MEASUREMENT AND TECHNICAL REPORT

SOLECTEK CORPORATION
6370 Nancy Ridge Drive
San Diego, CA 92121

DATE: 03 April 2001

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	Skymate	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: **Defer until:**	No: X
Company Name **agrees to notify the Commission by:** **of the intended date of announcement of the product so that the grant can be issued on that date.**	N/A	
Transition Rules Request per 15.37?	Yes:	*No:

(*) FCC Part 15, Paragraphs 15.205; 15.209; 15.247(a)(2); 15.247(b)(1); 15.247(c); and 15.247(d)

Report Prepared by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 546 3999
Fax: 858 546 0364

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TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

1 GENERAL INFORMATION

1.1 Product Description

CUSTOMER CONTACT:		Frank Harkins		
PRODUCT DESCRIPTION				
NAME, MODEL, SERIAL # OF EUT:		Skymate Series		
DESCRIPTION OF EUT:		Transciever in the 2.4Ghz ISM band using DSSS Techniques		
Components of EUT				
Description	Model Number		Serial Number	FCC ID Number
Skymate Series	Skymate		NA ..protype	KA324WAN6
OPERATING MODE(S):		**Data rate of 11Mbs,5.5Mbs and 2Mbs using DSSS**		
EUT CONFIGURATIONS:		**6volt dc powered only SELV Configured with 8 antennas**		
POWER INTERFACE				
FREQUENCY/AC/DC VOLTAGE:		I/P 100 to 250 volt ac @ 50 to 60 hz and O/P 6Volt @ 2 amps max		
PHASES ( )/CURRENT (amps):		Single phase		
OSCILLATOR FREQUENCIES:		NA		
DESCRIPTION:		AC to DC convertors (X3)		
MANUFACTURER, MODEL #, S/N #		ArtesynSSL12-7632-NO1,IPS HUP 15 Series, CUI DTS050240U.		
SWITCHING FREQUENCY:		NA		
POWERLINE FILTER: MODEL #:		NA		
DESCRIPTION OF ENCLOSURE:		UL Plastic type		
CRITICAL EMI COMPONENTS:		NA		
INTERFACING AND/OR SIMULATORS PERIPHERAL EQUIPMENT:				
Description	Model #		Serial #	FCC ID/Other
NA	NA		NA	NA
I/O PORTS:				
Name of Line	Type of Line	Length of Cable	Status of Line	Kind of Transmission
Ethernet	Shielded	6 feet	Active	Digital
MAJOR SUBASSEMBLIES OR INTERNAL DEVICES				
Description	Model #		Serial #	FCC ID #
NA	NA		NA	NA
Frequency hopping transmitters: N/A				
Scanning receivers: N/A				
Certification of transmitters operating within the 59 to 64 GHz band: N/A				
Tune-up procedure: N/A				

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

1 GENERAL INFORMATION (continued)

1.2 Related Submittal/Grant

None

1.3 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

Test Performed:

- X 1. Conducted Emissions, FCC Part 15, Paragraph 15.209; and 15.247(c)
- 2. Radiated Emissions EN55022: 1992 Class B limit, 30 - 1,000 MHz, 10 meters
- X 3. Radiated Emission per FCC Part 15, Paragraph 15.205; 15.209; 15.247(c)
- 4. Engineering evaluations
- X 5. Peak Power Spectral Density, Part 15, Paragraph 15.247(d)
- X Bandwidth, Part 15, Paragraph 15.247(a)(2)

Both Conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8 - M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters (1 - 25 GHz).

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 619 546 3999
Fax: 619 546 0364

The Test Site Data and performance comply with ANSI 63.4 and are registered with the FCC, 7435 Oakland Mills Rd, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2. SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emission in the following configuration:

See Block Diagram.

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Modification

None

2.5 Configuration of Tested System

See Block Diagram.

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

3 CONDUCTED EMISSION EQUIPMENT/DATA

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

LISN-3, 50 µH/250 µH/50 Ω /0.25 µF	457	9252-50-R-24-BNC	Solar Electronics Co.	941720	05/01
ESHS 20	459	EMI Test Receiver	Rohde & Schwarz	832354/004	02/02
CAT-20	602	20 dB Attenuator	Mini-Circuits	--	Verified

NOTE: There were no measurable emission noted above 22 GHz.

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

TUV Product Service
Powerline Conducted Emissions

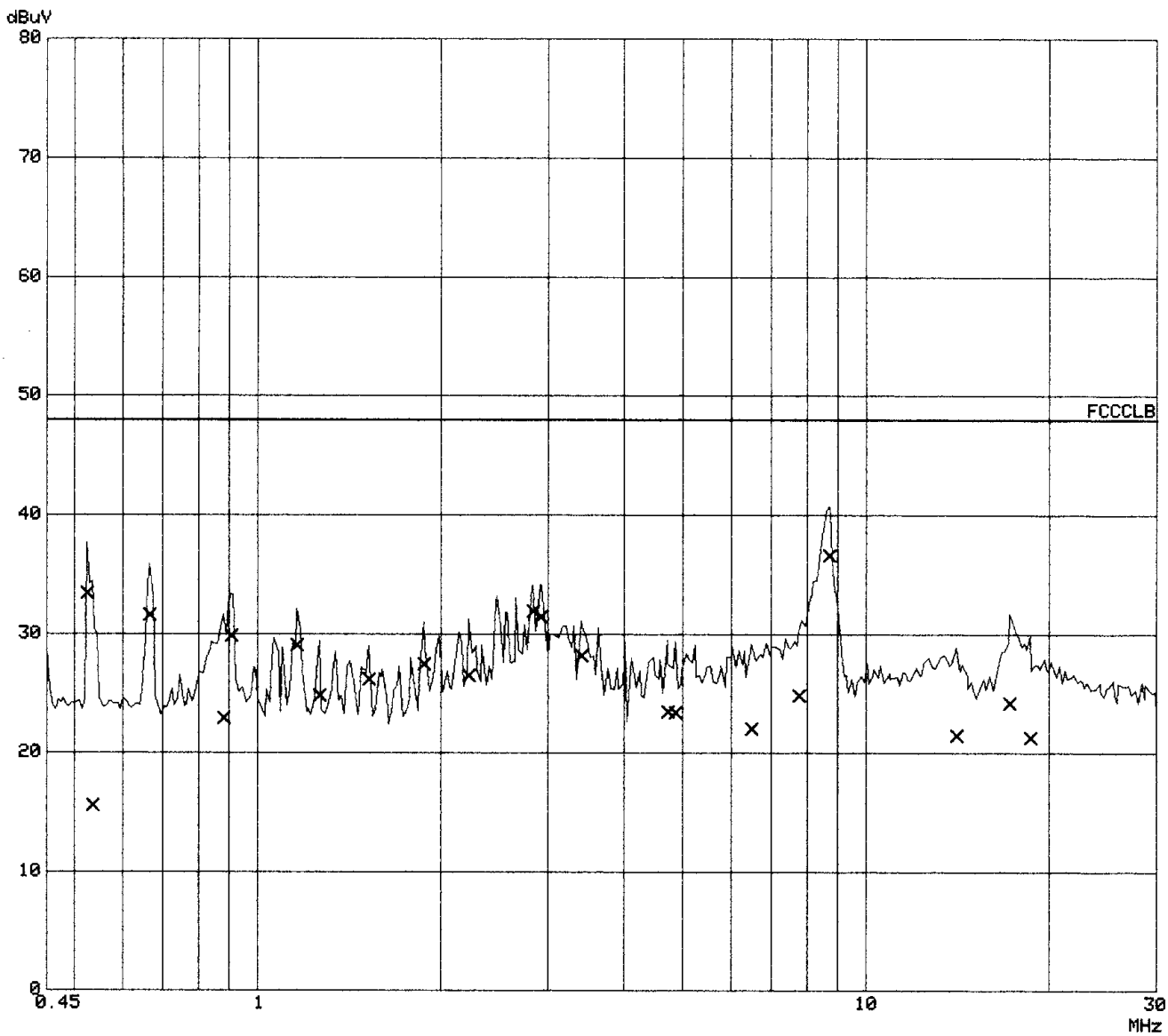
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 1 (2408Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:34

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



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TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 1 (2408Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:34

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.52500	33.4	48.0	
0.53500	15.6	48.0	
0.66500	31.6	48.0	
0.88000	22.9	48.0	
0.90500	29.8	48.0	
1.16000	29.1	48.0	
1.26500	24.8	48.0	
1.52500	26.2	48.0	
1.87500	27.5	48.0	
2.22500	26.5	48.0	
2.83500	31.9	48.0	
2.91500	31.4	48.0	
3.41000	28.2	48.0	
4.72500	23.5	48.0	
4.86000	23.4	48.0	
6.48000	22.0	48.0	
7.76500	24.8	48.0	
8.69000	36.6	48.0	-11.4
14.07500	21.5	48.0	
17.22500	24.2	48.0	
18.63000	21.3	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

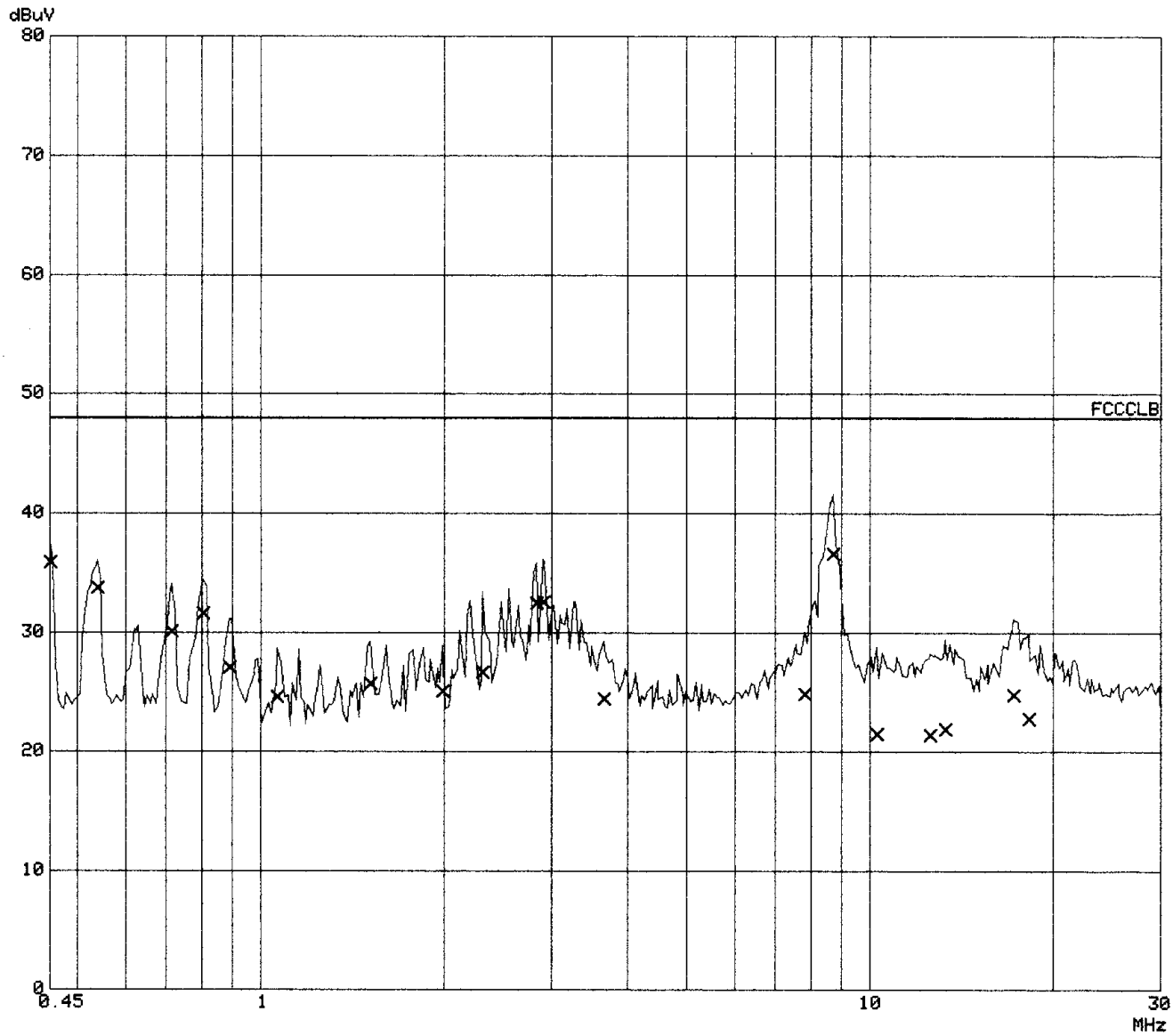
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 1 (2408Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:43

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 1 (2408Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:43

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.45000	35.9	48.0	
0.54000	33.8	48.0	
0.71500	30.1	48.0	
0.80500	31.6	48.0	
0.89000	27.1	48.0	
1.06500	24.6	48.0	
1.51500	25.7	48.0	
1.99000	25.0	48.0	
2.31500	26.7	48.0	
2.84000	32.5	48.0	
2.91000	32.6	48.0	
3.65500	24.4	48.0	
7.80500	24.8	48.0	
8.70000	36.6	48.0	11.4
10.28000	21.5	48.0	
12.56500	21.4	48.0	
13.27500	21.9	48.0	
17.20000	24.7	48.0	
18.21000	22.8	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

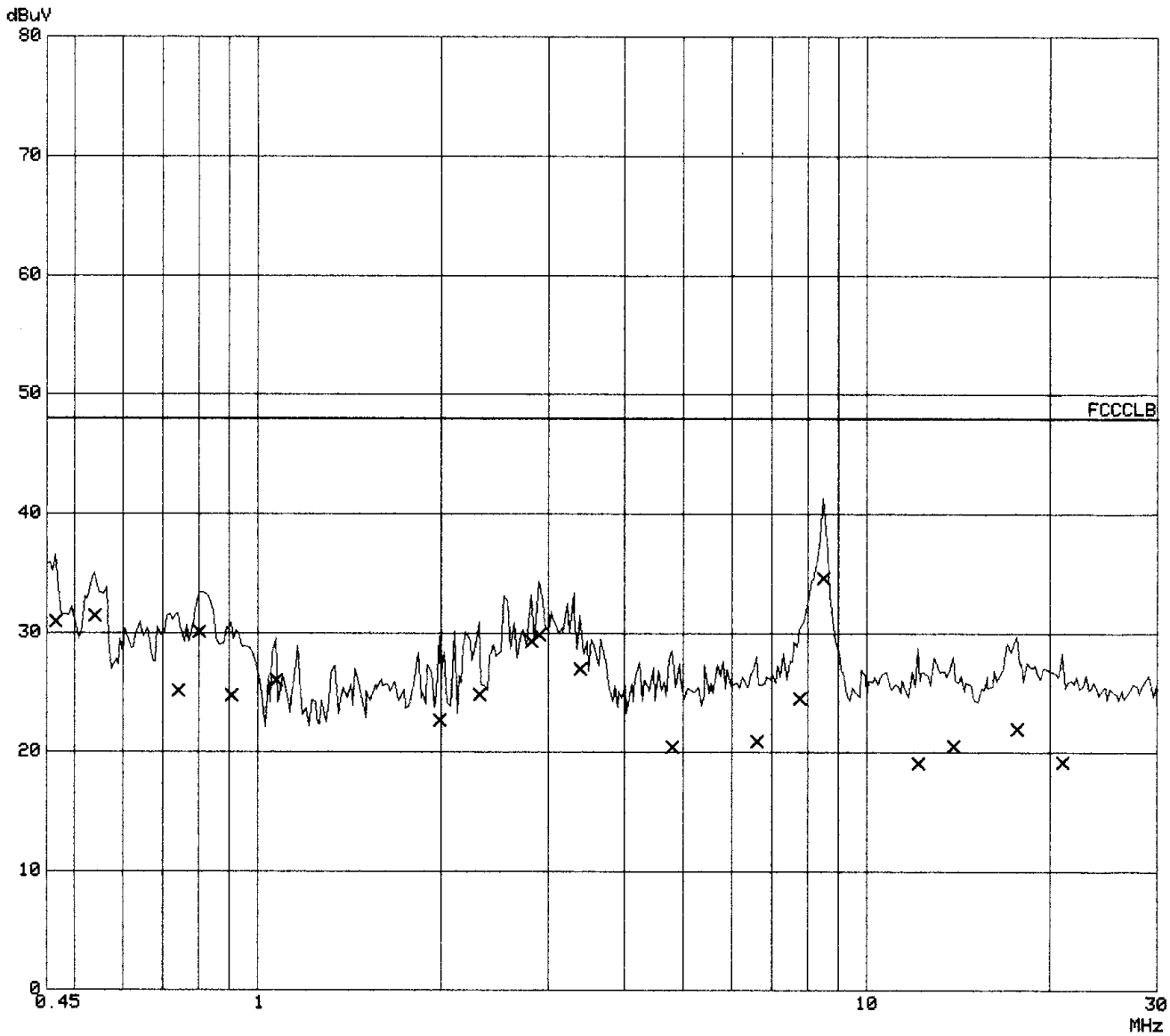
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 6 (2438Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:55

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



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TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 6 (2438Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:55

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.46500	31.0	48.0	
0.54000	31.4	48.0	
0.74000	25.1	48.0	
0.80000	30.1	48.0	
0.90500	24.7	48.0	
1.07000	26.1	48.0	
1.98500	22.7	48.0	
2.31000	24.8	48.0	
2.82000	29.3	48.0	
2.90000	29.8	48.0	
3.38500	27.0	48.0	
4.79500	20.5	48.0	
6.59000	20.9	48.0	
7.76000	24.5	48.0	
8.47500	34.6	48.0	-13.4
12.13500	19.1	48.0	
13.86000	20.5	48.0	
17.67500	21.9	48.0	
21.02000	19.2	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

