

Data Sheets for Test Report 127109- OBD ½ Wireless Vehicle Interface XXX-WI-916

FOR: EASE Simulation, Inc.
FCC ID No: O8A-WI-916
EUT: OBD ½ Wireless Vehicle Interface
MANUFACTURER: EASE Simulation Inc.
State Route 492, Box 3011
New Milford, PA 18834
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Contact for any questions Bridget A. Keesser
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Data sheet 1	Conducted emissions plotted graph
Data sheet 2	Conducted emissions data
Data sheet 3	Conducted emissions plotted graph
Data sheet 4	Conducted emissions data
Data sheet 5	Conducted emissions plotted graph
Data sheet 6	Conducted emissions data
Data sheet 7	Conducted emissions plotted graph
Data sheet 8	Conducted emissions data
Data sheet 9	Conducted emissions data
Data sheet 10	Radiated emissions plotted graph
Data sheet 11	Radiated emissions data
Data sheet 12	Section 15.249 Radiated emissions data
Data sheet 13	Occupied bandwidth
Data sheet 14	Occupied bandwidth

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

17 JUL 2000 09:24:52

PEAK

100

80

60

40

20

.45

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
ACTIVELY COMMUNICATING
TEST No. 1 LINE @120VAC/60HZ

CLASS B

1

10

30

FREQUENCY [MHz]

18 031

INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 17 JULY 2000 TEST No.: 1
TITLE OF TEST: FCC PART 15 CLASS B CONDUCTED EMISSIONS
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL -ACTIVE COMMUNICATION BETWEEN BASE & VEHICLE
SERIAL No.: N/A (BASE UNIT)
FREQUENCY RANGE: 450kHz - 30MHz SENSOR LOCATION: LINE
INPUT POWER: 120VAC/60Hz TEMP: 74.6 f HUM: 58.4 % BAR: 29.94 "
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT, TRANSMIT @ 916.48MHz RECIEVE @ 905.78MHz

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WORLD COMPLIANCE CENTER 17 Jul 2000 09:24:52

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1. CONDUCTED EMISSIONS TEST SETUPS
1.1 FCC PART 15 CLASS B

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EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
ACTIVELY COMMUNICATING
TEST No. 1 LINE @120VAC/60Hz

23 highest Peaks above -50 dB of Limit Line #1
peak criteria = 1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.67	39.8	-8.2
2	.4812	38.4	-9.6
3	.4693	38.3	-9.7
4	.5082	37.9	-10.1
5	.7867	36.9	-11.1
6	.7079	36.6	-11.4
7	.53	36.2	-11.8
8	.6704	35.7	-12.3
9	.5504	35.6	-12.4
10	.5644	35.3	-12.7
11	.5961	34.7	-13.3
12	.6268	34.7	-13.3
13	.6087	34.6	-13.4
14	.6348	34.5	-13.5
15	.8805	34	-14.0
16	13.69	33.5	-14.5
17	.9299	32.7	-15.3
18	.9417	32.1	-15.9
19	.9657	31.2	-16.8
20	.9779	30.3	-17.7
21	17.76	30.3	-17.7
22	1.016	30	-18.0
23	.9945	29.7	-18.3

19 of 31

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

PEAK

17 JUL 2000 09:46:10

100

80

60

40

20

.45

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
ACTIVELY COMMUNICATING
TEST No. 2 NEUT @ 120VAC/60HZ

CLASS B

1

10

30

FREQUENCY [MHz]

20931

INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 17 JULY 2000 TEST No.: 2
TITLE OF TEST: FCC PART 15 CLASS B CONDUCTED EMISSIONS
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL -ACTIVE COMMUNICATION BETWEEN BASE & VEHICLE
SERIAL No.: N/A (BASE UNIT)
FREQUENCY RANGE: 450kHz - 30MHz SENSOR LOCATION: NEUTRAL
INPUT POWER: 120VAC/60Hz TEMP: 74.6 f HUM: 58.4 % BAR: 29.94 "
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT, TRANSMIT @ 916.48MHz RECIEVE @ 905.78MHz

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WORLD COMPLIANCE CENTER 17 Jul 2000 09:46:10

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1. CONDUCTED EMISSIONS TEST SETUPS
1.1 FCC PART 15 CLASS B

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EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
ACTIVELY COMMUNICATING
TEST No. 2 NEUT @ 120VAC/60Hz

