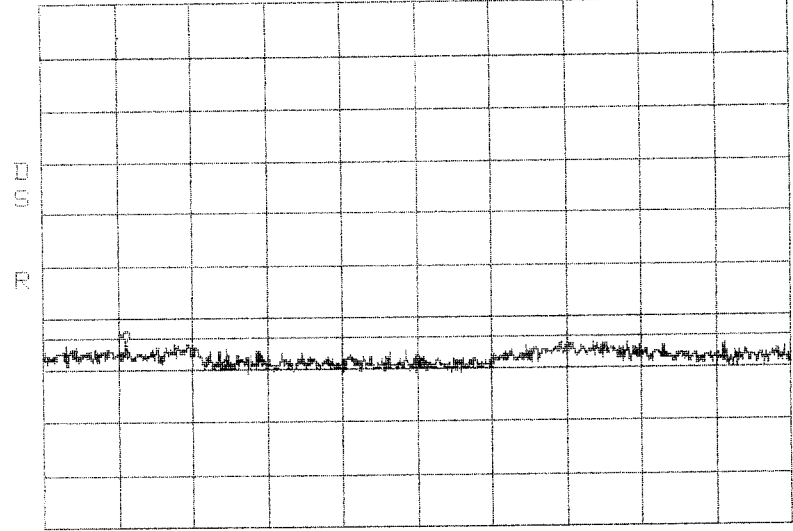


**Intermodulation
Apart
16 QAM
BAND SMR
800 MHz**



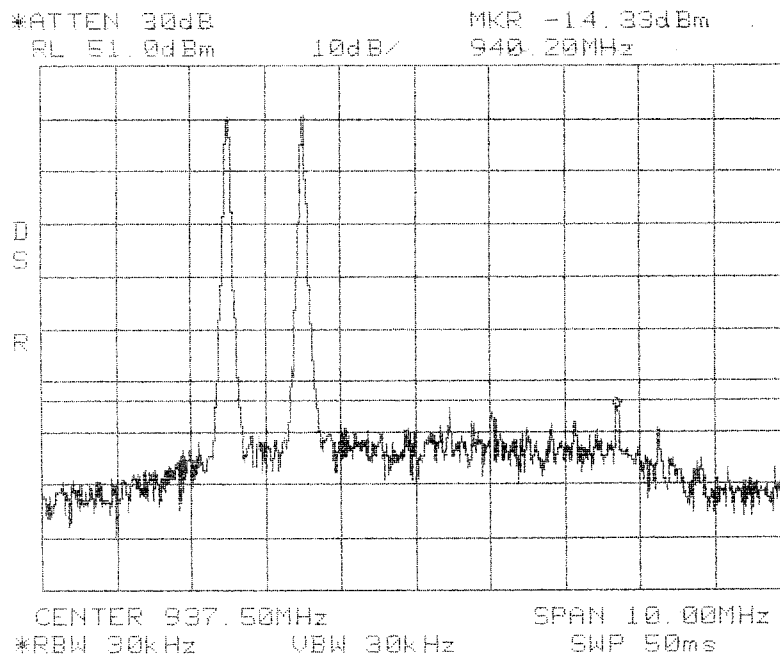
**Intermodulation
Apart
16 QAM
BAND SMR
800 MHz**