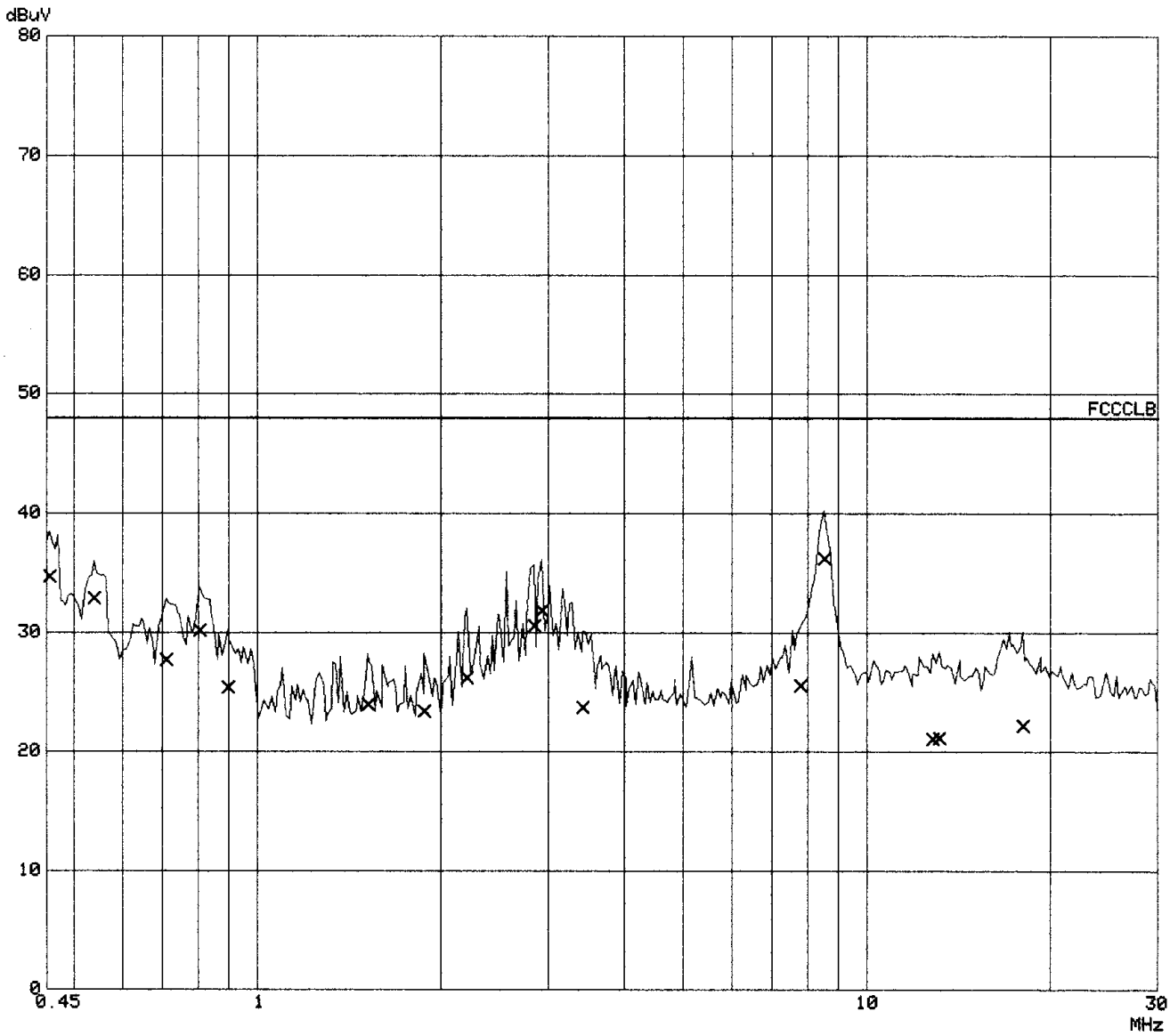
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 6 (2438Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:49

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 6 (2438Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 09:49

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.45500	34.7	48.0	
0.54000	32.9	48.0	
0.71000	27.7	48.0	
0.80500	30.2	48.0	
0.89500	25.4	48.0	
1.52000	23.9	48.0	
1.88000	23.4	48.0	
2.21000	26.2	48.0	
2.84500	30.6	48.0	
2.93000	31.8	48.0	
3.42500	23.7	48.0	
7.79000	25.6	48.0	
8.52000	36.2	48.0	-11.8
12.82000	21.1	48.0	
13.16500	21.2	48.0	
18.05000	22.2	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

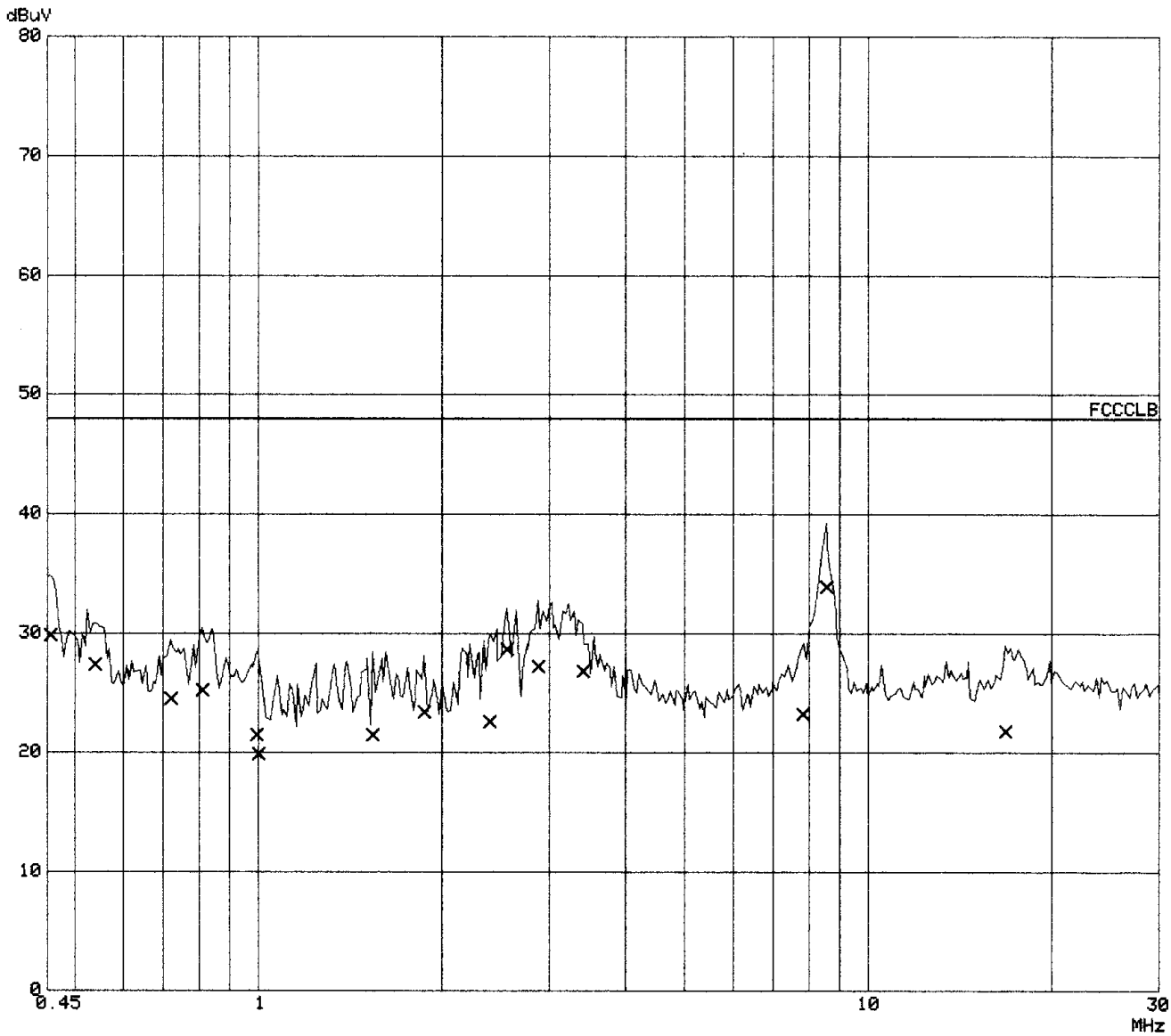
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 11(2468Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 10:08

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



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TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 11(2468Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 10:08

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45500	29.8	48.0
0.54000	27.4	48.0
0.72000	24.5	48.0
0.81000	25.2	48.0
0.99500	21.5	48.0
1.00000	19.9	48.0
1.54000	21.5	48.0
1.87000	23.4	48.0
2.40000	22.6	48.0
2.56000	28.7	48.0
2.87500	27.2	48.0
3.40500	26.8	48.0
7.81500	23.3	48.0
8.55500	33.9	48.0
16.82000	21.8	48.0

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

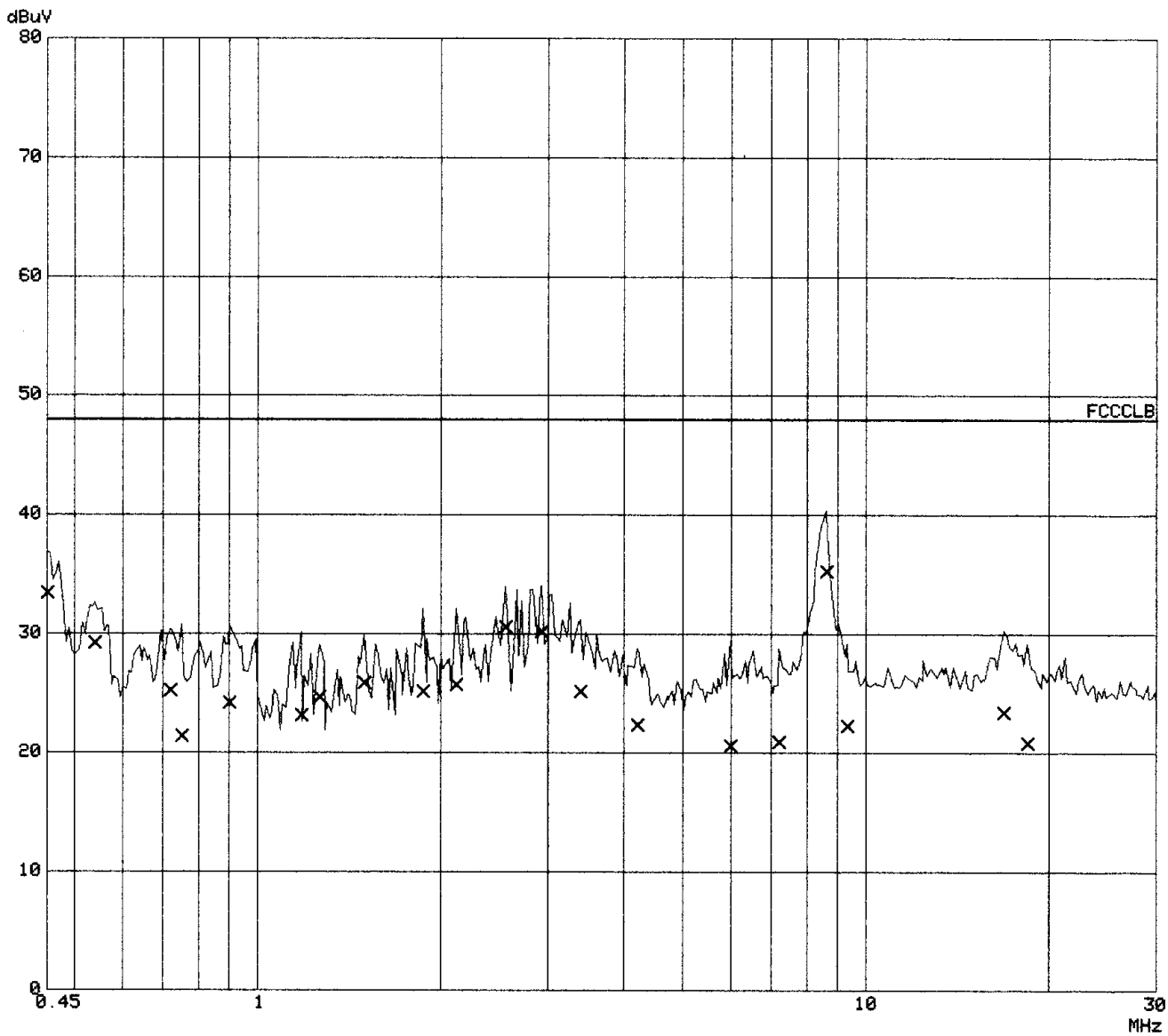
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 11(2468Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 10:14

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Ch 11(2468Mhz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 CUI Stack Power Supply Model 91-57233
Date: 27. Feb 01 10:14

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.45000	33.5	48.0	
0.54000	29.2	48.0	
0.72000	25.2	48.0	
0.75000	21.4	48.0	
0.90000	24.2	48.0	
1.18000	23.2	48.0	
1.26500	24.6	48.0	
1.49500	25.8	48.0	
1.87000	25.1	48.0	
2.12000	25.7	48.0	
2.56000	30.6	48.0	
2.92500	30.2	48.0	
3.39500	25.2	48.0	
4.20500	22.4	48.0	
5.99500	20.6	48.0	
7.20000	21.0	48.0	
8.59500	35.3	48.0	-12.7
9.30500	22.3	48.0	
16.87500	23.4	48.0	
18.41500	20.9	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

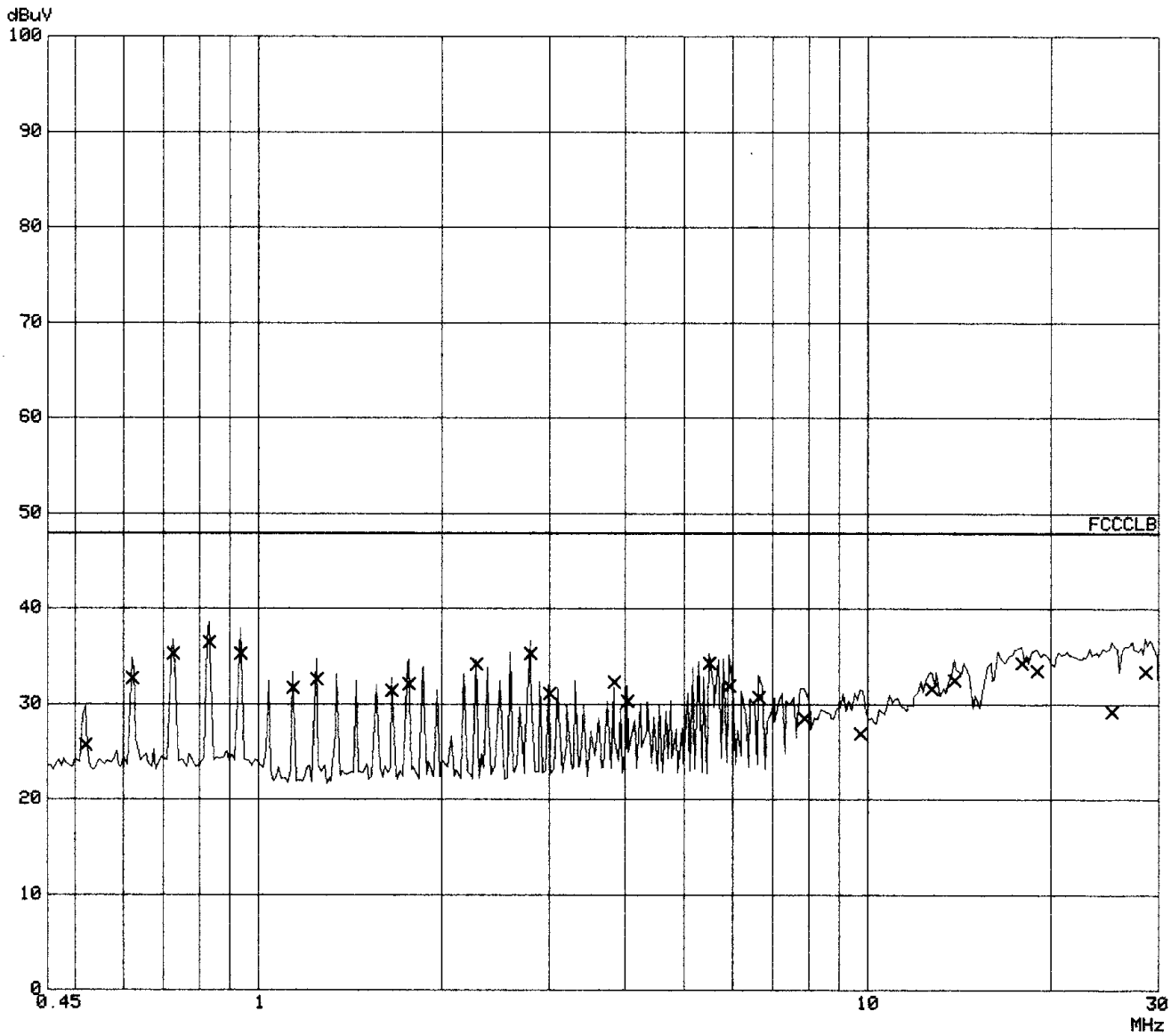
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 1 (2408 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:19

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode ~~Ch 1 (2408 MHz)~~
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:19

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.52000	25.8	48.0
0.62000	32.7	48.0
0.72500	35.4	48.0
0.83000	36.5 ✓	48.0
0.93500	35.3	48.0
1.14000	31.8	48.0
1.24500	32.6	48.0
1.65500	31.4	48.0
1.76500	32.1	48.0
2.28000	34.2	48.0
2.79500	35.3	48.0
3.00500	31.2	48.0
3.83000	32.3	48.0
4.04000	30.3	48.0
5.49000	34.3	48.0
5.91500	32.0	48.0
6.63000	30.7	48.0
7.87000	28.6	48.0
9.74000	27.0	48.0
12.73500	31.6	48.0
13.87500	32.6	48.0
17.91500	34.3	48.0
18.95000	33.6	48.0
25.21500	29.3	48.0
28.58500	33.4	48.0