23 highest Peaks above -50 dB of Limit Line #1
peak criteria = 1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.72	36.8	-11.2
2	11.48	35.7	-12.3
3	.5345	32.5	-15.5
4	11.05	32.1	-15.9
5	.5861	31.7	-16.3
6	.5621	31.6	-16.4
7	.4673	31.5	-16.5
8	.5692	31.4	-16.6
9	11.97	31.4	-16.6
10	.5412	31.3	-16.7
11	.5527	31.3	-16.7
12	.6242	31.2	-16.8
13	.6537	31.2	-16.8
14	.4772	31	-17.0
15	12.22	31	-17.0
16	.6401	30.9	-17.1
17	.5936	30.8	-17.2
18	.6036	30.8	-17.2
19	11.82	30.8	-17.2
20	.5212	30.5	-17.5
21	.4956	30.3	-17.7
22	11.29	30.3	-17.7
23	.4833	30.2	-17.8

21 731

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

17 Jul 2000 09:58:20

PEAK

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 3 LINE @ 120VAC/60Hz

CLASS B

100

80

60

40

20

.45

1

10

30

FREQUENCY [MHz]

22 831

INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 17 JULY 2000 TEST No.: 3
TITLE OF TEST: FCC PART 15 CLASS B CONDUCTED EMISSIONS
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL - VEHICLE UNIT IN UTILITY MODE
SERIAL No.: N/A (VEHICLE UNIT)
FREQUENCY RANGE: 450kHz - 30MHz SENSOR LOCATION: LINE
INPUT POWER: 120VAC/60Hz TEMP: 74.6 f HUM: 58.4 % BAR: 29.94 "
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT, NO ACTIVE TRANSMISSION IN THIS MODE
BASE UNIT NOT INVOLVED IN THIS PROCESS.

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WORLD COMPLIANCE CENTER	17 Jul 2000	09:58:20
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1. CONDUCTED EMISSIONS TEST SETUPS
1.1 FCC PART 15 CLASS B

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EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 3 LINE @ 120VAC/60Hz

23 highest Peaks above -50 dB of Limit Line #1
peak criteria = 1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4853	39.4	-8.6
2	12.17	38.3	-9.7
3	.7321	37.9	-10.1
4	.7139	37.8	-10.2
5	.7764	37.6	-10.4
6	.5527	36.5	-11.5
7	.6592	36.2	-11.8
8	.5644	36	-12.0
9	.5716	35.5	-12.5
10	.5788	35.5	-12.5
11	.8551	35.5	-12.5
12	11.72	35.3	-12.7
13	.9068	33.8	-14.2
14	13.63	32.5	-15.5
15	.9861	30.6	-17.4
16	1.037	30.4	-17.6
17	1.003	30.3	-17.7
18	17.76	30.3	-17.7
19	1.072	29.5	-18.5
20	11.92	29.1	-18.9
21	1.095	28.6	-19.4
22	6.143	28.4	-19.6
23	1.147	28.3	-19.7

23 931

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

17 Jul 2000 10:07:36

PEAK

100

80

60

40

20

.45

1

10

30

FREQUENCY [MHz]

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 4 NEUT @ 120VAC/60Hz

CLASS B

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

17 Jul 2000 10:07:36

QUASI-PEAK

100

80

60

40

20

.45

1

10

30

FREQUENCY [MHz]

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 4 NEUT @ 120VAC/60Hz

CLASS B

24831

INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 17 JULY 2000 TEST No.: 4
TITLE OF TEST: FCC PART 15 CLASS B CONDUCTED EMISSIONS
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL - VEHICLE UNIT IN UTILITY MODE
SERIAL No.: N/A (VEHICLE UNIT)
FREQUENCY RANGE: 450kHz - 30MHz SENSOR LOCATION: NEUTRAL
INPUT POWER: 120VAC/60Hz TEMP: 74.6 f HUM: 58.4 % BAR: 29.94 "
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT, NO ACTIVE TRANSMISSION IN THIS MODE
BASE UNIT NOT INVOLVED IN THIS PROCESS.