*ATTEN 30dB MKR -13.33dBm
FL 51.0dBm 10dB/ 1.990GHz

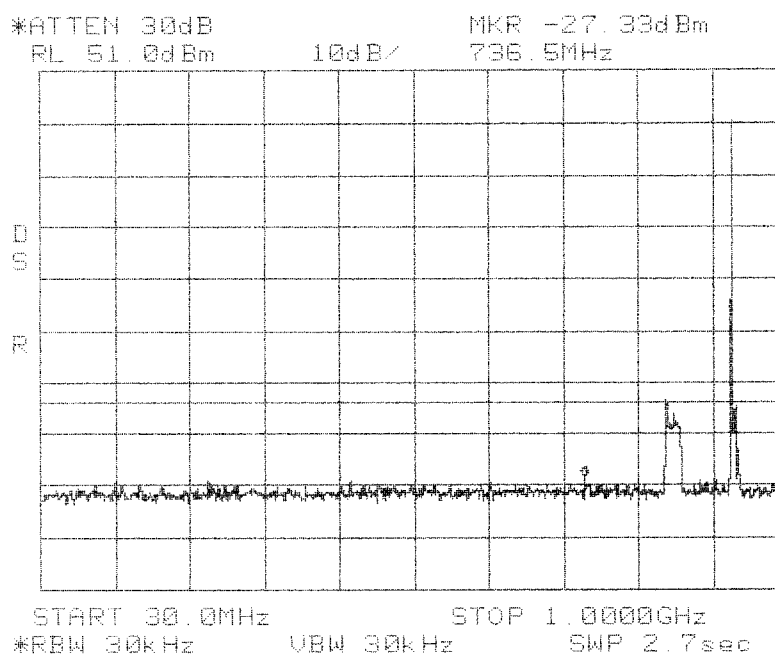


START 1.000GHz STOP 10.000GHz
*RBW 1.0MHz VBW 1.0MHz SWP 180ms

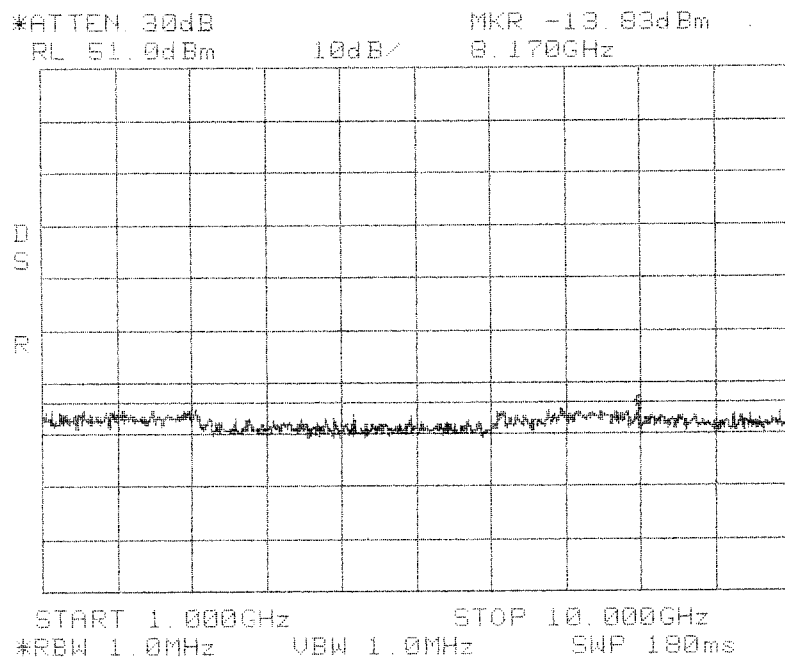
**Intermodulation
Apart
16 QAM
BAND SMR
800 MHz**



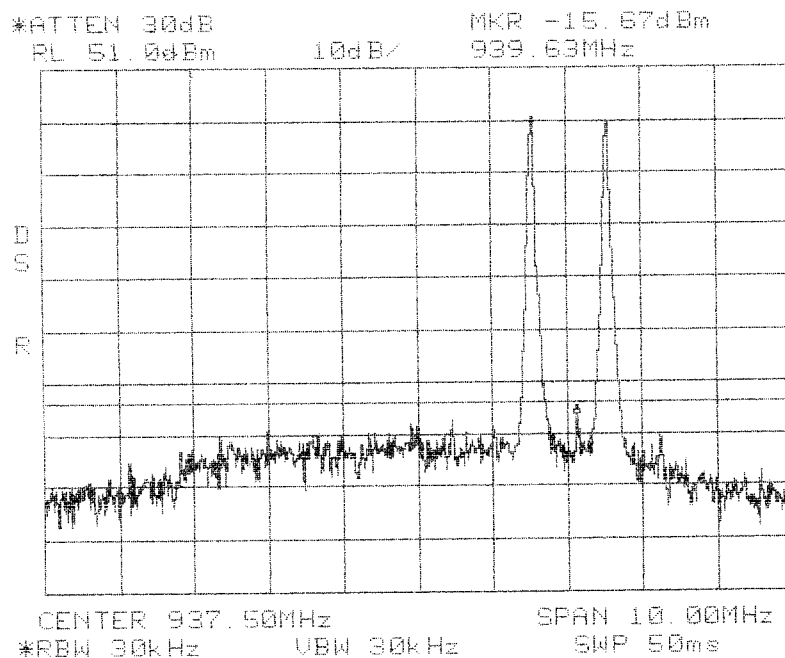
**Intermodulation
Close
Lower
16 QAM
BAND SMR
900 MHz**