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

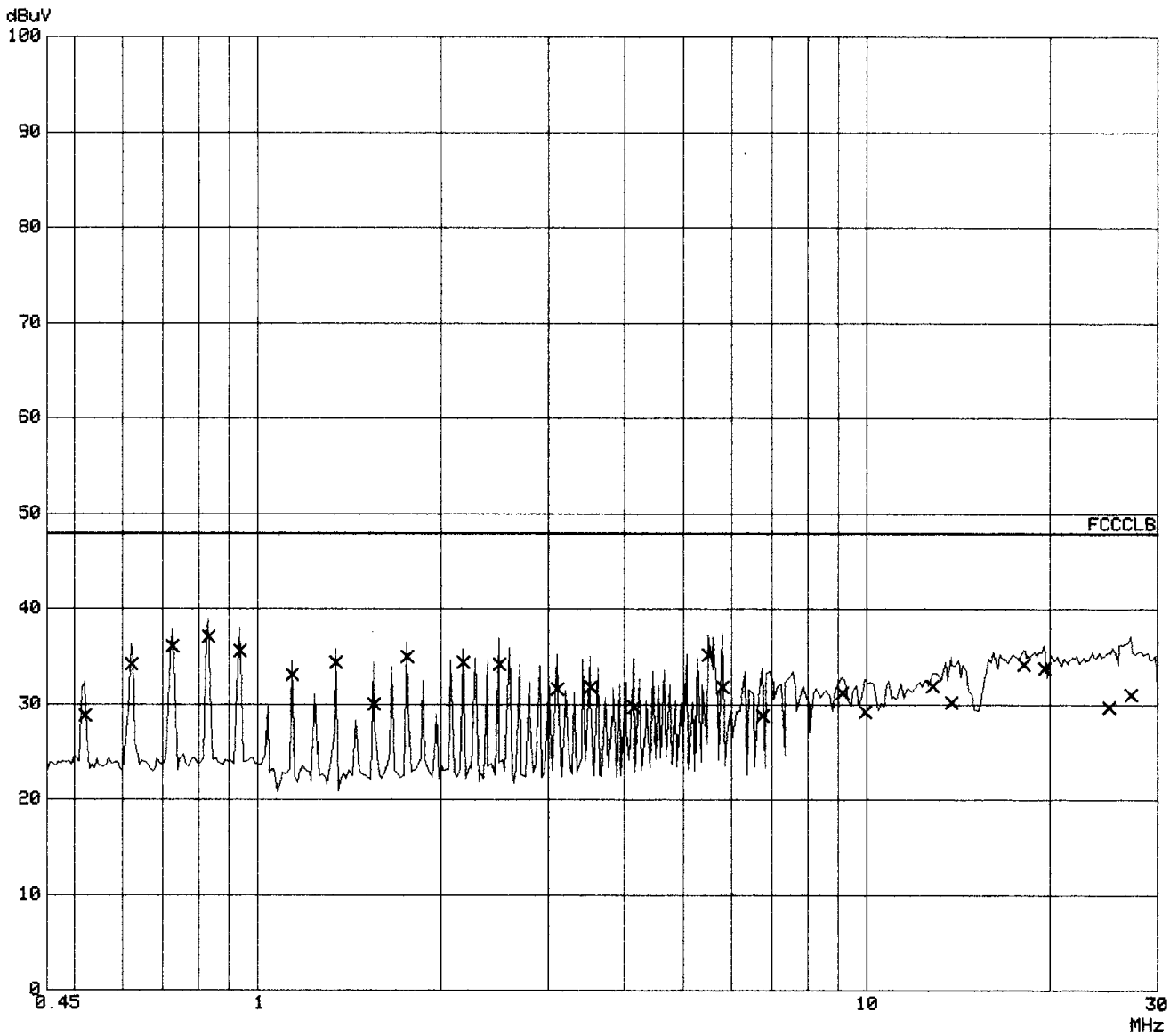
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 1 (2408 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:13

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 1 (2408 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:13

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.52000	28.9	48.0	
0.62000	34.2	48.0	
0.72500	36.2	48.0	
0.83000	37.2	48.0	-10.8dB
0.93500	35.6	48.0	
1.14000	33.1	48.0	
1.34500	34.5	48.0	
1.55000	30.1	48.0	
1.76000	35.0	48.0	
2.17500	34.4	48.0	
2.49000	34.2	48.0	
3.10500	31.7	48.0	
3.52000	31.9	48.0	
4.15000	29.7	48.0	
5.49000	35.3	48.0	
5.80500	31.8	48.0	
6.73500	28.9	48.0	
9.11500	31.2	48.0	
9.94000	29.2	48.0	
12.84000	31.9	48.0	
13.79000	30.3	48.0	
18.12000	34.2	48.0	
19.57000	33.9	48.0	
24.99500	29.7	48.0	
27.17000	31.1	48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

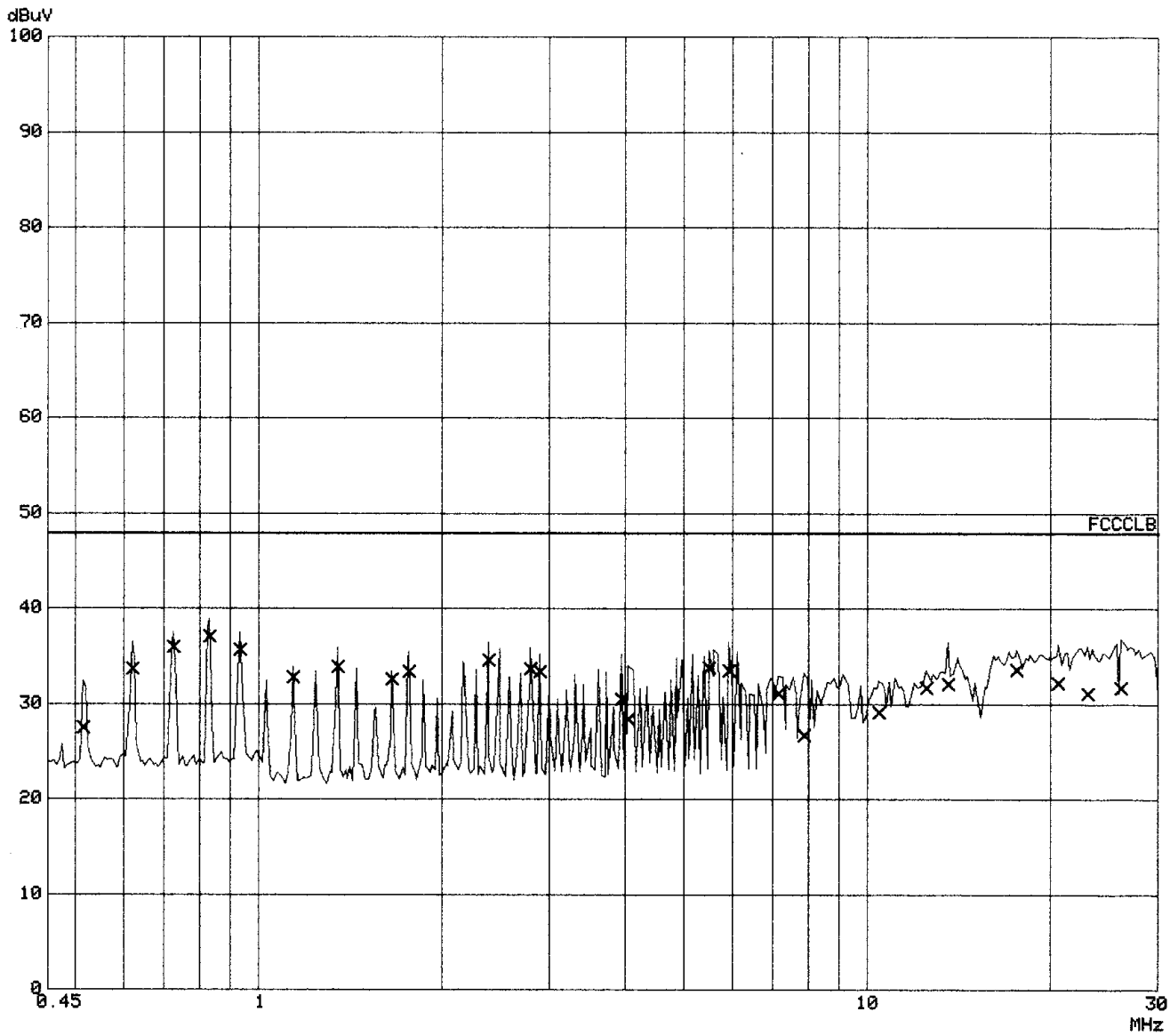
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 6 (2438 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:01

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 6 (2438 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 14:01

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.51500	27.6	48.0
0.62000	33.8	48.0
0.72500	36.0	48.0
0.83000	37.1	48.0
0.93000	35.7	48.0
1.14000	32.8	48.0
1.35000	33.9	48.0
1.65500	32.6	48.0
1.76500	33.5	48.0
2.38500	34.6	48.0
2.80000	33.8	48.0
2.90000	33.5	48.0
3.94500	30.6	48.0
4.05000	28.4	48.0
5.48500	33.8	48.0
5.91500	33.5	48.0
7.14500	31.2	48.0
7.88000	26.8	48.0
10.45500	29.2	48.0
12.52500	31.8	48.0
13.59000	32.2	48.0
17.59500	33.7	48.0
20.64500	32.2	48.0
23.03500	31.1	48.0
26.14500	31.7	48.0

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

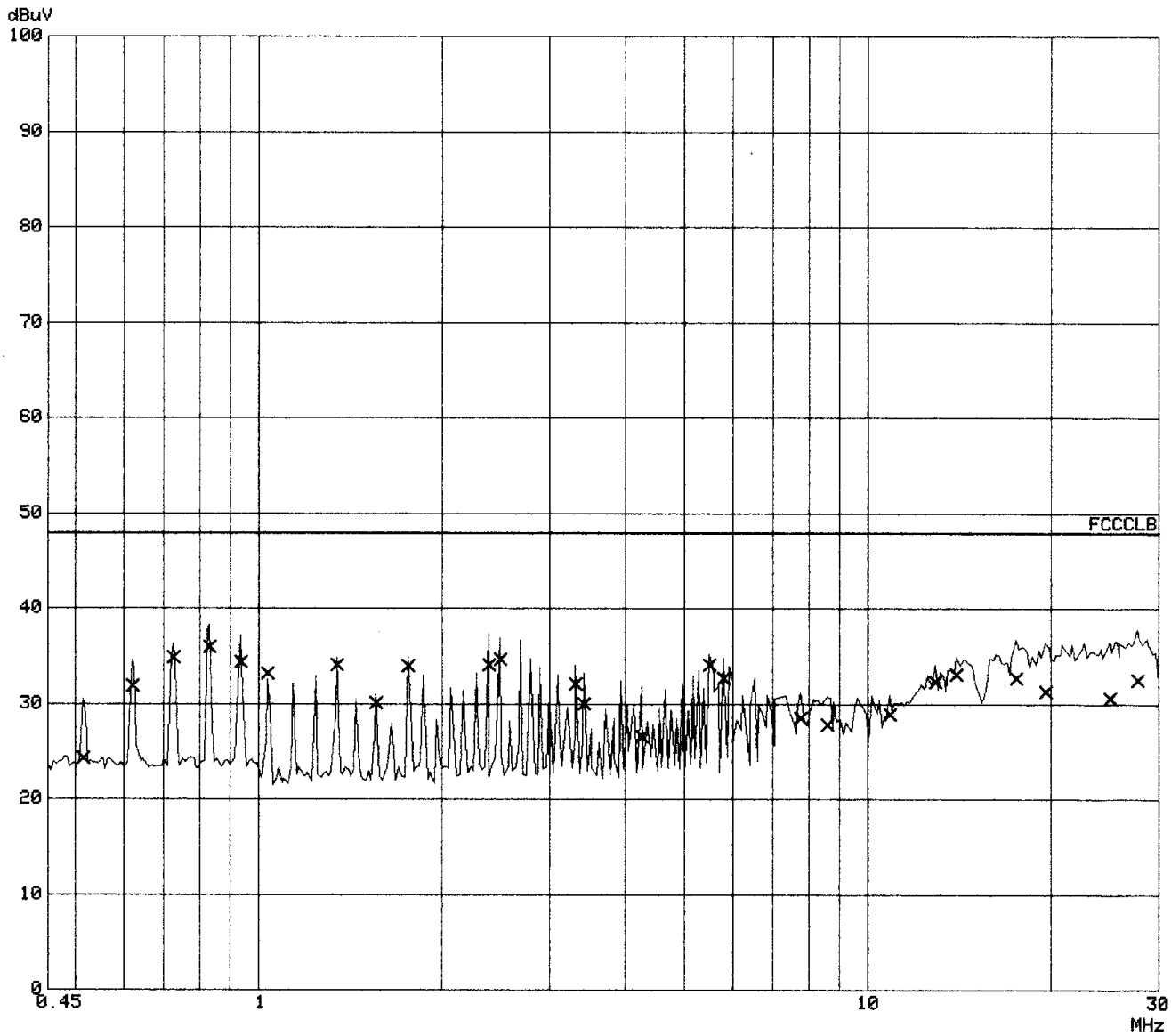
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch ~~11~~ (2438 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 13:54

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 11 (2438 MHz)
Operator: Rodel Resolme
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 13:54

Final Measurement Results:

Frequency MHz	QP Level dBuV		QP Limit dBuV	
0.51500	24.4		48.0	
0.62000	32.0		48.0	
0.72500	34.9		48.0	
0.83000	36.1	✓	48.0	11.9dB
0.93500	34.4		48.0	
1.03500	33.3		48.0	
1.34500	34.1		48.0	
1.55500	30.1		48.0	
1.76000	34.0		48.0	
2.38500	34.1		48.0	
2.49000	34.7		48.0	
3.31000	32.1		48.0	
3.42000	30.0		48.0	
4.25500	26.7		48.0	
5.48500	34.1		48.0	
5.79500	32.7		48.0	
7.76000	28.6		48.0	
8.59000	27.8		48.0	
10.86500	28.9		48.0	
12.93500	32.3		48.0	
13.97000	33.1		48.0	
17.52500	32.8		48.0	
19.60500	31.4		48.0	
24.98500	30.7		48.0	
27.79500	32.5		48.0	

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

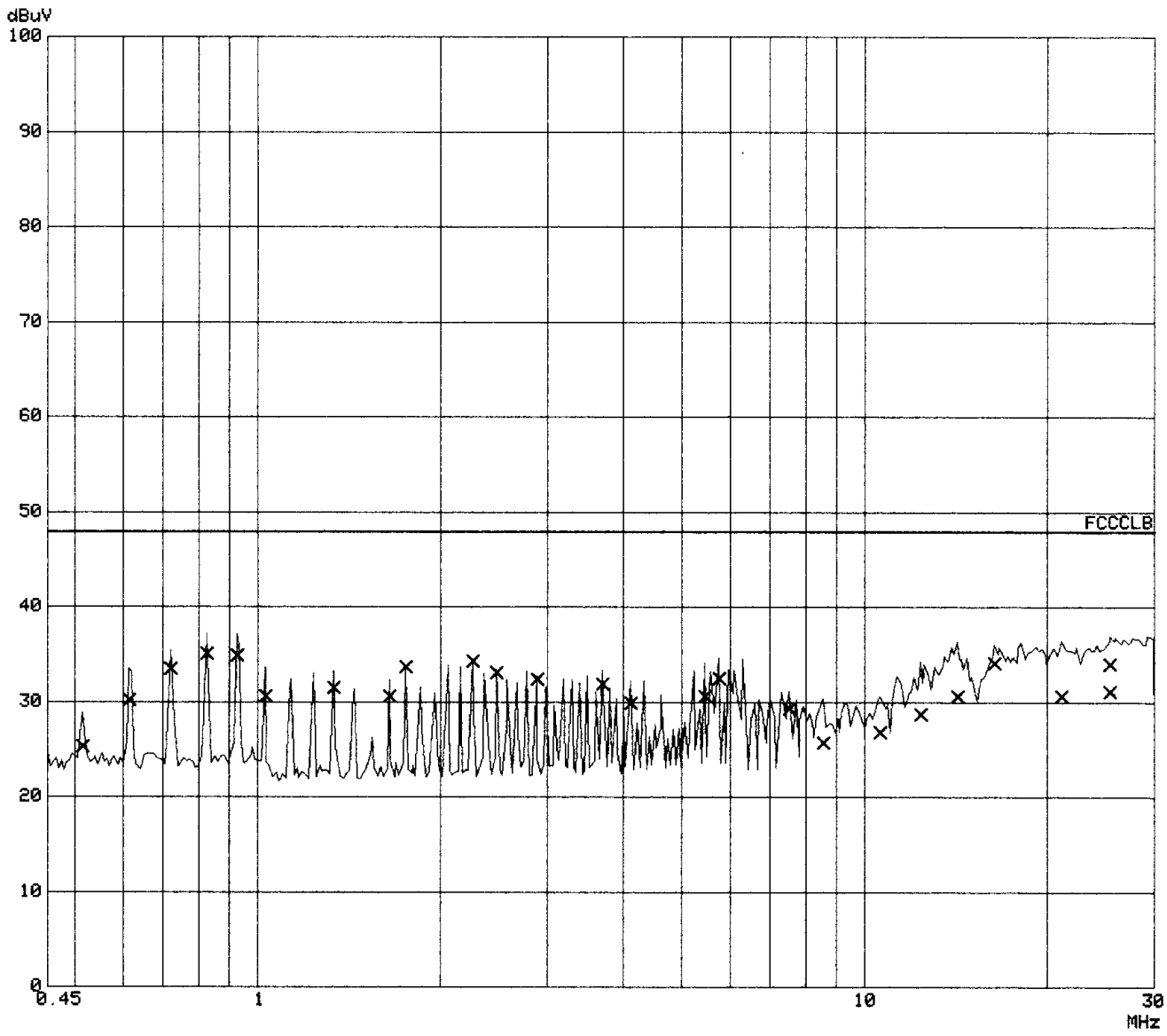
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 11 (2468 MHz)
Operator: Mary Washington
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 13:33

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 11 (2468 MHz)
Operator: Mary Washington Mary Washington
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 1
SC100923 IPs Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 13:33

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.51500	25.4	48.0
0.61500	30.2	48.0
0.72000	33.5	48.0
0.82500	35.2 36.6	48.0
0.92500	34.9 36.5	48.0
1.03000	30.7	48.0
1.33500	31.5	48.0
1.65000	30.6	48.0
1.75000	33.8	48.0
2.26500	34.3 ✓	48.0
2.47500	33.1	48.0
2.88500	32.4	48.0
3.70500	31.9	48.0
4.11500	29.9	48.0
5.45500	30.6	48.0
5.76500	32.6	48.0
7.52000	29.4	48.0
8.55500	25.8	48.0
10.61500	26.9	48.0
12.37000	28.7	48.0
14.23500	30.6	48.0
16.38000	34.1	48.0
21.14500	30.7	48.0
25.34500	34.0	48.0
25.38500	31.1	48.0