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WORLD COMPLIANCE CENTER	17 Jul 2000	10:07:36
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1. CONDUCTED EMISSIONS TEST SETUPS
1.1 FCC PART 15 CLASS B

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EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 4 NEUT @ 120VAC/60Hz

23 highest Quasi-Peaks above -50 dB of Limit Line #1
peak criteria = 1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.72	34.7	-13.3
2	11.48	29.3	-18.7
3	11.29	23.2	-24.8
4	11.1	22.4	-25.6
5	11.01	21.5	-26.5
6	10.87	19.5	-28.5
7	10.64	17.6	-30.4
8	10.73	17.5	-30.5
9	13.18	12.1	-35.9

25731

INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 17 JULY 2000 TEST No.: 4
TITLE OF TEST: FCC PART 15 CLASS B CONDUCTED EMISSIONS
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL - VEHICLE UNIT IN UTILITY MODE
SERIAL No.: N/A (VEHICLE UNIT)
FREQUENCY RANGE: 450kHz - 30MHz SENSOR LOCATION: NEUTRAL
INPUT POWER: 120VAC/60Hz TEMP: 74.6 f HUM: 58.4 % BAR: 29.94 "
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT, NO ACTIVE TRANSMISSION IN THIS MODE
BASE UNIT NOT INVOLVED IN THIS PROCESS.

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WORLD COMPLIANCE CENTER 17 Jul 2000 10:07:36

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1. CONDUCTED EMISSIONS TEST SETUPS
1.1 FCC PART 15 CLASS B

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EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 4 NEUT @ 120VAC/60Hz

23 highest Peaks above -50 dB of Limit Line #1
peak criteria = 1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	11.72	45.6	-2.4
2	11.43	35	-13.0
3	11.57	35	-13.0
4	.5837	32.9	-15.1
5	.5412	32.7	-15.3
6	.4557	32.6	-15.4
7	.5886	32.6	-15.4
8	.5481	32.3	-15.7
9	12.38	32.3	-15.7
10	.5764	32.2	-15.8
11	.6113	32.2	-15.8
12	.6242	32.1	-15.9
13	.6321	32.1	-15.9
14	.6962	32.1	-15.9
15	.5961	32	-16.0
16	12.12	32	-16.0
17	.4654	31.9	-16.1
18	.6537	31.9	-16.1
19	11.82	31.9	-16.1
20	.6455	31.8	-16.2
21	.4752	31.6	-16.4
22	12.02	31.6	-16.4
23	.6592	31.4	-16.6