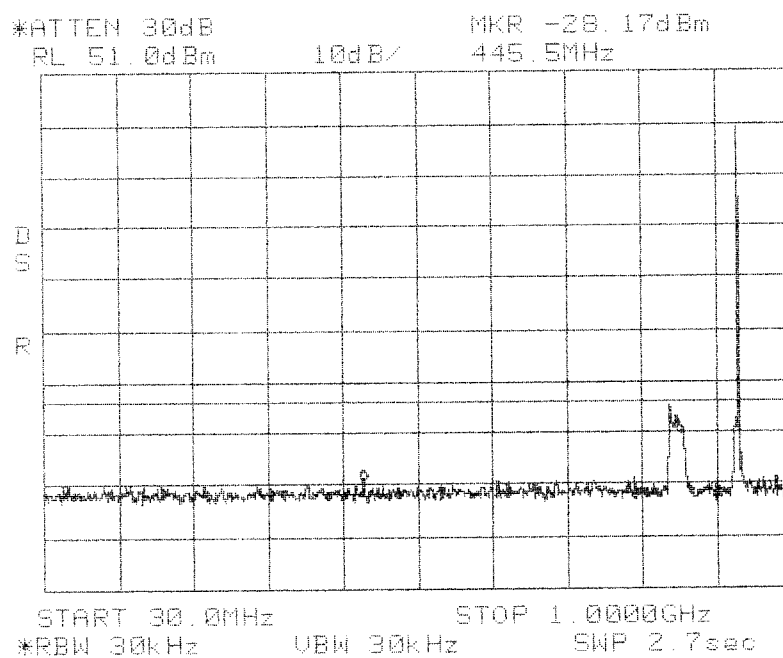
**Intermodulation
Close
Lower
16 QAM
BAND SMR
900 MHz**