* limit exceeded

TUV Product Service
Powerline Conducted Emissions

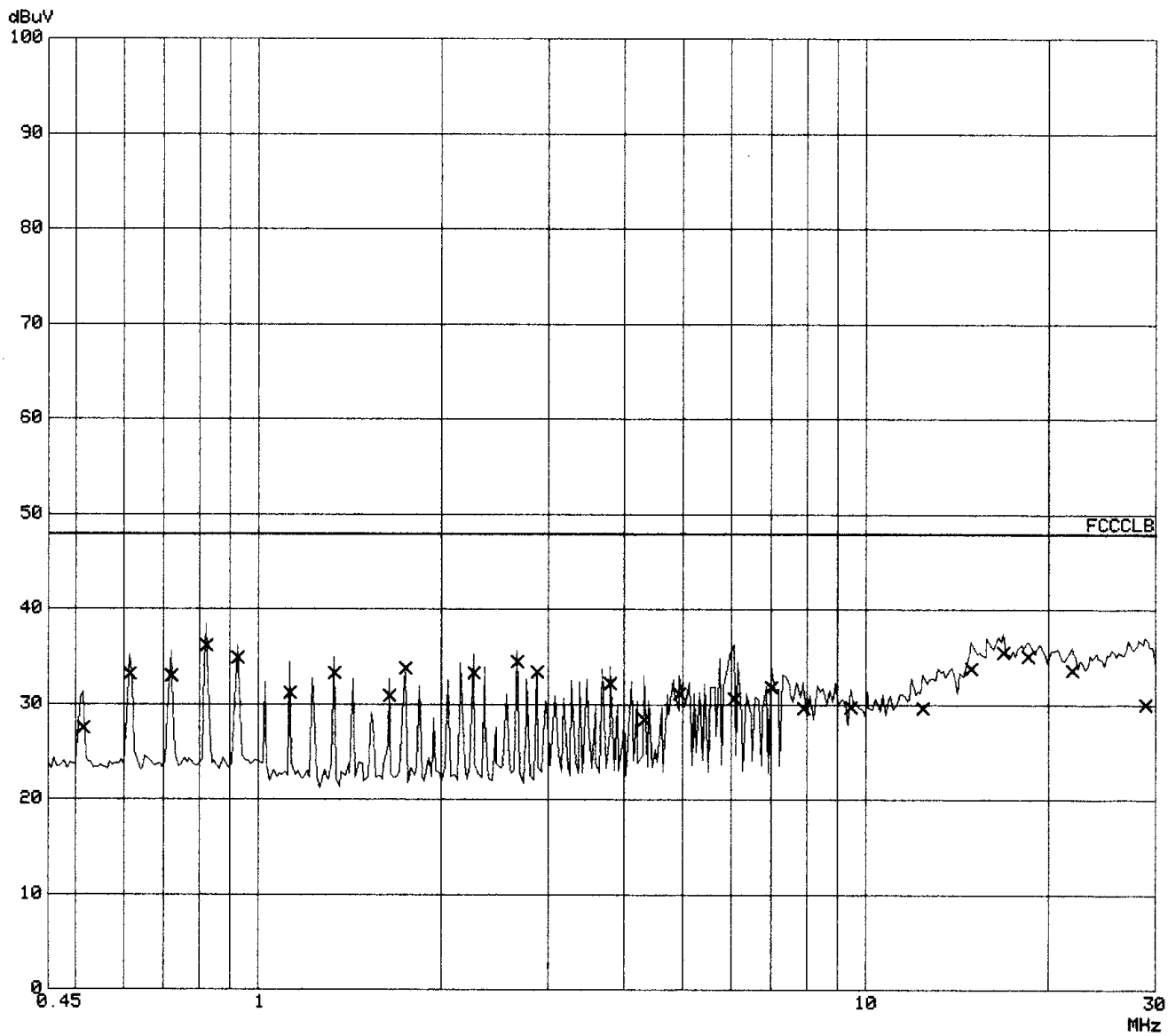
EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 11 (2468 MHz)
Operator: Mary Washington
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPS Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 11:54

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	100k	30M	20dBLISN

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



TUV Product Service
Powerline Conducted Emissions

EUT: SkyMate with 8 antennas
Manuf: Solectek Corporation
Op Cond: Transmit Mode Ch 11 (2468 MHz)
Operator: Mary Washington mary washington
Test Spec: FCC Class B
Comment: 120 Vac 60 Hz Line 2
SC100923 IPS Power Supply Model HUP15A-10-1B2
Date: 22. Feb 01 11:54

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV	
0.51500	27.6	48.0	
0.61500	33.2	48.0	
0.72000	33.0	48.0	
0.82000	36.2	48.0	
0.92500	35.0 35.7	48.0	- 12.3 dB
1.12500	31.3	48.0	
1.33500	33.3	48.0	
1.64500	30.9	48.0	
1.74500	33.9	48.0	
2.26000	33.4	48.0	
2.67000	34.5 35.4	48.0	
2.87500	33.5	48.0	
3.79500	32.2	48.0	
4.32000	28.5	48.0	
4.93000	31.1	48.0	
6.06500	30.6	48.0	
6.98500	31.8	48.0	
7.90500	29.7	48.0	
9.45000	29.7	48.0	
12.42500	29.6	48.0	
14.89500	33.8	48.0	
16.84500	35.5 ✓	48.0	
18.49500	35.1	48.0	
21.88500	33.7	48.0	
28.92000	30.0	48.0	

* limit exceeded

4 RADIATED EMISSION EQUIPMENT/DATA

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

See test setup photos for radiated emissions test setup.

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

REPORT No: sc100923 TESTED BY: Rodel Resolme SPEC: FCC Part 15, Para. 15.205, 15.209 15.247(C)

CUSTOMER: Solectek Corporation TEST DIST: 3 Meters

E U T: Skymate with Superpass 12dBi panel antenna TEST SITE: 3

EUT MODE: transmit mode BICONICAL: N/A

DATE: 5-Mar-01 LOG: N/A

NOTES: Duty Cycle= 100% OTHER: 251

115 VAC 60Hz

(peak) RBW 1Mhz, VBW 1Mhz; (average) RBW 1Mhz, VBW 10hz

No other emissions detected

v.beta2

FREQ (MHz)	VERTICAL (dBuv)		HORIZONTAL (dBuv)		CORRECTION FACTOR (dB/m)	MAX LEVEL (dBuV/m)		SPEC LIMIT (dBuV/m)		MARGIN (dB)		EUT Rotatio	Antenna Height
	pk	av	pk	av		pk	av	pk	av	pk	av		
2408	72.5	59.3	54	40.1	34.2	**106.7**	**93.5**			106.7	93.5	202	1.5
2438	75.5	61	60.5	46.3	37.0	**112.5**	**98.0**			112.5	98	213	1.5
2468	74.8	59.5	57.2	42.2	37.1	**111.9**	**96.6**			111.9	96.6	195	1.5
4816	0	0	0	0	43.7	**43.7**	**43.7**	74	54	-30.3	-10		
4876	18	4.5	11.9	0	43.9	**61.9**	**48.4**	74	54	-12.1	-5.6	0	1.5
4936	9	0	5	0	44.1	**53.1**	**44.1**	74	54	-20.9	-9.9		
7314	4.5	0	0	0	48.5	**53.0**	**48.5**	74	54	-21	-5.5	0	1.5

REPORT No: 100923b TESTED BY: Rodel Resolme SPEC: FCC Part 15, Para 15.205, 15.209, 15.247(c)

CUSTOMER: Solectek Corporation TEST DIST: 3 Meters

E U T: Skymate with Hirschmann 11dBi Omni TEST SITE: 3

EUT MODE: transmit mode BICONICAL: N/A

DATE: 5-Mar-01 LOG: N/A

NOTES: Duty Cycle= 100% OTHER: 251

115 VAC 60Hz

(peak) RBW 1Mhz, VBW 1Mhz; (average) RBW 1Mhz, VBW 10Hz

No other emissions detected

v.beta2

FREQ (MHz)	VERTICAL (dBuv)		HORIZONTAL (dBuv)		CORRECTION FACTOR (dB/m)	MAX LEVEL (dBuV/m)		SPEC LIMIT (dBuV/m)		MARGIN (dB)		EUT Rotatio	Antenna Height
	pk	av	pk	av		pk	av	pk	av	pk	av		
2408	69.1	55.8	56.6	43.1	34.2	**103.3**	**90.0**			103.3	90	74	1.5
2438	73.5	58.8	60	44.8	37.0	**110.5**	**95.8**			110.5	95.8	95	1.5
2468	72.5	57.2	60	44.5	37.1	**109.6**	**94.3**			109.6	94.3	101	1.5
4816	0	0	0	0	43.7	**43.7**	**43.7**	74	54	-30.3	-10		
4876	12.5	0	8	0	43.9	**56.4**	**43.9**	74	54	-17.6	-10		
4936	9	0	7	0	44.1	**53.1**	**44.1**	74	54	-20.9	-9.9		

REPORT No: SC-100923 TESTED BY: David Gray SPEC: FCC Part 15, Para 15.205, 15.209, 15.247(c)

CUSTOMER: Solectek Corporation TEST DIST: 3 Meters

E U T: Skymate with Cushcraft 8dBi patch antenna TEST SITE: 3

EUT MODE: transmit mode BICONICAL: N/A

DATE: 2-Mar-01 LOG: N/A

NOTES: Duty Cycle= 100% OTHER: 251

115 VAC 50 Hz

(peak) RBW 1Mhz, VBW 1Mhz; (average) RBW 1Mhz, VBW 10Hz

No other emissions detected.

v.beta2

FREQ (MHz)	VERTICAL (dBuv)		HORIZONTAL (dBuv)		CORRECTION FACTOR (dB/m)	MAX LEVEL (dBuV/m)		SPEC LIMIT (dBuV/m)		MARGIN (dB)		EUT Rotatio	Antenna Height
	pk	av	pk	av		pk	av	pk	av	pk	av		
2408	77.9	57.8	66.2	51	34.1	**112.0**	**91.9**			112	91.9	0	1.5
2438	79	58.8	67.2	51.4	37.2	**116.2**	**96.0**			116.2	96	0	1.5
2468	78.3	61.1	68.9	54.2	37.3	**115.6**	**98.4**			115.6	98.4	0	1.5
4816	16.3	2.6	11.3	2.1	43.9	**60.2**	**46.5**	74	54	-13.8	-7.5		
4876	23.2	7.6	16.2	3.6	44.2	**67.4**	**51.8**	74	54	-6.65	-2.2		
4963	19	2.7	13.3	2.2	44.5	**63.5**	**47.2**	74	54	-10.5	-6.8		
7314	9	0	4.5	0	48.0	**57.0**	**48.0**	74	54	-17	-6	0	1
7404	0	0	0	0	48.3	**48.3**	**48.3**	74	54	-25.7	-5.7	0	1

Choice

BAND EDGE

5100923 SOLECTRIX 3/13/01

HIRSCHMANN HAB OMNI

(LIMIT 73.9) 2390 MHz PEAK RBW 1MHz/VBW 1MHz = 29.0 + 35.0 C.F. = 64.0 dBuV -9.9

(LIMIT 53.9) 2390 MHz AVERAGE RBW 1MHz/VBW 10Hz = 8.2 + 35.0 C.F. = 43.2 dBuV -10.7

FUNDAMENTAL$_1$ (PEAK) RBW 1MHz/VBW 1MHz = 74.8 dBuV

FUNDAMENTAL$_2$ (PEAK) RBW 100KHz/VBW 30KHz = 62.3 dBuV

RESTRICTED BAND EDGE (PEAK) 2483.5 MHz RBW 100KHz/VBW 30KHz = 9.7 dBuV

F_2 - RES BAND EDGE = 62.3 - 9.7 = 52.6 dBuV

F_1 - 52.6 dBuV = 74.8 dBuV - 52.6 dBuV = 22.2 dBuV + 35.5 C.F. = 57.7 dBuV -16.2 PEAK LIMIT (73.9)

FUNDAMENTAL$_1$ (AVERAGE) RBW 1MHz/VBW 10Hz = 15.6 dBuV

FUNDAMENTAL$_2$ (AVERAGE) RBW 100KHz/VBW 10Hz = 5.1 dBuV

RESTRICTED BAND EDGE (AVERAGE) 2483.5 MHz RBW 100KHz/VBW 10Hz = -1.3 dBuV

F_2 - RBE = 5.1 - (-1.3) = 6.4 dBuV

F_1 - (F_2 - RBE) = 15.6 - 6.4 = 9.2 dBuV + 35.5 dBuV C.F. = 44.7 dBuV -9.2 AVG. LIMIT (53.9)

15.205, 15.209, 15.247(c)

BAND EDGE

S100923
SOUETEK
3/13/01

MTI 18dBi Tx 17dBm

(739) 2390MHz PEAK RBW 1MHz/VBW 1MHz = 36.4dBuV + 35dBuV C.F = 71.4dBuV

(539) 2390MHz AVERAGE RBW 1MHz/VBW 10Hz = 16.6 dBuV + 35dBuV C.F. = 51.6dBuV

FUNDAMENTAL$_1$ (PEAK) RBW 1MHz/VBW 1MHz = 95.0 dBuV FUNDAMENTAL$_2$ PEAK RBW 100KHz/VBW 300KHz = 24.7 dBuV

RESTRICTED BANDEDGE 2483.5MHz RBW 100KHz/VBW 300KHz = 26.1 dBuV

FUNDAMENTAL$_2$ − RESTRICTED BANDEDGE = 24.7 − 26.1 = 48.6 dBuV

FUNDAMENTAL$_1$ − (FUNDAMENTAL$_2$ − RESTRICTED BAND EDGE) = 95.0 − 48.6 = 36.4dBuV

36.4dBuV + CORRECTION FACTOR 35.5dBuV = 71.9 dBuV −2.0 PEAK

AVERAGE

F_1 = 20.1dBuV F_2 = 12.0dBuV RESTRICTED BANDEDGE = 8.0dBuV

F_2 − RBE = 12.0 − 8.0 = 4.0dBuV F_1 − (F_2 − RBE) = 20.1 − 4.0 = 16.1dBuV + 35.5dBuV C.F. = 51.6dBuV

−2.3

15.205, 15.209, 15.247(c)

DETERMINED TO BE WORSE CASE

BAND EDGE

5100123 SOLECTEK 3/13/01

CUSN CRAFT 8dBi PATCH ANTENNA 15.205, 15.209, 15.247(c)

LIMIT (73.9) 2390MHz PEAK RBW 1MHz/VBW 1MHz = 26.1 dBuV + 35.0 C.F. = 61.1 dBuV -12.8

LIMIT (53.9) 2390MHz AVERAGE RBW 1MHz/VBW 10Hz = 7.3 dBuV + 35.0 C.F. = 42.3 dBuV -11.6

FUNDAMENTAL, (PEAK) RBW 1MHz/VBW 1MHz = 75.8 dBuV

FUNDAMENTAL 2 (PEAK) RBW 100KHz/VBW 300KHz = 63.8 dBuV

RESTRICTED BAND EDGE (PEAK) 2483.5MHz RBW 100KHz/VBW 300KHz = 13.0 dBuV

F_2 - RES. BAND EDGE = 63.8 - 13.0 = 50.8 dBuV

F_1 - 50.8 dBuV = 75.8 dBuV - 50.8dBuV = 25.0 dBuV + 35.5 C.F. = 60.5 dBuV PEAK LIMIT (73.9) -13.4

FUNDAMENTAL, (AVERAGE) RBW 1MHz/VBW 10Hz = 13.9 dBuV

FUNDAMENTAL 2 (AVERAGE) RBW 100KHz/VBW 10Hz = 5.3 dBuV

RESTRICTED BAND EDGE (AVERAGE) 2483.5 MHz RBW 100KHz/VBW 10Hz = -1.2 dBuV

F_2 - RBE = 5.3 - (-1.2) = 6.5 dBuV

F_1 - (F_2 - RBE) = 13.9 - 6.5 = 7.4 dBuV + 35.5 C.F. = 42.9 dBuV AVG. LIMIT (53.9) -11.0

CHANNEL 2 2214MHz 23dBm

LIMIT (73.9) 2390MHz PEAK RBW 1MHz/VBW 1MHz = 36.7 dBuV + 35.0 C.F. = 71.7 dBuV -2.2

LIMIT (53.9) 2390MHz AVERAGE RBW 1MHz/VBW 10Hz = 17.0 dBuV + 35.0 C.F. = 52.0 dBuV -1.9

CHANNEL 10 2462MHz 23dBm

FUNDAMENTAL, (PEAK) RBW 1MHz/VBW 1MHz = 92.2 dBuV RESTRICTED BAND EDGE (PEAK) 2483.5 MHz

FUNDAMENTAL 2 (PEAK) RBW 100KHz/VBW 300KHz = 80.5 dBuV RBW 100KHz/VBW 300KHz = 26.2 dBuV

F_2 - RBE = 80.5 - 26.2 = 54.3 dBuV

F_1 - (F_2 - RBE) = 92.2 - 54.3 = 37.9 dBuV + 35.5 C.F. = 73.4 dBuV PEAK LIMIT (73.9) -0.5

FUNDAMENTAL, (AVG.) RBW 1MHz/VBW 10Hz = 16.5 dBuV RESTRICTED BAND EDGE (AVG.) 2483.5MHz

FUNDAMENTAL 2 (AVG.) RBW 100KHz/VBW 10Hz = 8.9 dBuV RBW 100KHz/VBW 10Hz = 8.9 dBuV

F_2 - RBE = 8.9 - 8.9 = 0

F_1 - (F_2 - RBE) = 16.5 - 0 = 16.5 dBuV + 35.5 C.F. = 52.0 dBuV AVG. LIMIT (53.9) -1.9

Emissions Test Conditions: RADIATED EMISSIONS, FCC Part 15, Paragraph 15.205; 15.209; 15.247(c)

The *RADIATED EMISSIONS* measurements were performed at the following test location :

☐ **- Test not applicable**

■ - Roof Site

Testing was performed at a test distance of:

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

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
3115	251	Antenna, Double Ridge Guide	EMCO	2495	10/01
8566B	720	Spectrum Analyzer	Hewlett Packard	211500842	03/17/01
8566B	721	Spectrum Analyzer Display	Hewlett Packard	2112A02185	03/17/01

Remarks: _____

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

Field Strength Calculation

If a preamplifier was used during the Radiated Emission Testing, it is required that the amplifier gain must be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna , cable used and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic measurement, these considerations are automatically presented as a part of the print out. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit was modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply the CMRL, which is the actual field strength present at the antenna. The quantity can be derived in the following manner:

Corrected Meter Reading Limit (CMRL) = SAR + AF + CL - AG - DC

Where, SAR = Spectrum Analyzer Reading
AF = Antenna Factor
CL = Cable Loss
AG = Amplifier Gain (if any)
DC = Distance Correction (if any)

Assume the following situation: A meter reading of 29.4 dBuV was obtained from a Class A computing device measured at 83 MHz. Assume an antenna factor of 9.2 dB, a cable loss of 1.4 dB and amplifier gain of 20.0 dB at 83 MHz. The final field strength would be determined as follows:

CMRL = 29.4 dBuV + 9.2dB = 1.4 dB - 20 dB/M - 0.0 dB

CMRL = 20.0 dBuV/M

This result is well below the FCC and CSA Class A limit of 29.5 dbuV/m at 83 MHz.