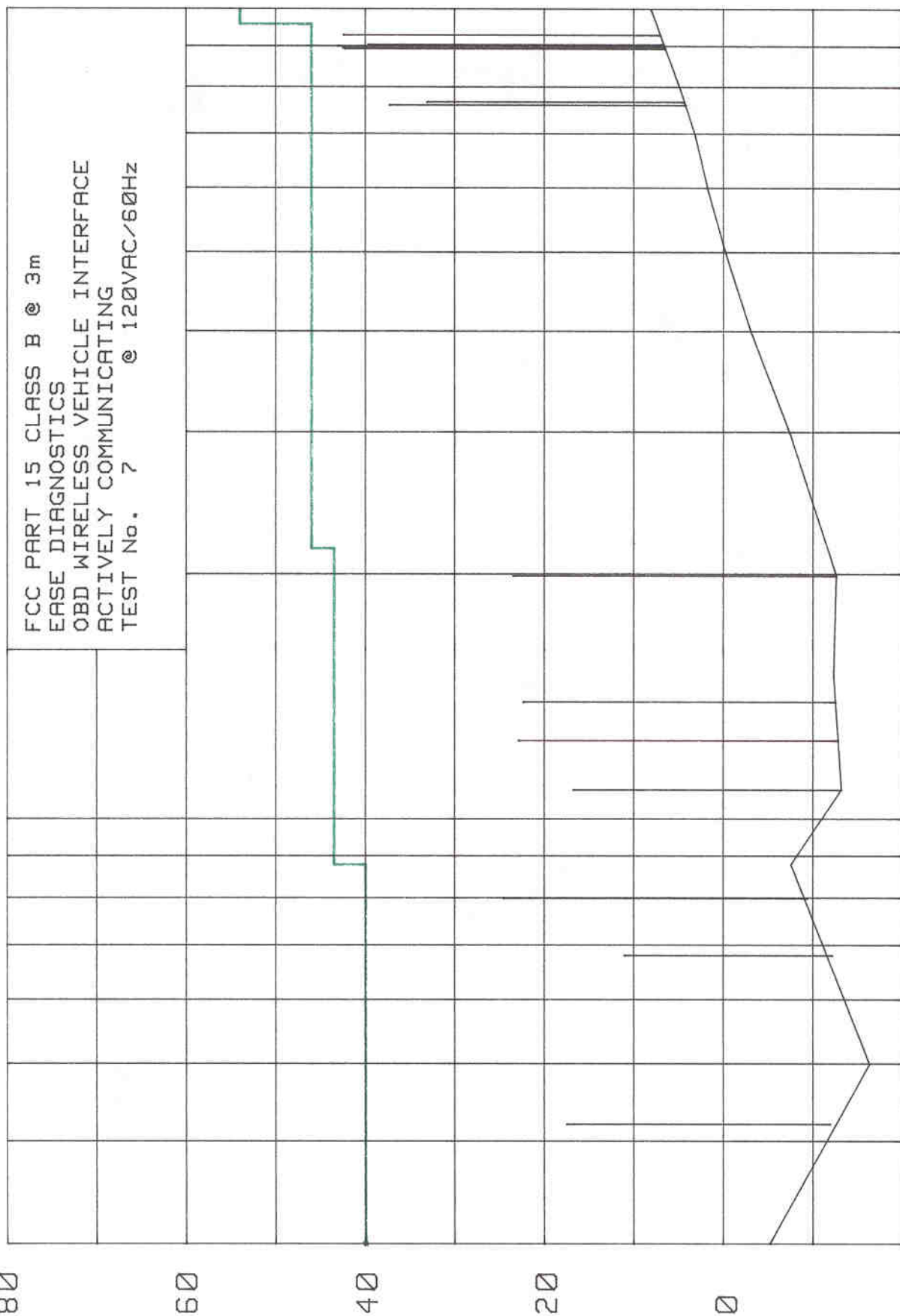
26 731

WORLD COMPLIANCE CENTER

EMISSION LEVEL [dBuV/m]

hp

FCC PART 15 CLASS B @ 3m
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
ACTIVELY COMMUNICATING
TEST No. 7 @ 120VAC/60Hz



100

30

1000

FREQUENCY [MHz]

FINAL SIGNALS

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INSTRUMENT SPECIALTIES CO., INC
WORLD COMPLIANCE CENTER
TEST DATA

REPORT No.: 127109 DATE: 19 JULY 2000 TEST No.: 7
TITLE OF TEST: FCC PART 15 CLASS B RADIATED EMISSIONS @ 3m
CUSTOMER: EASE DIAGNOSTICS
EUT DESCRIPTION: OBD WIRELESS VEHICLE INTERFACE
TEST MODE: OPERATIONAL - ACTIVE COMMUNICATION BETWEEN BASE & VEHICLE
SERIAL No.: N/A
FREQUENCY RANGE: 30MHz - 1000MHz SENSOR LOCATION/POLARIZATION: WORSE CASE
INPUT POWER: 120VAC/60Hz TEMP: 75.1f HUM: 59.3% BAR: 30.02"
TEST PERFORMED BY: EUGENE P. CLARKE SR.
TEST RESULTS: COMPLIES
TEST CONDITIONS: TABLE TOP ARRANGEMENT
TRANSMIT @ 916.48MHz, RECEIVE @ 905.78MHz

* INDICATES NOISE FLOOR READING

PRODUCT EMISSIONS

FCC PART 15 CLASS B @ 3m Data File: TEST No. 7 19 Jul 2000 13:51

No	EMISSION	SPEC LIMIT	MEASUREMENTS			POL	SITE		CORR FACTOR	COMMENTS
	FREQUENCY MHz		ABS	dLIM	MODE		HGT	AZM		
			dBuV/m	dB			cm	deg	dB	
1	42.078	39.0	17.5	-21.5	PK	V	100	0	-18.4	*
2	68.030	39.0	11.1	-27.9	PK	V	100	0	-24.5	*
3	79.995	39.0	24.6	-14.4	PK	H	400	180	-23.4	
4	108.900	43.5	16.8	-26.7	PK	V	100	0	-19.5	*
5	125.279	43.5	22.9	-20.6	PK	V	100	270	-18.3	*
6	139.694	43.5	22.4	-21.1	PK	V	100	0	-18.1	*
7	199.795	43.5	23.5	-20.0	PK	H	100	180	-19.9	
8	762.661	46.4	37.3	-9.1	QP	V	150	0	-3.9	
9	769.410	46.4	33.1	-13.3	QP	V	150	0	-3.8	
10	895.062	46.4	42.3	-4.1	QP	V	150	0	-1.6	
11	897.183	46.4	42.5	-3.9	QP	V	150	0	-1.5	
12	902.121	46.4	43.1	-3.3	QP	V	200	0	-1.5	
13	905.772	46.4	39.7	-6.7	QP	V	100	180	-1.4	
14	930.749	46.4	42.4	-4.0	QP	V	110	180	-0.9	