**Intermodulation
Close
Lower
16 QAM
BAND SMR
900 MHz**

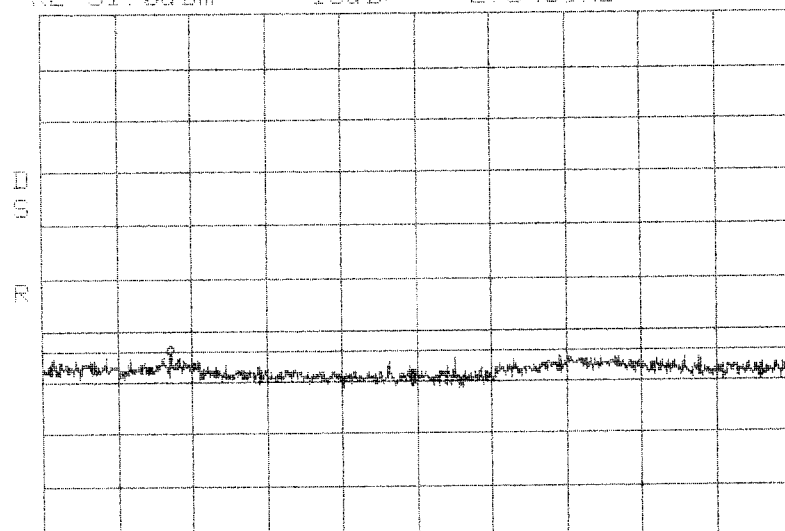


**Intermodulation
Close
Upper
16 QAM
BAND SMR
900 MHz**



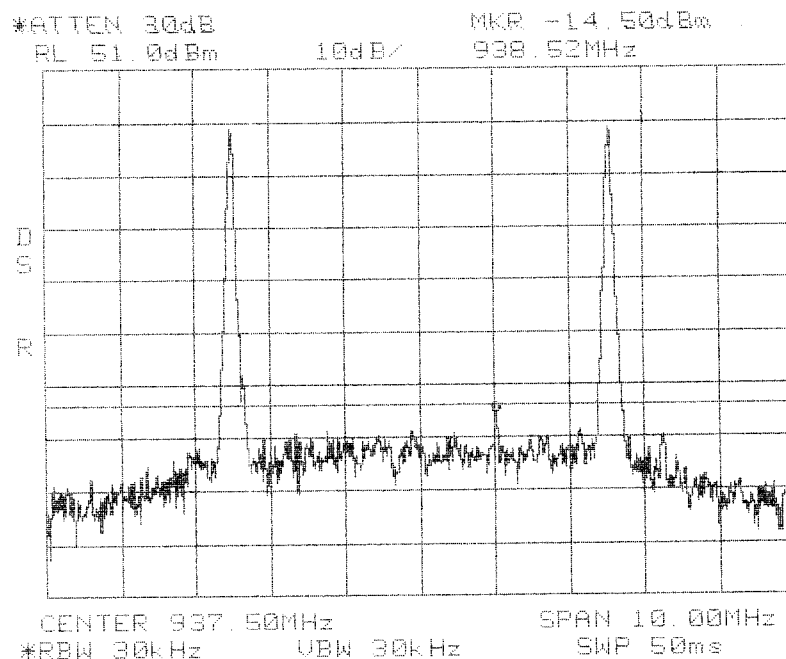
**Intermodulation
Close
Upper
16 QAM
BAND SMR
900 MHz**

*ATTEN 30dB MKR -13.67dBm
RL 51.0dBm -10dB/ 2.545GHz

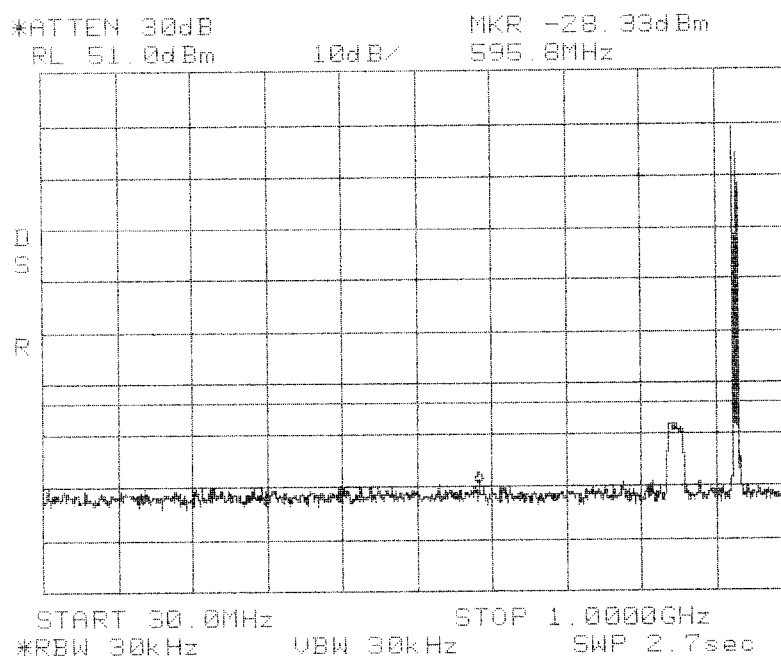


START 1.000GHz STOP 10.000GHz
*RBW 1.0MHz VBW 1.0MHz SWP 180ms

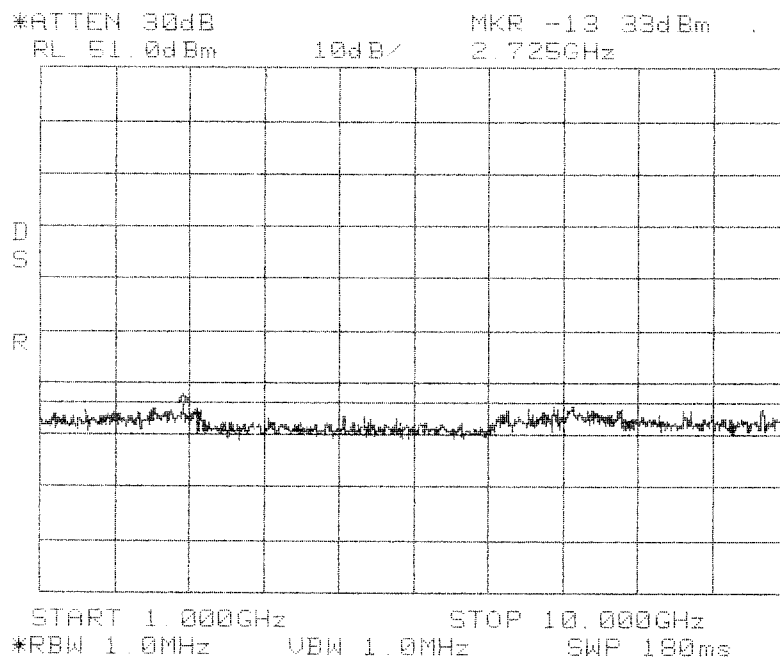
**Intermodulation
Close
Upper
16 QAM
BAND SMR
900 MHz**