For the manual mode of measurement, a table of corrected meter reading limit was used to permit immediate comparison of the meter reading to determine if the measure emission amplitude exceeded the specification limit at that specific frequency.

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5 CONDUCTED SPURIOUS and BANDWIDTH EQUIPMENT/DATA

■ - SR-3, Shielded Room, 12’ x 20’ x 8’, Metal Chamber

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Cal Date
8566B	407	Spectrum Analyzer	Hewlett Packard	02/02

See following page(s).

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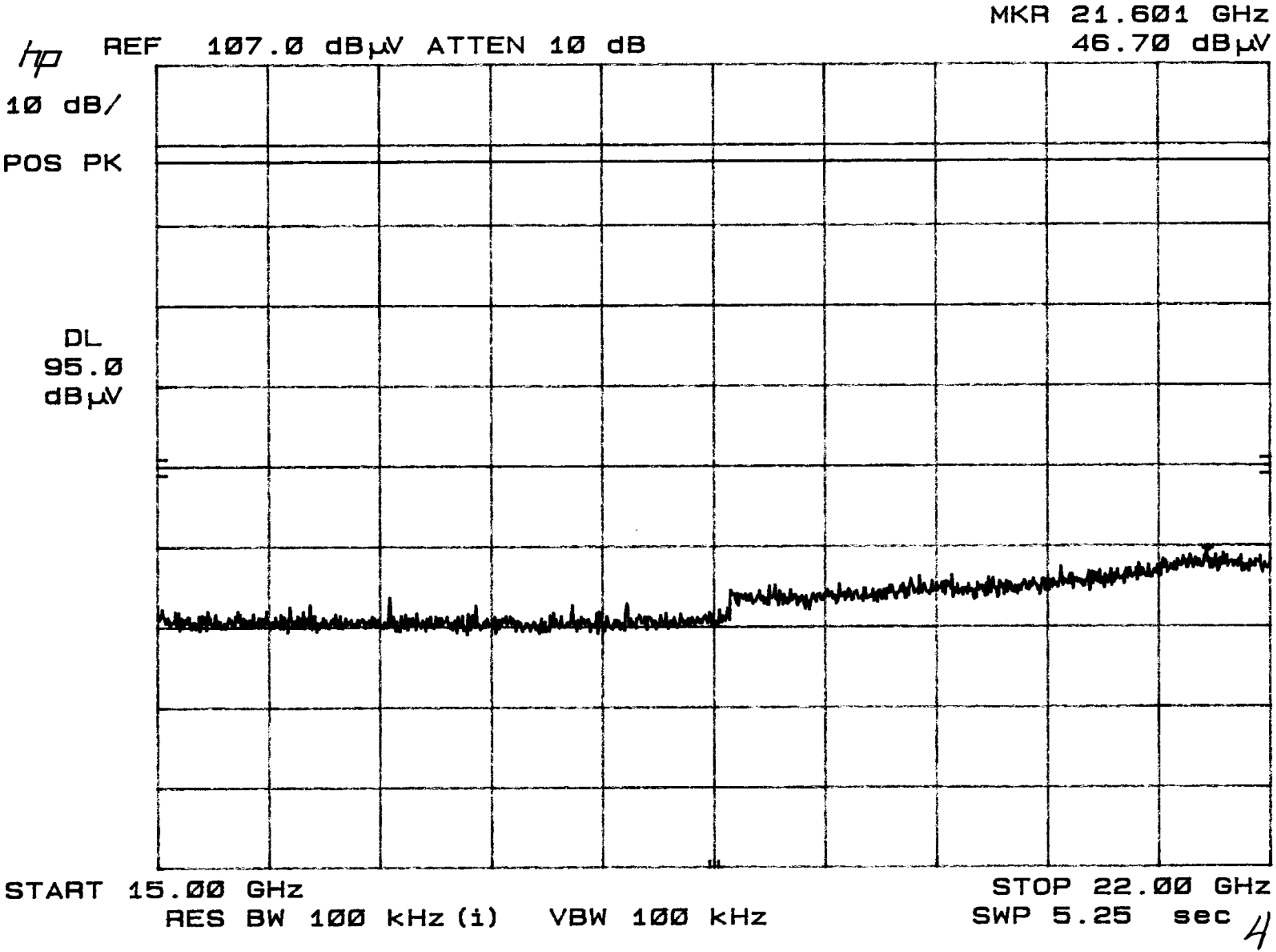
CONDUCTED RF EMISSIONS SOLECTRON

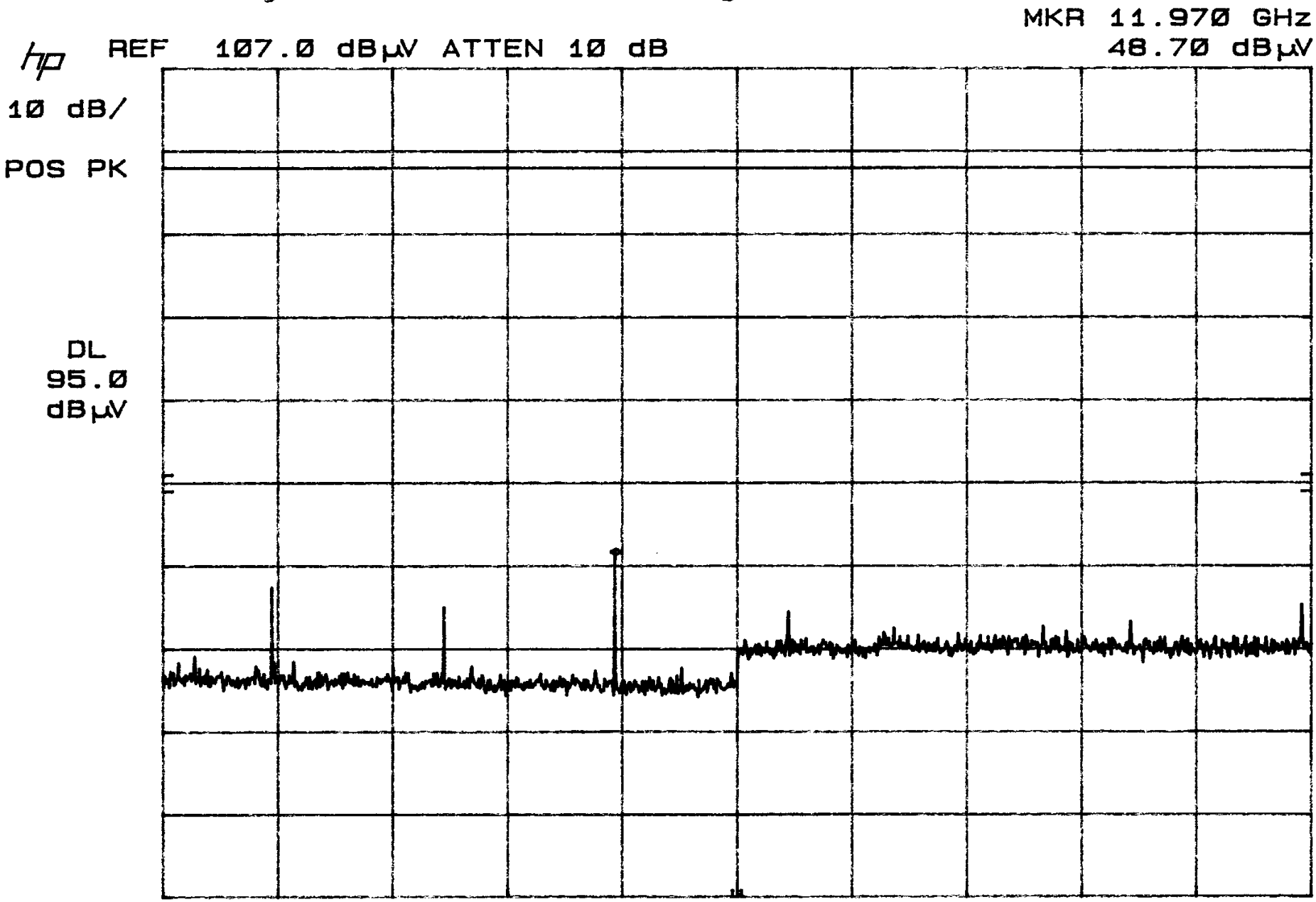
MID CH6(2438) 15.247(c)



CONDUCTED RF EMISSIONS

MID CH (2438)

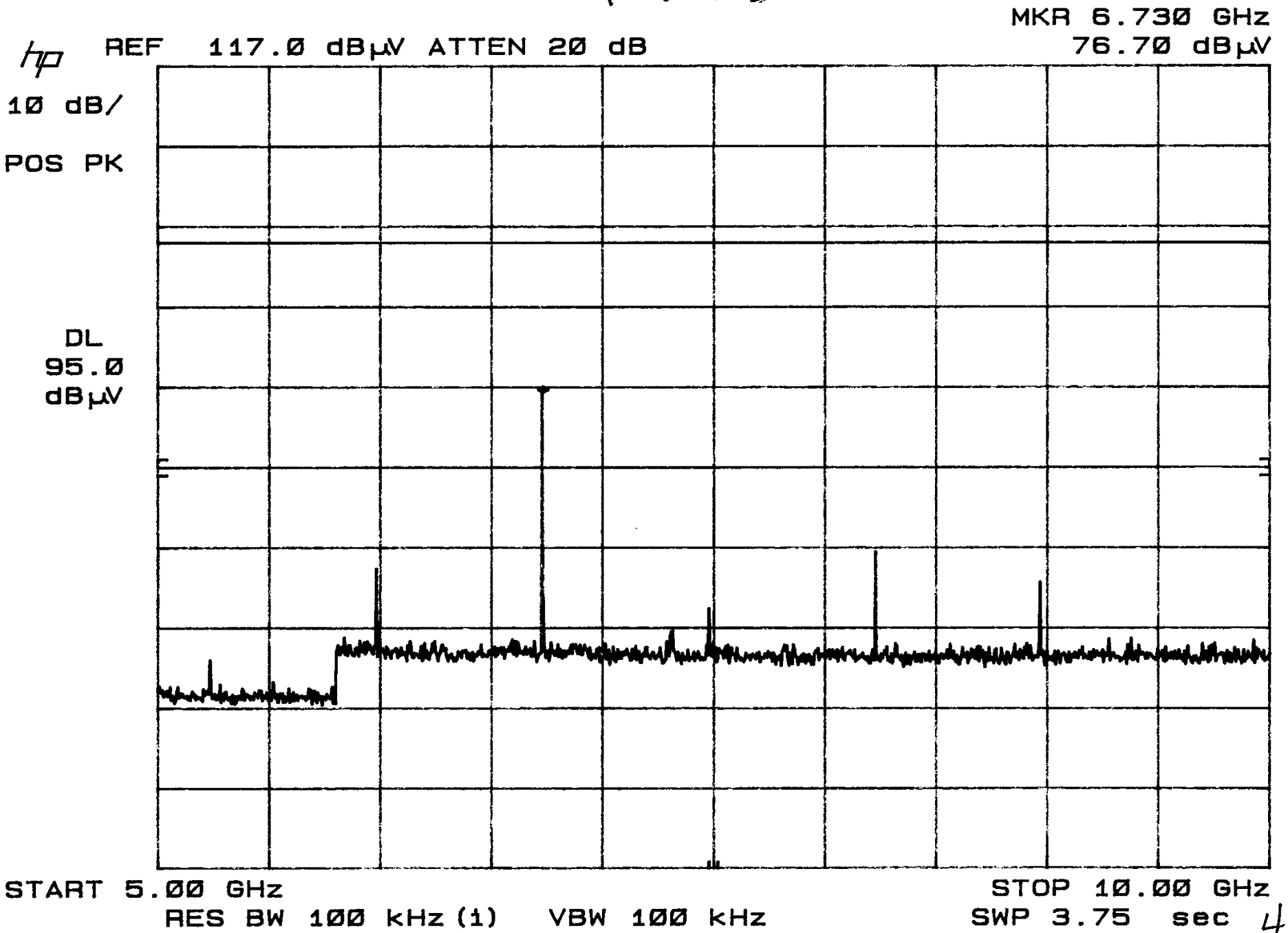
15.247(c)



CONDUCTED RF EMISSIONS

MID CH (2438)

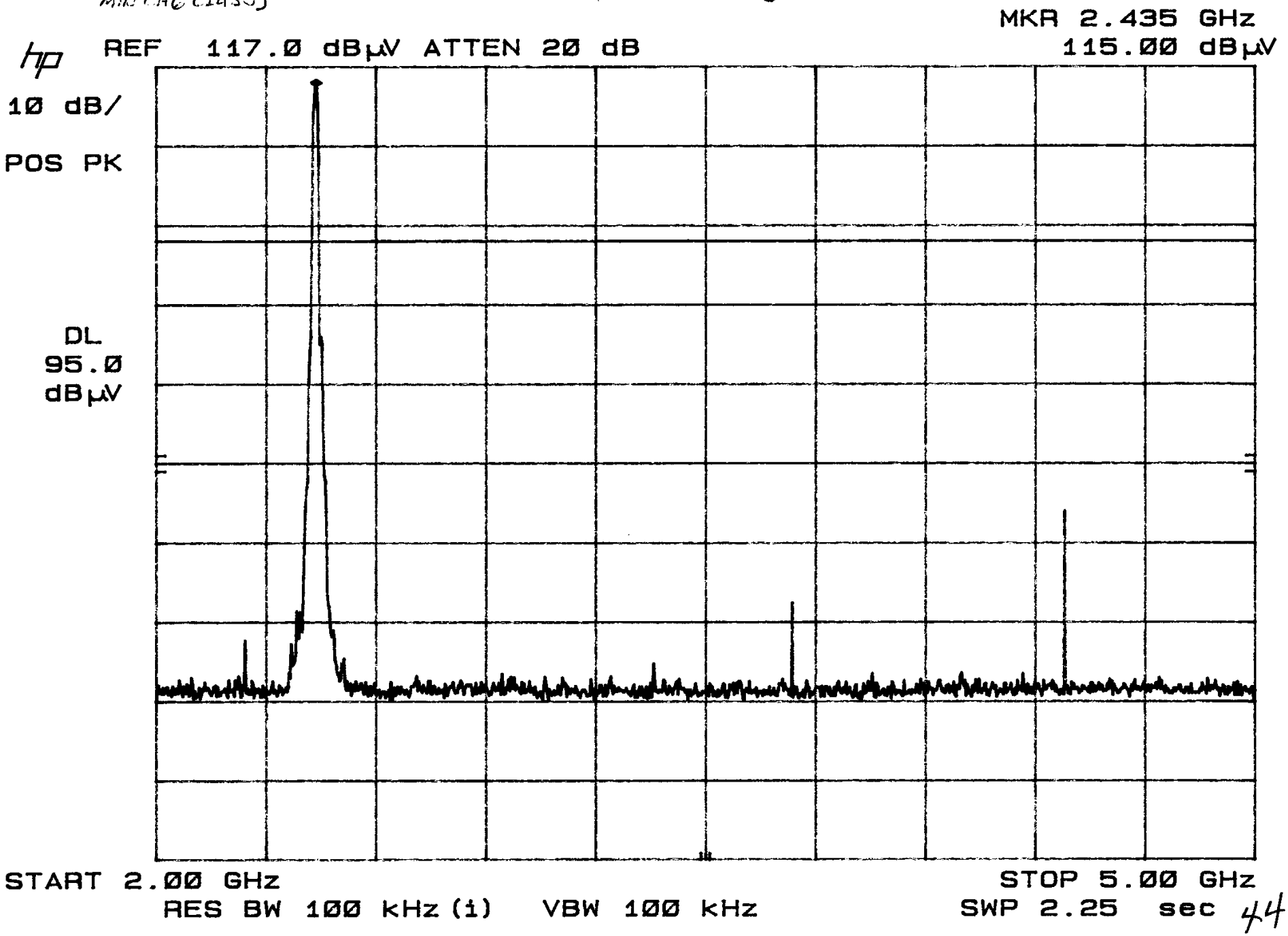
15.247(c)



CONDUCTED RF EMISSIONS

MID CH6 (2438)

15.247(c)



CONDUCTED RF EMISSIONS

MID CH (2438)