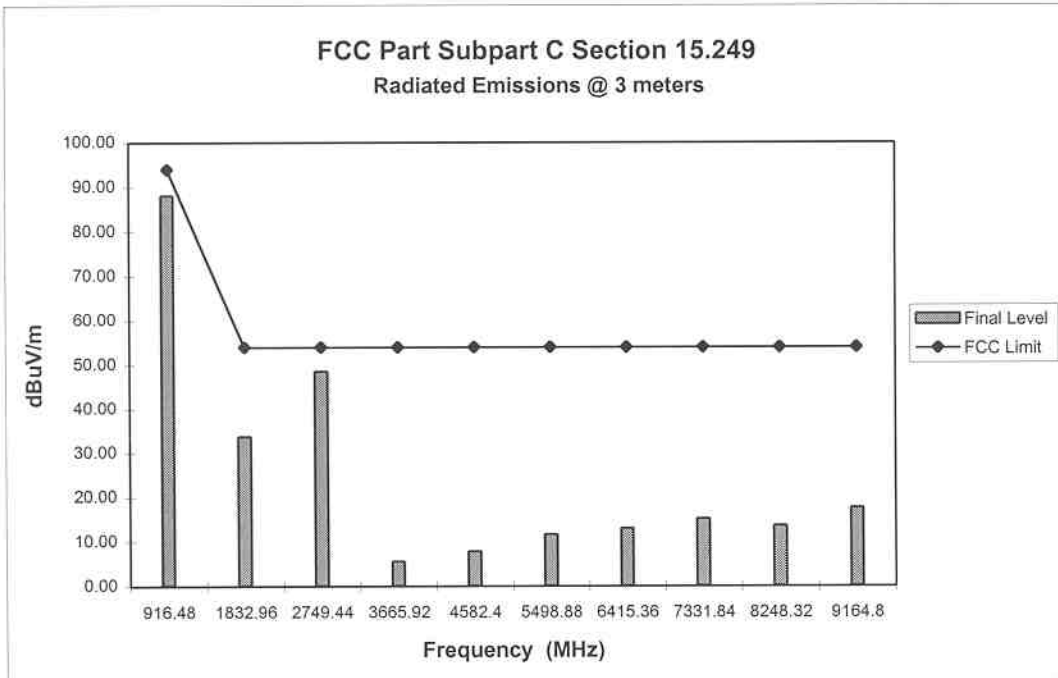
28 of 71

FCC Part 15 Subpart C Section 15.249 **Radiated Emissions @ 3 Meters** **Data Sheet**

Date : 19-Jul-00
Customer Ease Diagnostics
Tech : Eugene P. Clarke Sr.
EUT : OBD Wireless Vehicle Interface

	Frequency (MHz)	Measured Level (dBuV)	Antenna Factor +(dB)	Cable Loss +(dB)	Preamp Gain -(dB)	Final Level (dBuV/m)	Spec Limit (dBuV/m)	Polarity (V/H)	Delta to Limit	Restricted Bands
1	916.48	88.2	23.2	2	25.2	88.20	93.97	Vertical	-5.77	No
2	1832.96	41.17	25.82	3.9	37.1	33.79	53.97	Vertical	-20.18	No
3	2749.44	49.5	30.36	6.4	37.7	48.56	53.97	Vertical	-5.41	Yes
4	3665.92	6.17	30.47	6.40	37.40	5.64	53.97	Vertical	-48.33	Yes
5	4582.4	5.67	33.13	6.40	37.30	7.90	53.97	Vertical	-46.07	Yes
6	5498.88	6.67	34.18	7.70	36.85	11.70	53.97	Horizontal	-42.27	No
7	6415.36	5.67	35.31	10.60	38.50	13.08	53.97	Horizontal	-40.89	No
8	7331.84	7.17	36.48	11.90	40.40	15.15	53.97	Vertical	-38.82	Yes
9	8248.32	4.5	37.56	10.60	39.00	13.66	53.97	Vertical	-40.31	Yes
10	9164.8	8.17	37.65	10.40	38.60	17.62	53.97	Horizontal	-36.35	Yes

Equipment used :
Low loss cables , S/n 329 (3M), S/n 338 (3m), S/n 331 (1m)
HP8449B Preamp
EMCO 3155 Antenna S/N: 2845
HP8566B Spectrum Analyzer



29 of 31

WORLD COMPLIANCE CENTER
EMISSION LEVEL [dBuV]