**Intermodulation
Apart
16 QAM
BAND SMR
900 MHz**



**Intermodulation
Apart
16 QAM
BAND SMR
900 MHz**



**Intermodulation
Apart
16 QAM
BAND SMR
900 MHz**

Test Equipment List

Table 1 Test Equipment

Equipment	MFG/Model	ADC Serial Number	Calibration Due. (NIST)
Attenuator	Aeroflex / 49-30-33	N/A	CNR
Spectrum Analyzer	HP/HP8563E	MC27690	8-12-05
Power Meter	HP / EPM-441A	MC27670	8-5-05
Multimeter	HP / 34401A	MC17773	12-16-04
Freq. Counter	HP/5347A	MC27569	5-17-05
Temperature Chamber	Tenney Environmental	MC24315	October 05
Variable Auto Transformer	Staco/1520CT	MC/44655	CNR
Signal Generator	Agilent / E4436B	953433	3-31-06

Note: Any equipment used in testing that has a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.

TEST EQUIPMENT LIST - RADIATED EMISSIONS (Electric Field)

The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 18 GHz were performed in a horizontal and vertical polarization at the following test location:

☐ - Test not applicable

- - Wild River Lab Large Test Site (Open Area Test Site)
- ☐ - Wild River Lab Small Test Site (Open Area Test Site)
- ☐ - Oakwood Lab (Open Area Test Site)
- ☐ - Wild River Lab Screen Room

at a test distance of:

- ☐ - 1 meters
- - 3 meters
- ☐ - 10 meters

Test equipment used :

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	3204	EM-6917B	Electro-Metrics	Biconicallog Periodic	102	21-Oct-05
■ -	8052	8566B	Hewlett-Packard	Spectrum Analyzer	2115a00853	14-Aug-05
■ -	8051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	14-Aug-05
■	2682	85650A	Hewlett-Packard	Quasi-Peak Adapter	2811A01127	14-Aug-05
■ -	3962	ZHL-1042J	Mini-Circuits	Preamplifier	D120403-2	Code B 09-Feb-05
■ -	3957	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0001	Code B 17-Oct-05
■ -	2075	3115	Electro-Mechanics (EMCO)	Ridge Guide Ant. 1-18 GHz	9001-3275	19-Nov-04

Cal Code B = Calibration verification performed internally.

Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- NOTE: This information will be input into your test report as shown below.
Press the F1 key at any time to get HELP for the current field selected.

Company: ADC Inc.

Address: P.O. Box 1101
Minneapolis, MN 55440-1101

Contact: Mark F. Miska Position: Compliance Engineer

Phone: 952-403-8340 Fax: 952-403-8560

E-mail Address: mark.miska@adc.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description Transports RF between a remote antenna and base station.

EUT Name Digivance LRCS SMR Dual Band System

Model No.: DGVL-901600SYS and DGVL-901900SYS Serial No.: None

Product Options: None

Configurations to be tested: SMR System

Test Objective

- | | |
|--|---|
| ☐ EMC Directive 89/336/EEC (EMC) | ☒ FCC: Class ☐ A ☐ B Part <u>90</u> |
| Std: _____ | ☐ VCCI: Class ☐ A ☐ B |
| ☐ Machinery Directive 89/392/EEC (EMC) | ☐ BCIQ: Class ☐ A ☐ B |
| Std: _____ | ☐ Canada: Class ☐ A ☐ B |
| ☐ Medical Device Directive 93/42/EEC (EMC) | ☐ Australia: Class ☐ A ☐ B |
| Std: _____ | ☐ Other: _____ |
| ☐ Vehicle Directive 72/245/EEC (EMC) | |
| Std: _____ | |
| ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

EMC Test Plan and Constructional Data Form

**TÜV Product Service Certification Requested**

- ☐ Attestation of Conformity (AoC) ☐ International EMC Mark (IEM)
☐ Certificate of Conformity (CoC) ☐ Compliance Document
Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III
(Press **F1** when field is selected to show additional information on Protection Class.)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TÜV Product Service should:

- ☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
☐ Continue testing to complete test series.
☐ Continue testing to define corrective action.
☐ Stop testing.