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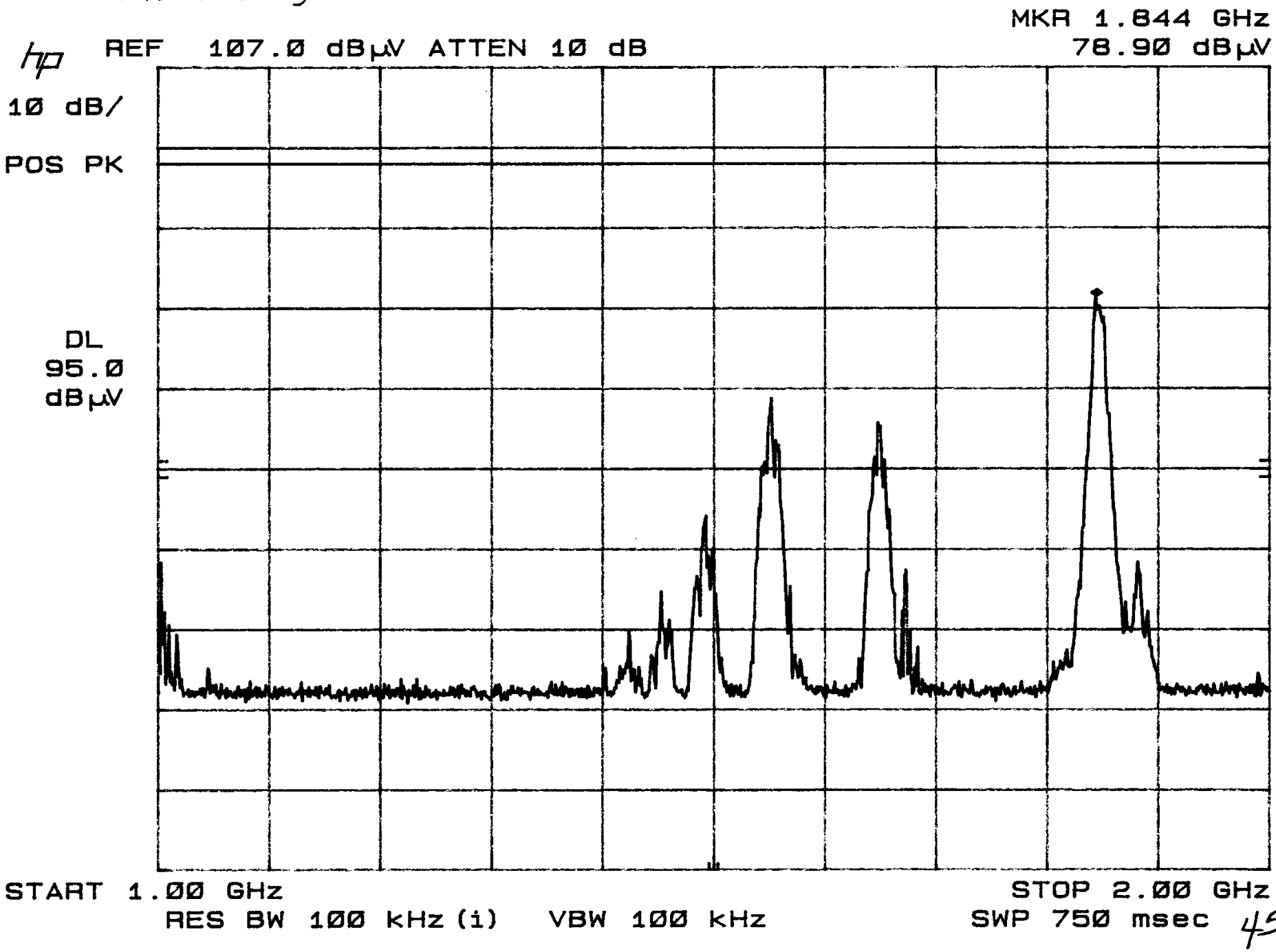
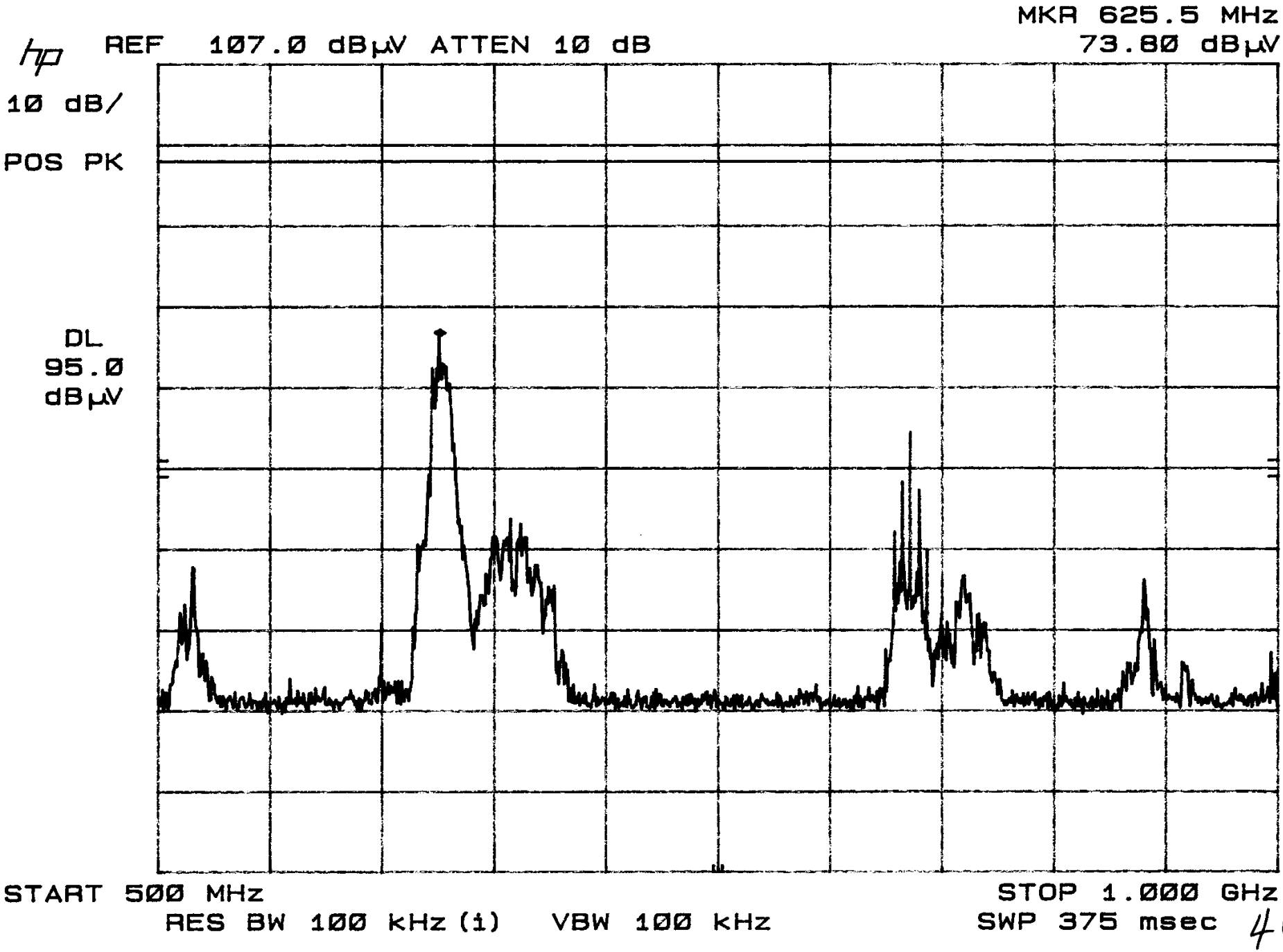


CONDUCTED R-F EMISSIONS

MID CHL (2438)

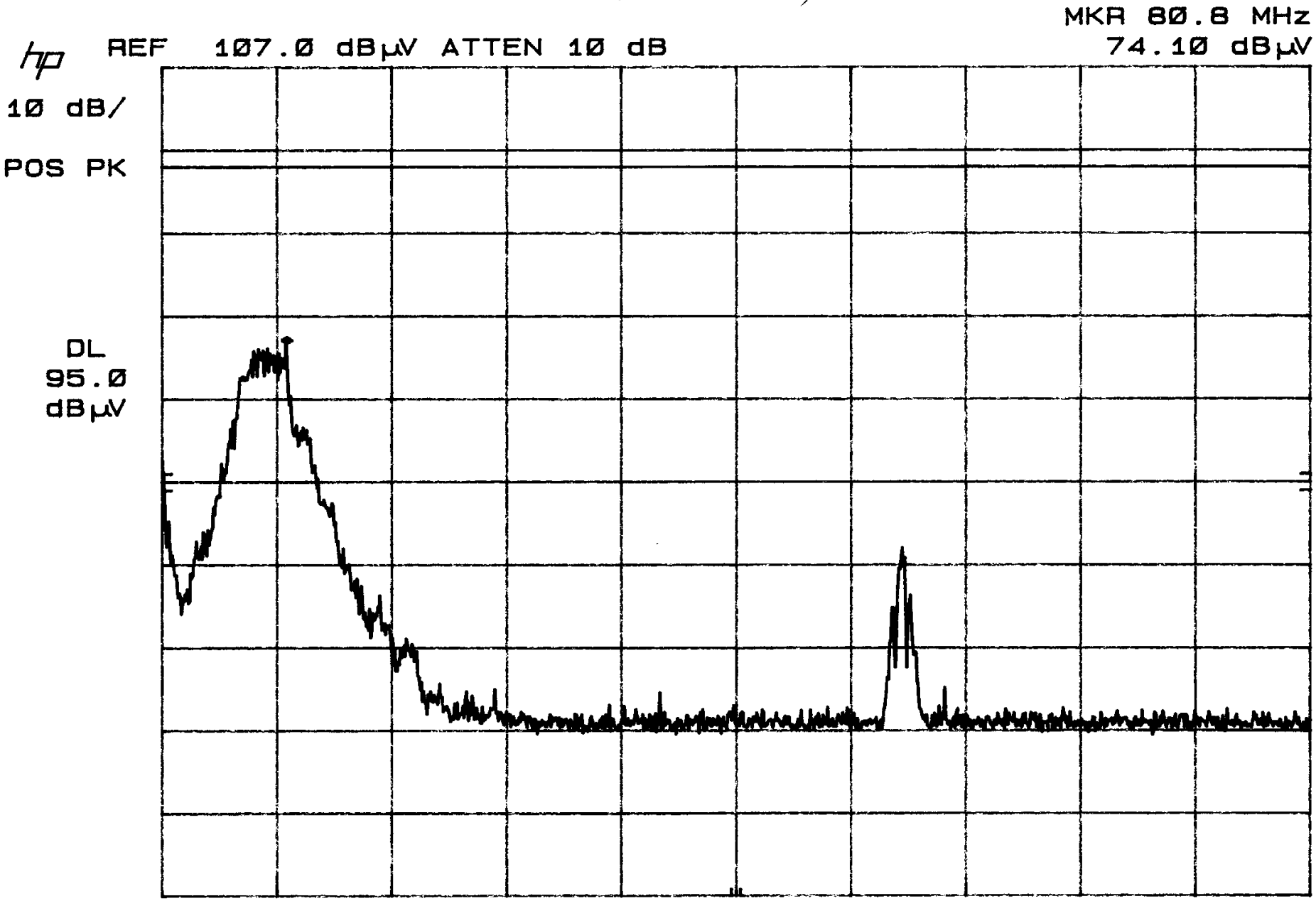
15.247(c)



CONDUCTED RF EMISSIONS

MID CH (2438)

15.247(c)



CONDUCTED RF EMISSIONS

LOW CH (2409)

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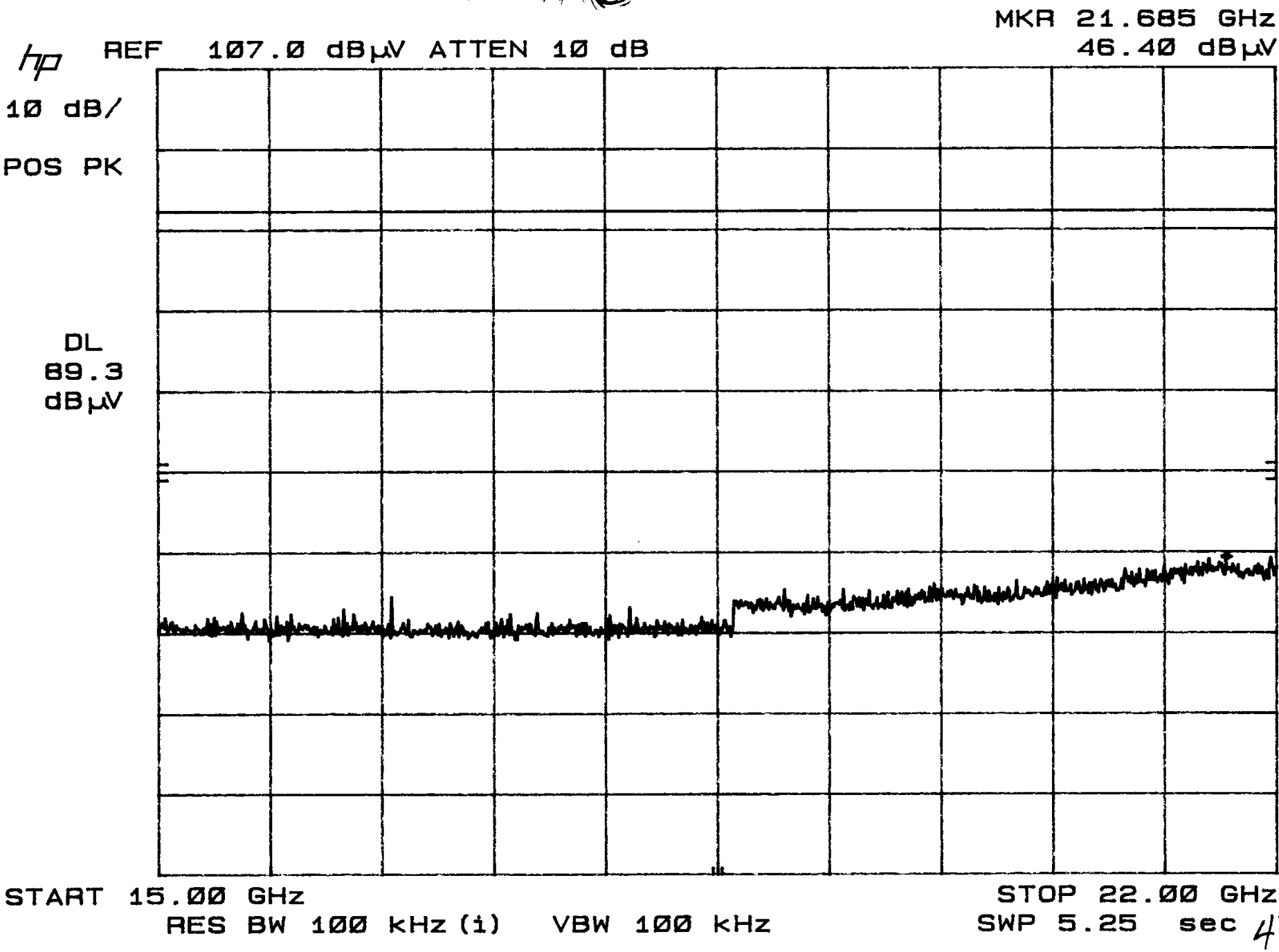
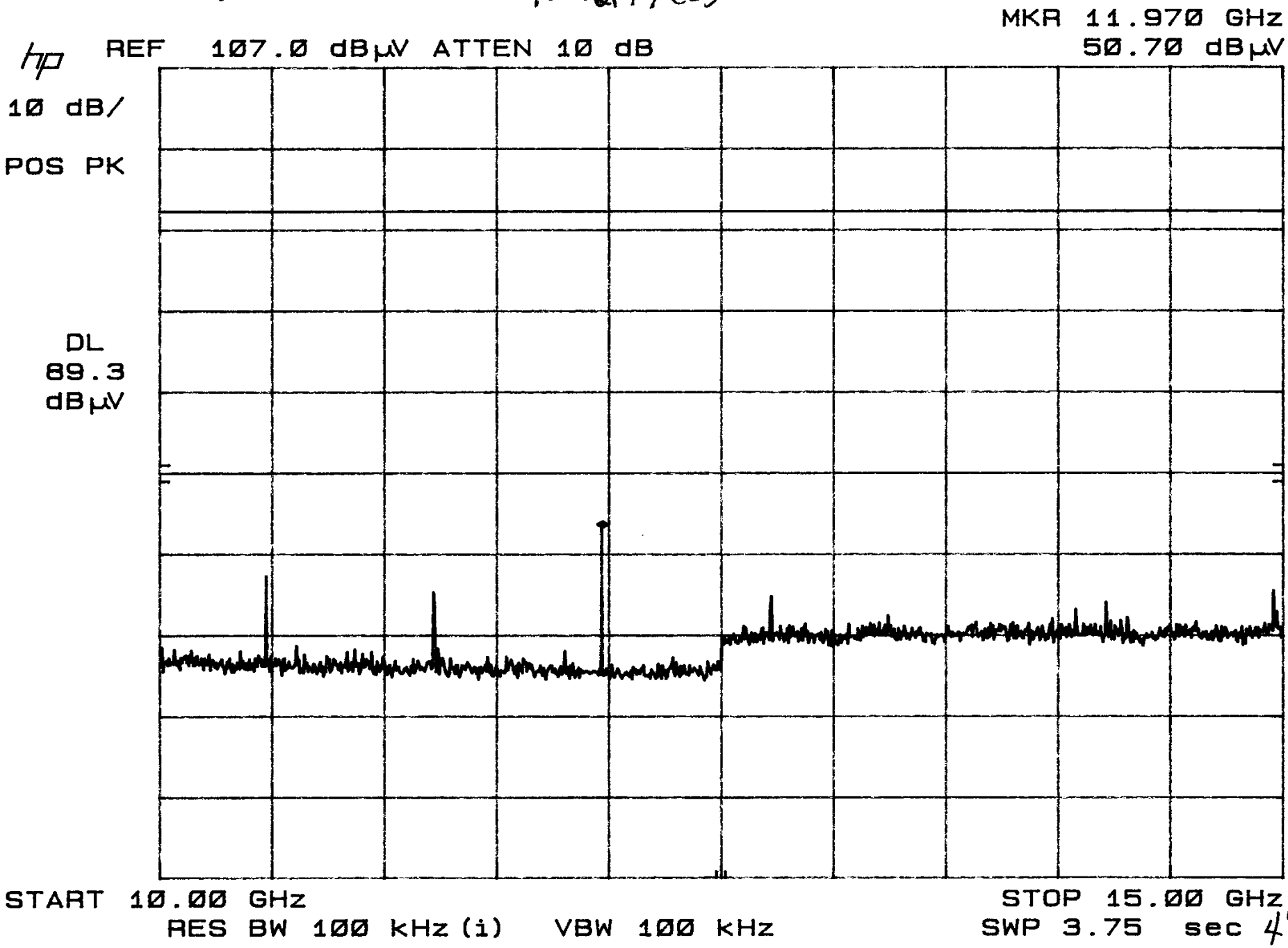


CONDUCTED RF EMISSIONS

LOW CH1 (2400)