17 Jul 2000 09:58:20

PEAK

FCC PART 15 CONDUCTED EMISSIONS
EASE DIAGNOSTICS
OBD WIRELESS VEHICLE INTERFACE
VEHICLE UNIT IN UTILITY MODE
TEST No. 3 LINE @ 120VAC/60Hz

CLASS B

100

80

60

40

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.45

1

10

30

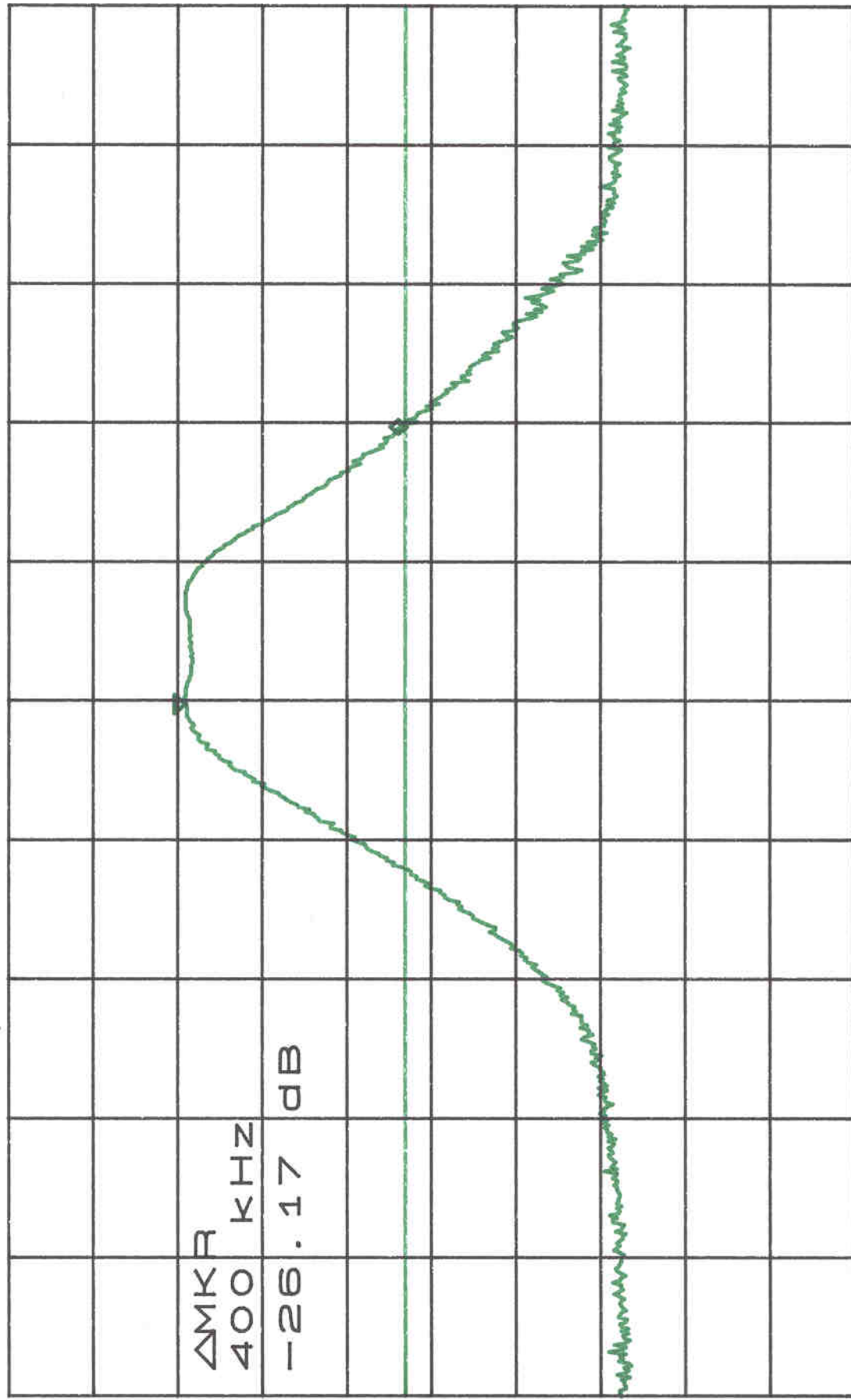
FREQUENCY [MHz]

22 831

ATTEN 20dB

 $\Delta MKR -26.17dB$ RL 117.0dB μV

400KHZ / 10dB / 400KHZ



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CENTER 916.420MHZ

SPAN 2.000MHZ

*RBW 100KHZ

VBW 100KHZ

*SWP 50ms