EUT Specifications and Requirements

Length: 19" Width: 51" Height: 27" Weight: 62 LBS

Power Requirements

*Regulations require testing to be performed at typical power ratings in the countries of intended use.
(i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)*

Voltage: 115 VAC (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: 1

Current (Amps/phase(max)): 2.5 Current (Amps/phase(nominal)): 1.5

Other _____

Other Special Requirements

none

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Host indoor only with STM and LPA indoor or outdoor. System is typically employed as a Microcell.

EMC Test Plan and Constructional Data Form



EUT Power Cable

☐	Permanent	OR	☒	Removable	Length (in meters): <u>1</u>
☐	Shielded	OR	☒	Unshielded	
☐	Not Applicable				

EMC Test Plan and Constructional Data Form



EUT Interface Ports and Cables												
Interface			Shielding									
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE:												
RS232	☐	☒	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒	☐
RF "N" type	☒	☐	5	☒	☐	Braid	Coaxial	N	50 Ohms	>3	☒	☐
Alarm	☒	☐	1	☐	☒	Not Specified	Coaxial	6 Pin Standoff		>3	☒	☐
Alarm	☒	☐	1	☐	☒	Not Specified	N/A	4 Pin Standoff		>3	☒	☐
Fiber	☐	☒	4	☐	☒	N/A	N/A	SC	N/A	>3	☒	☐
9 Pin Din	☐	☒	4	☒	☐	Not Specified	AC Coupled	Din		3	☒	☐
AC power	☒	☐	1	☐	☒	N/A				>3	☒	☐
Battery Connection	☒	☐	1	☐	☒	N/A	N/A	2 Pin Standoff		1	☒	☐
STM to Amp Interconnect	☒	☐	1	☐	☒	Varied		Terminal		1	☒	☐
Net In	☒	☐	1	☐	☒	Not Specified	CAT 5	RJ-45		3	☐	☐
Net Out	☒	☐	1	☐	☒	Not Specified	CAT 5	RJ-45		3	☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: Version 3.01.04

Description: Digivance Element Management System (DEMS). System Management and Interface Matching Software.

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Max composite in and out
- 2.
- 3.

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
Host Unit	DGVL-901000HU	None	
STM	DGVL-901000STM	None	
LPA	DGVL-901000LPA	None	
Digivance LRCS SMR Dual Band System Models DGVL-901600SYS and DGVL-901900SYS consist of the HU, STM, and LPA.			

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)

<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Signal Generator	Agilent E4436B	963739	
Power Supply	Xantrex HPD 60-5	MC 27764	

Oscillator Frequencies

<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>

Power Supply

<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
None		

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

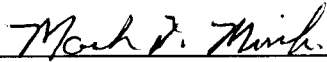
Description	Manufacturer	Part # or Value	Qty	Component # / Location
None				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

None

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures



 Customer authorization to perform tests
according to this test plan.

10-28-04

Date

Test Plan/CDF Prepared By (please print)

Date

Reviewed by TÜV Product Service Associate

Date

RADIATED EMISSIONS

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the FCC limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B. The amplifier gain is automatically accounted for by using an analyzer offset.

Example:

FREQ (MHz)	LEVEL (dB μ V)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)			FINAL (dB μ V/m)	POL/HGT/AZ (m) (deg)			DELTA1 FCC
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5 = 29.1	V	1.0	0.0	-10.9

SUBSTITUTION ANTENNA

The substitution antenna is used to replace the EUT for tests in which a transmitting parameter(i.e. frequency error, effective radiated power, spurious emissions and adjacent channel power) is being measured. The substitution antenna is connected to a calibrated signal generator. The frequency of the calibrated signal generator is set to the frequency of the emission component detected. The test antenna is raised and lowered through the specified range of height to ensure the maximum signal is received. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the emission component was measured, corrected for any change of input attenuator setting of the measuring receiver. The input level to the substitution antenna is recorded as power level, corrected for any change of input attenuator setting of the measuring receiver.