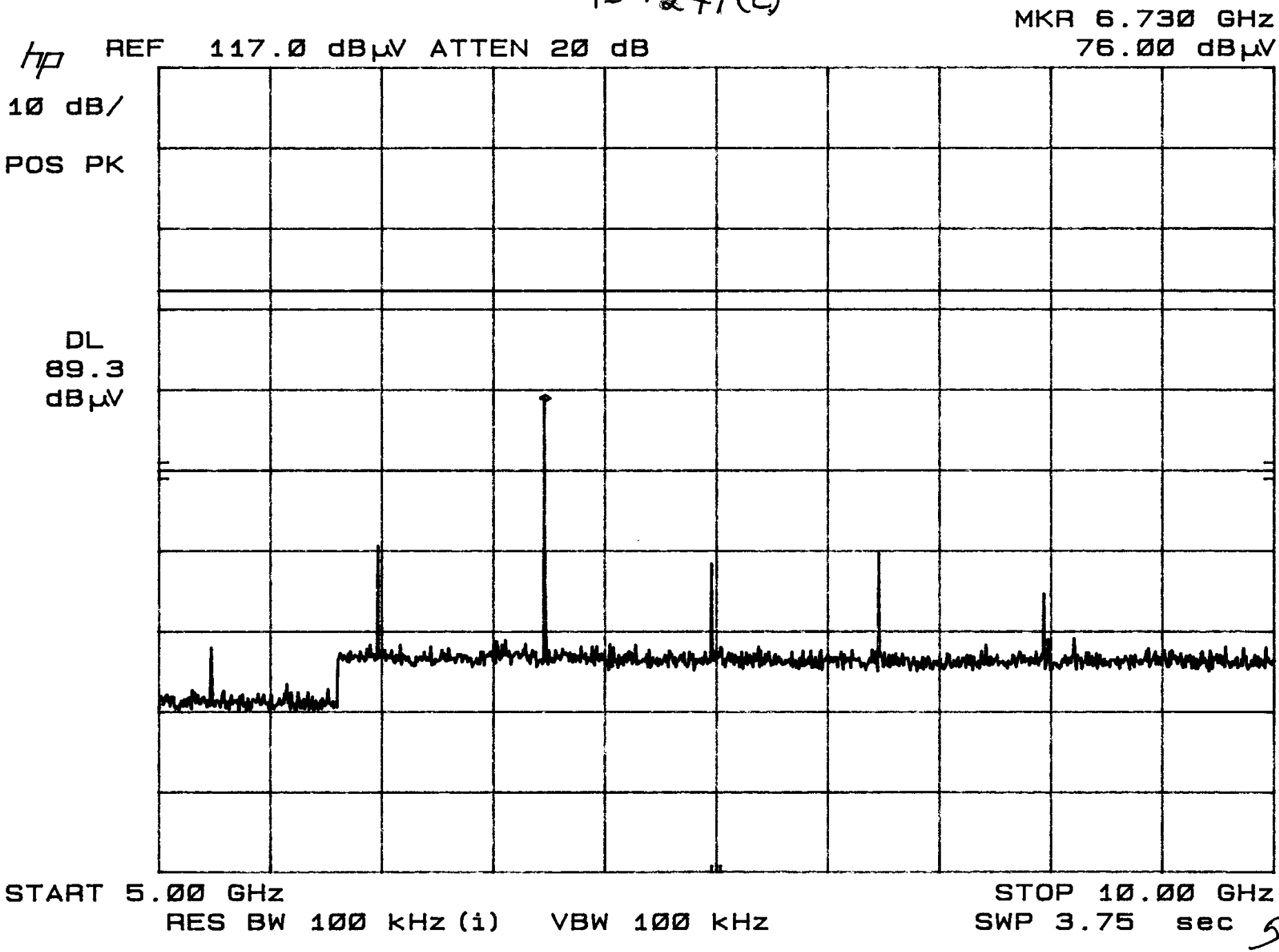
15.247(c)



CONDUCTED RF EMISSIONS

LOW CH (2408)

15.247(c)



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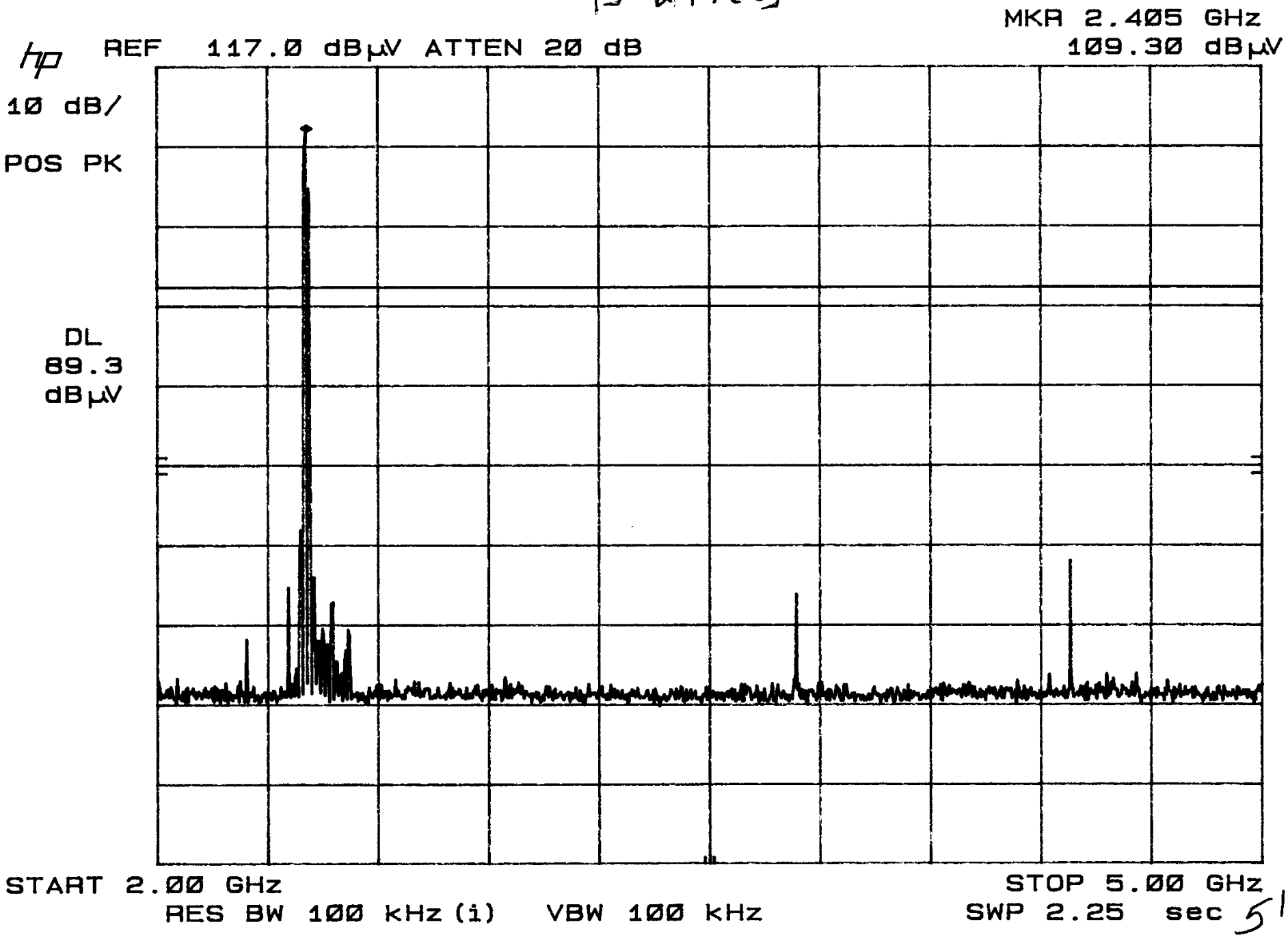
CONDUCTED RF EMISSIONS

LOW CH (2408)

15.247(c)



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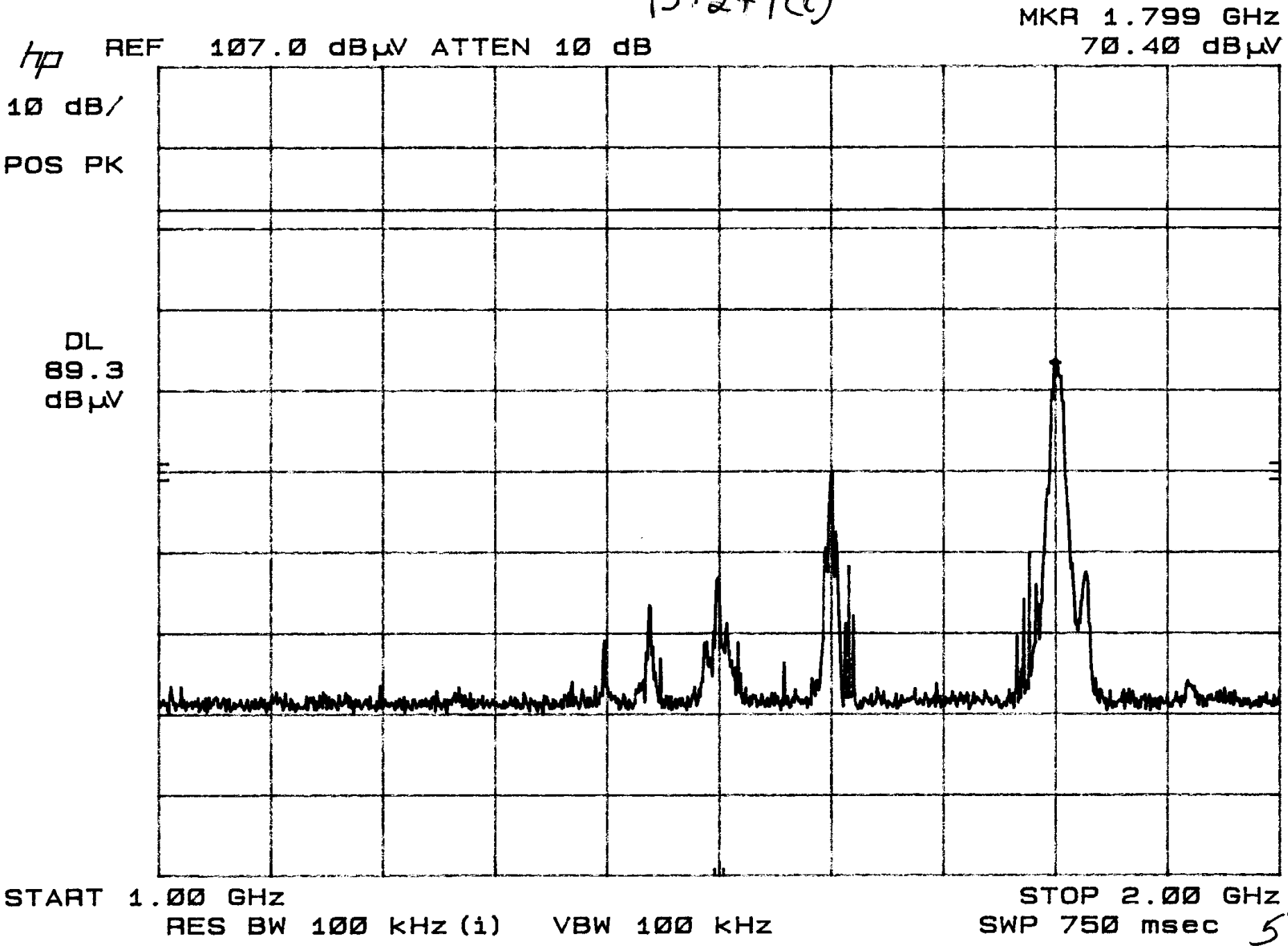
CONDUCTED RF EMISSIONS

LOW CH: (2408)

15.247(c)



CONDUCTED RF EMISSIONS

LOW CH (2402)

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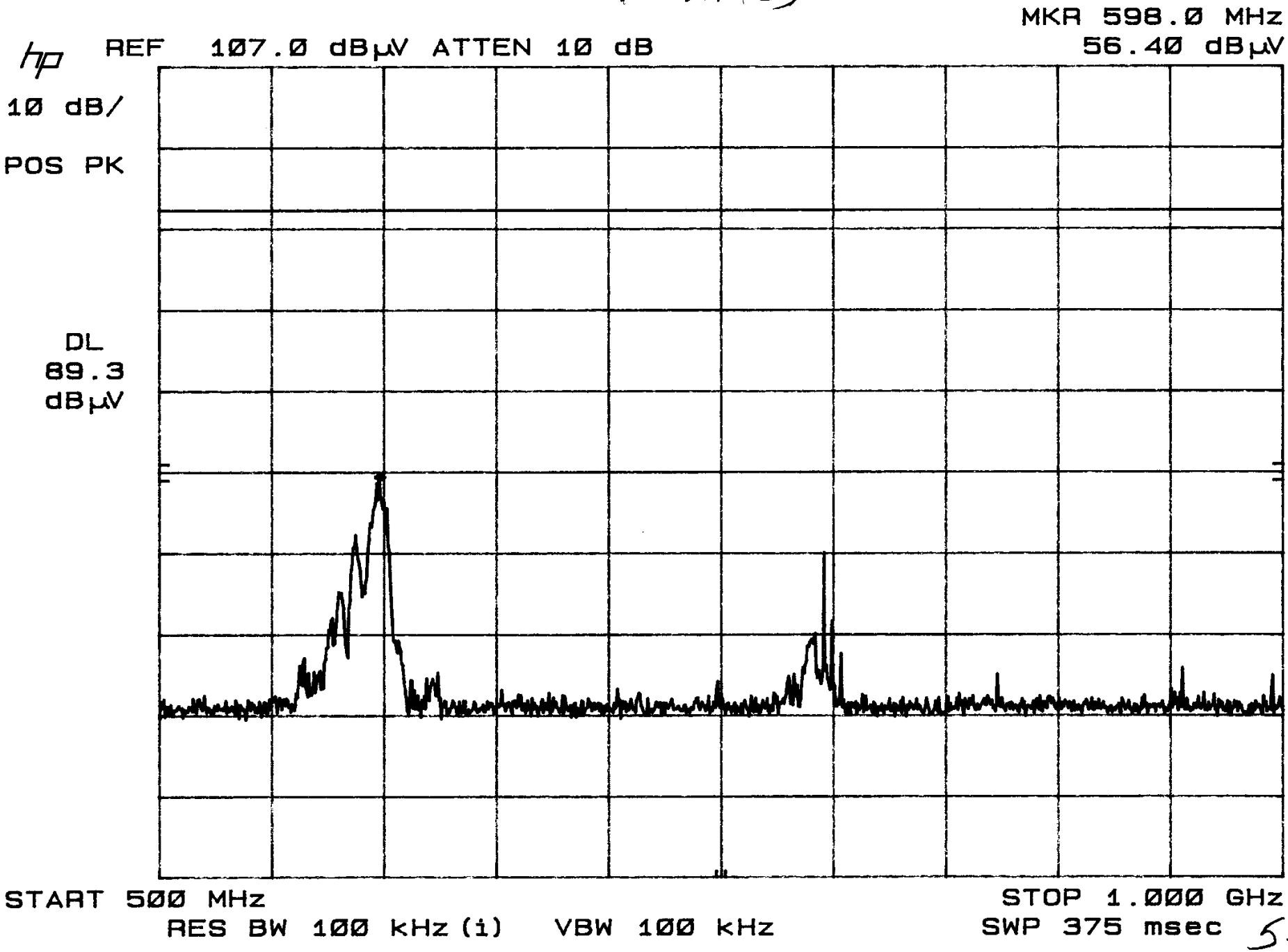

CONDUCTED RF EMISSIONS

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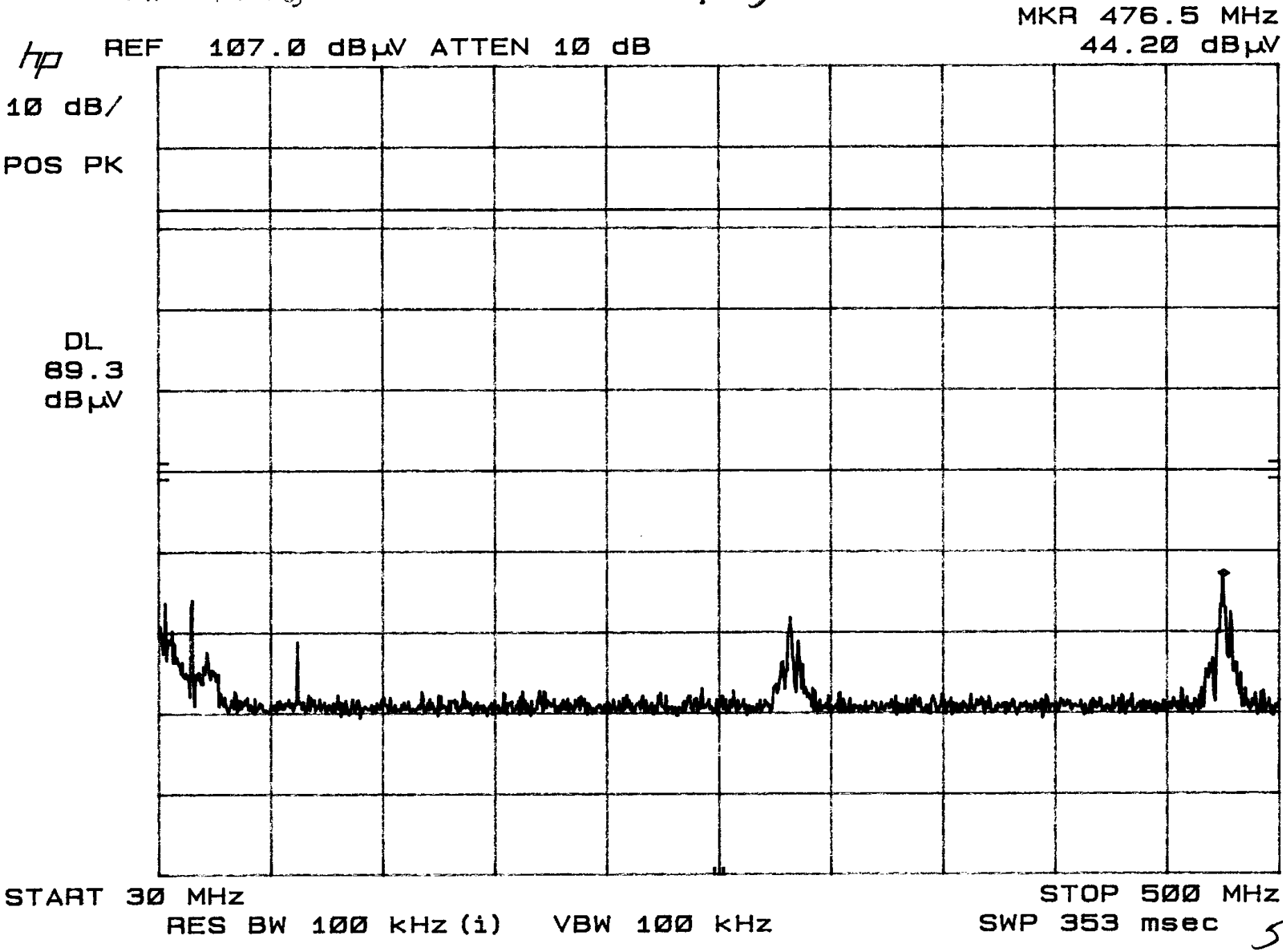
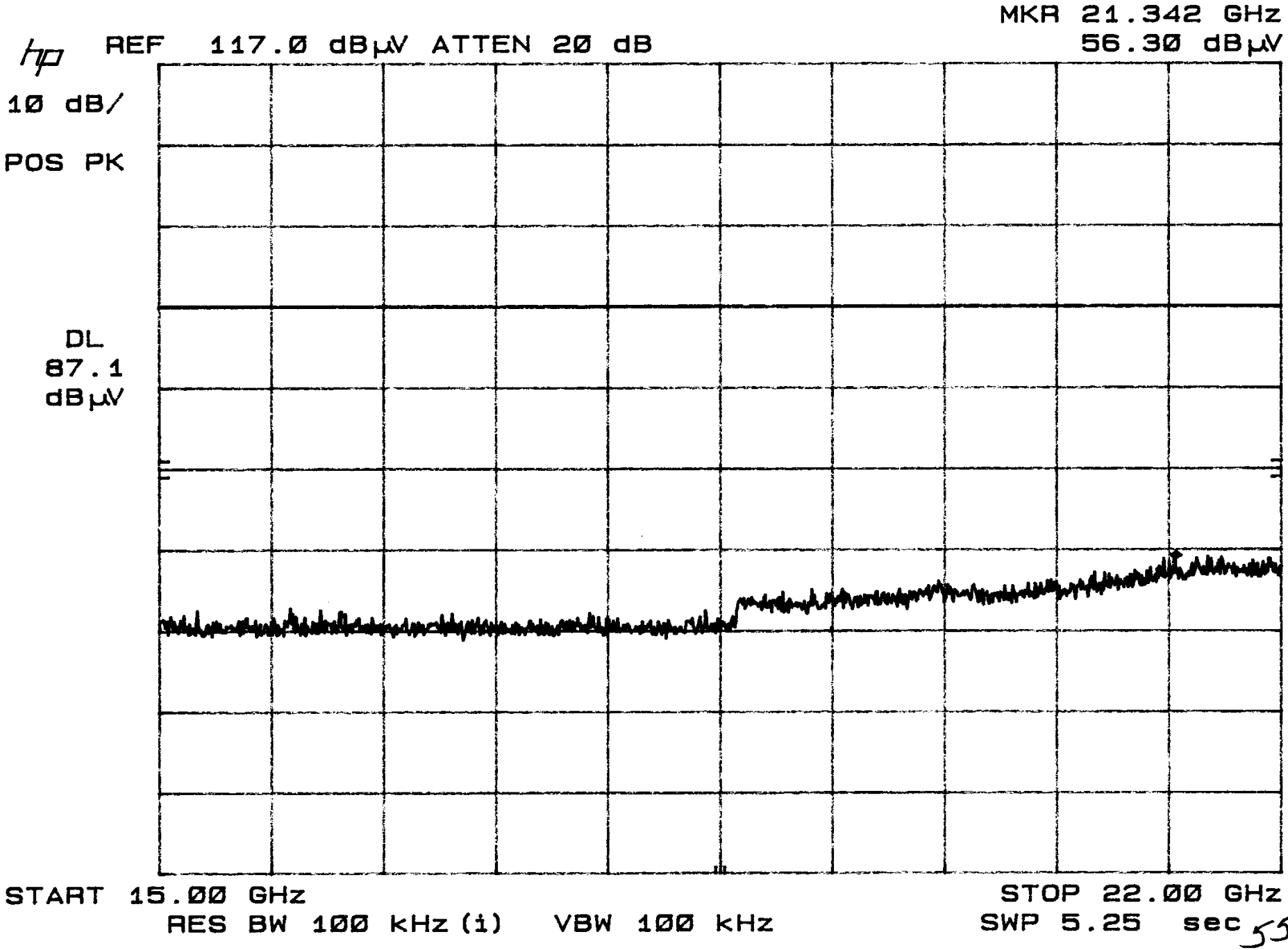


CONDUCTED RF EMISSIONS

HIGH CH (2463)

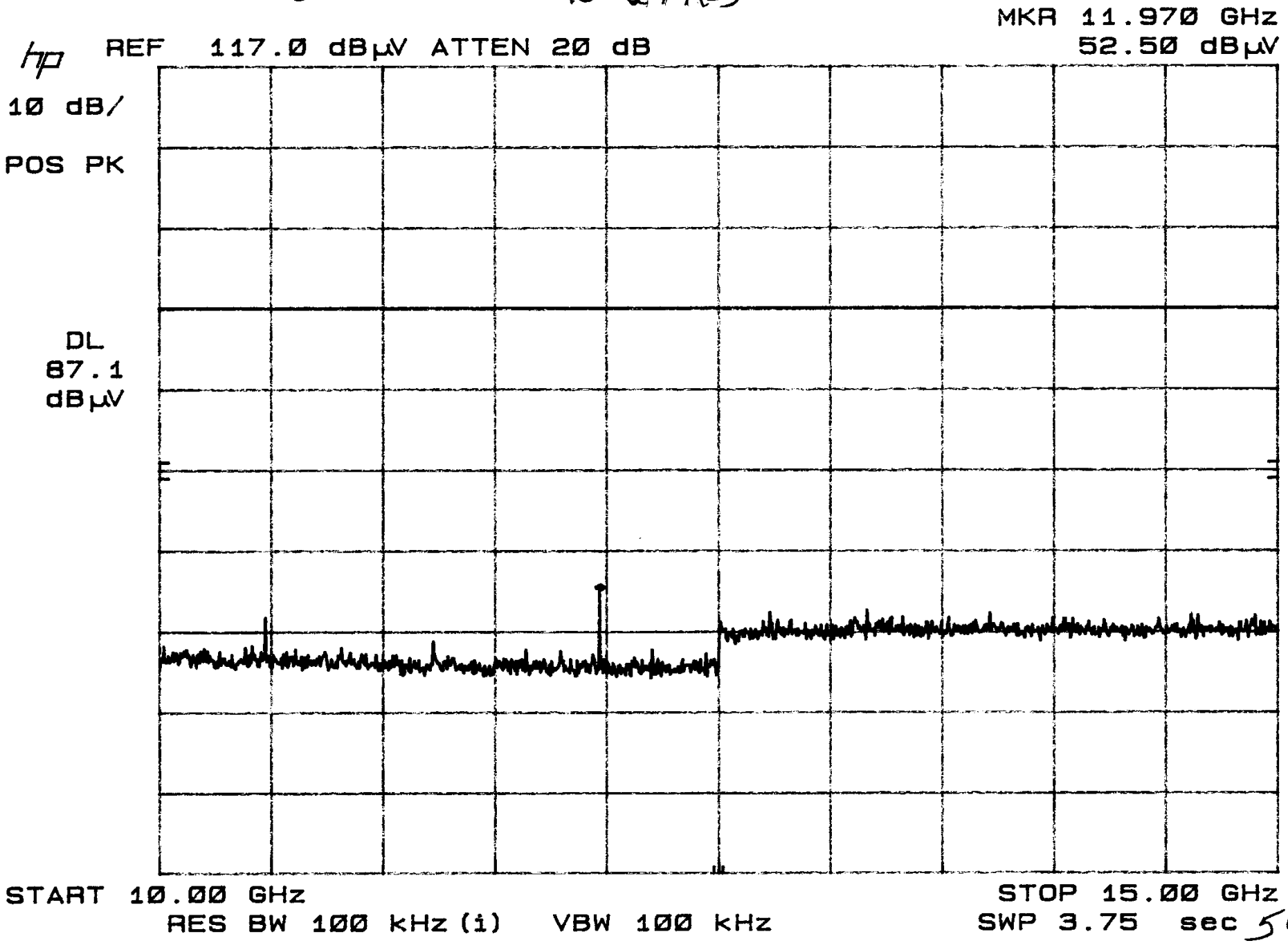
15.247(c)



CONDUCTED RF EMISSIONS

HIGH CH II (2468)

15.247(c)



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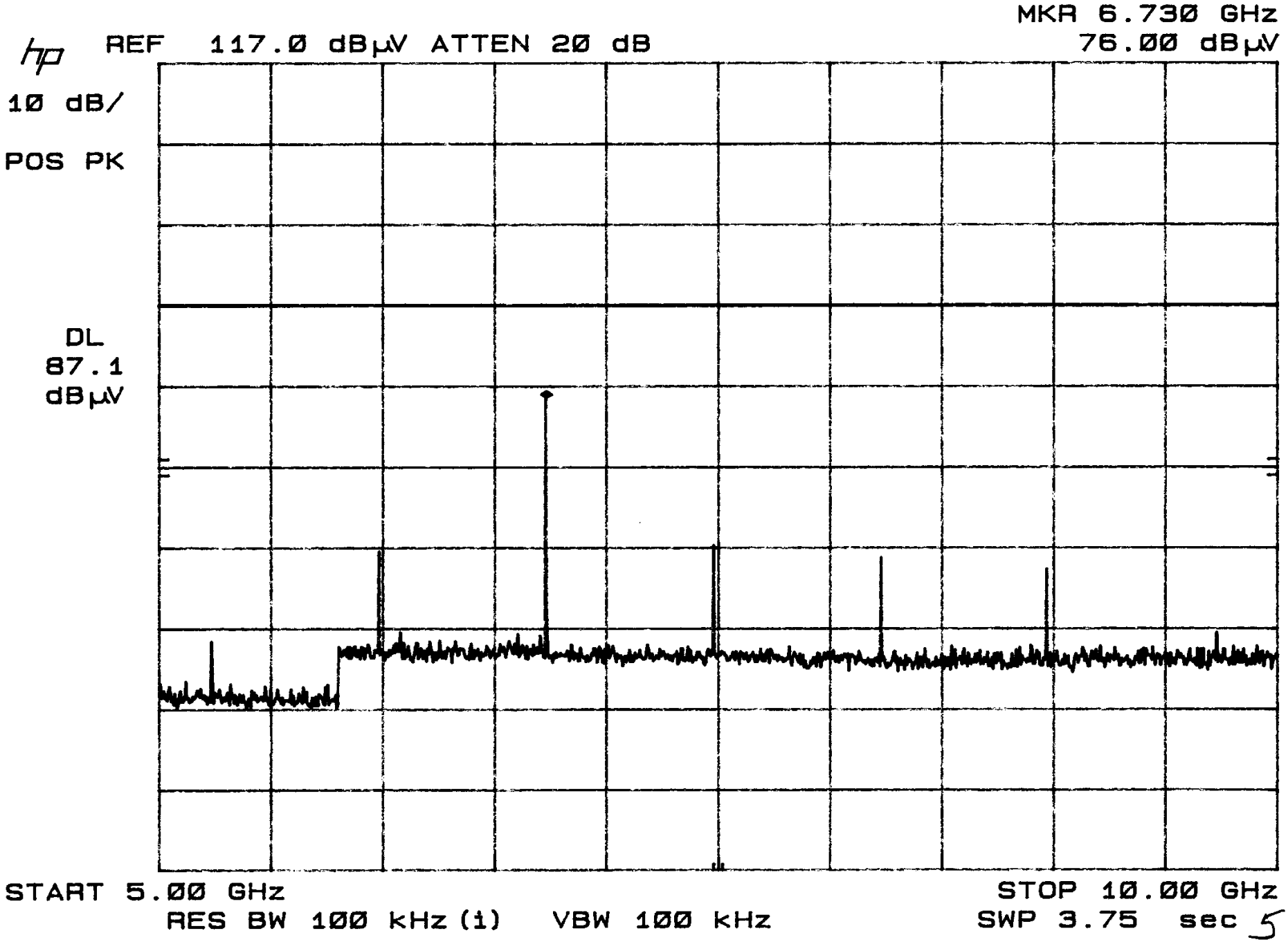
CONDUCTED RF EMISSIONS

HIGH CH 11 (2462)

15.247(c)



CONDUCTED RF EMISSIONS

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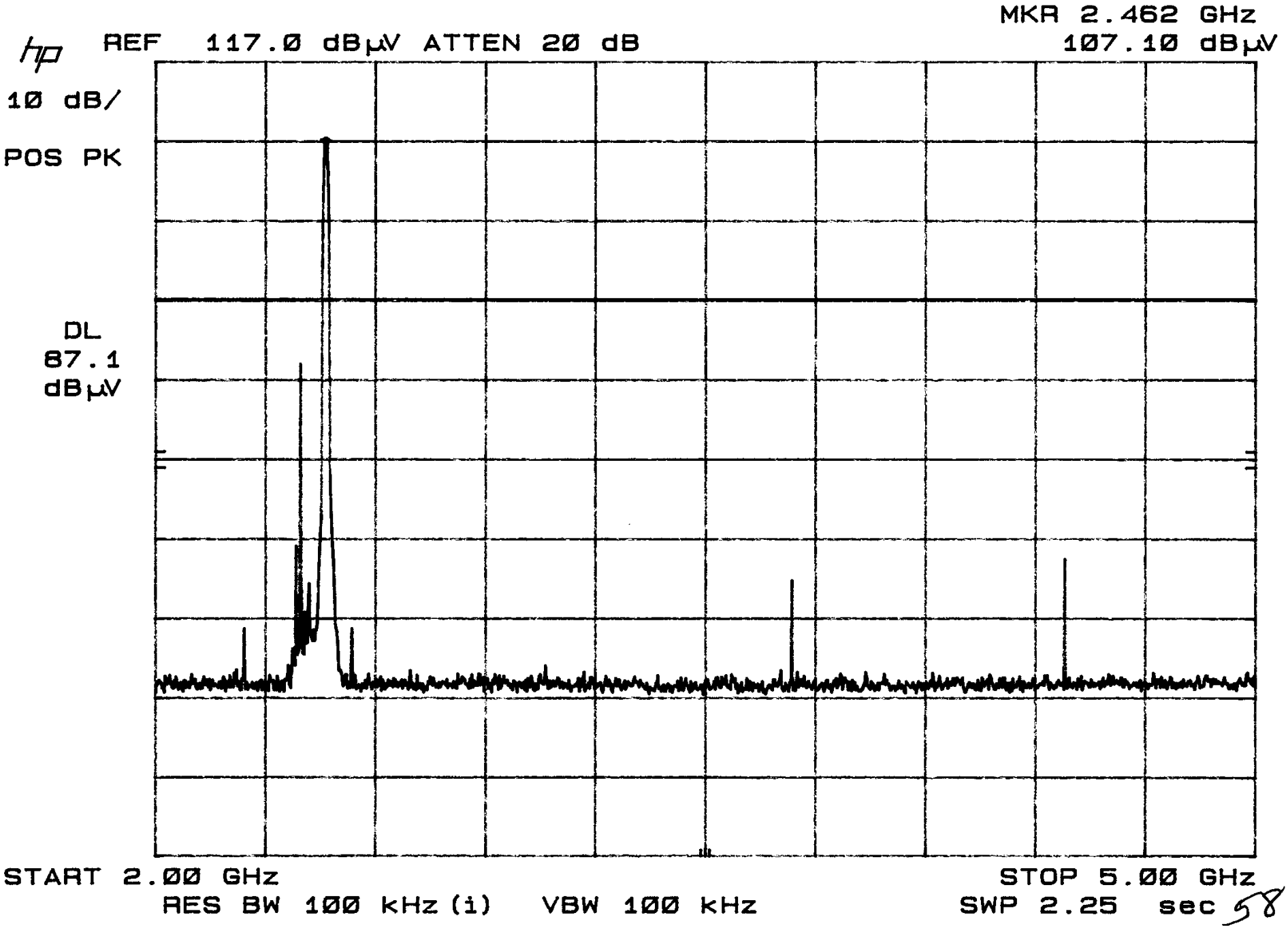
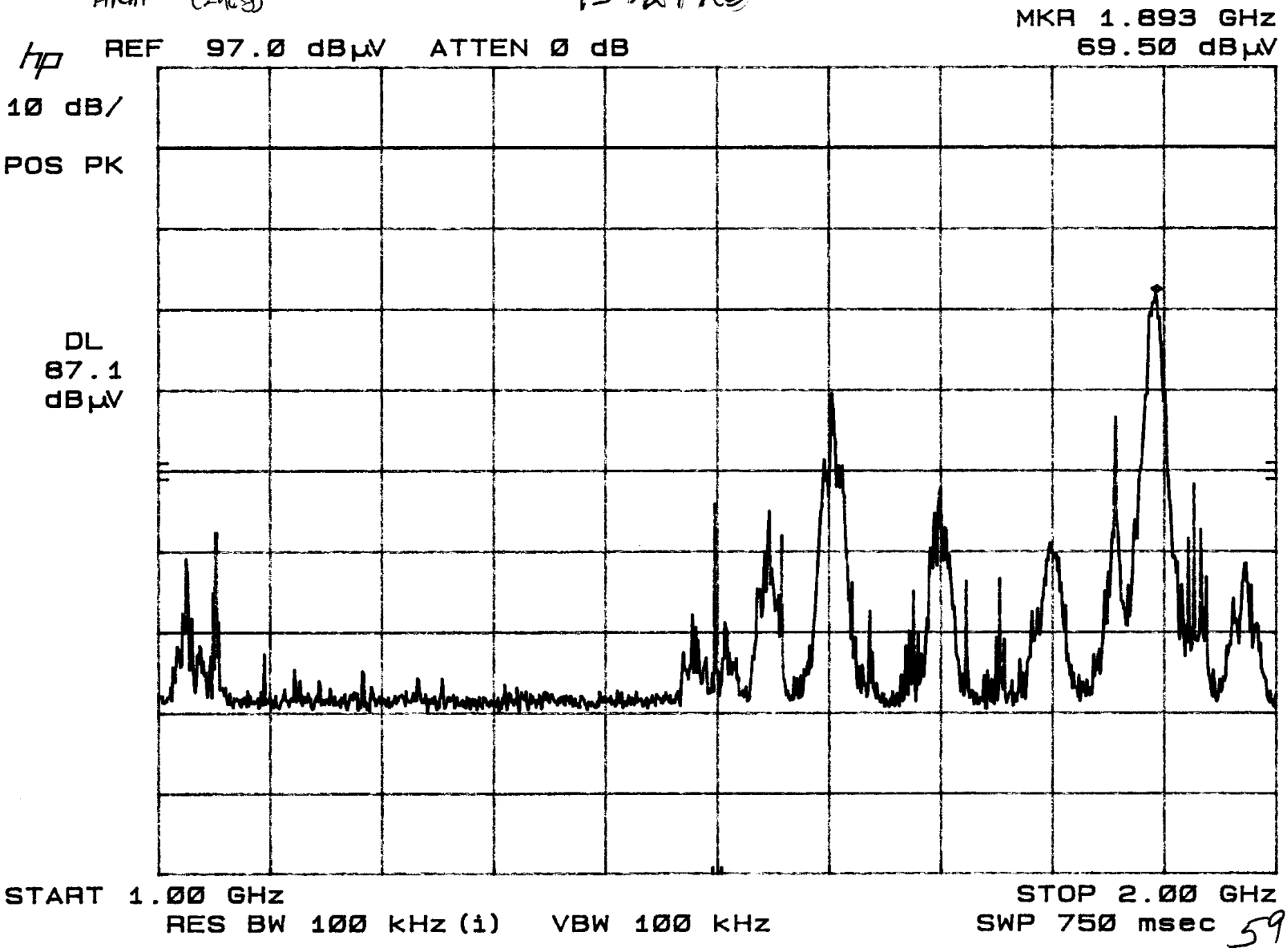
15.247(c)



CONDUCTED RF EMISSIONS

HITACHI (2169)

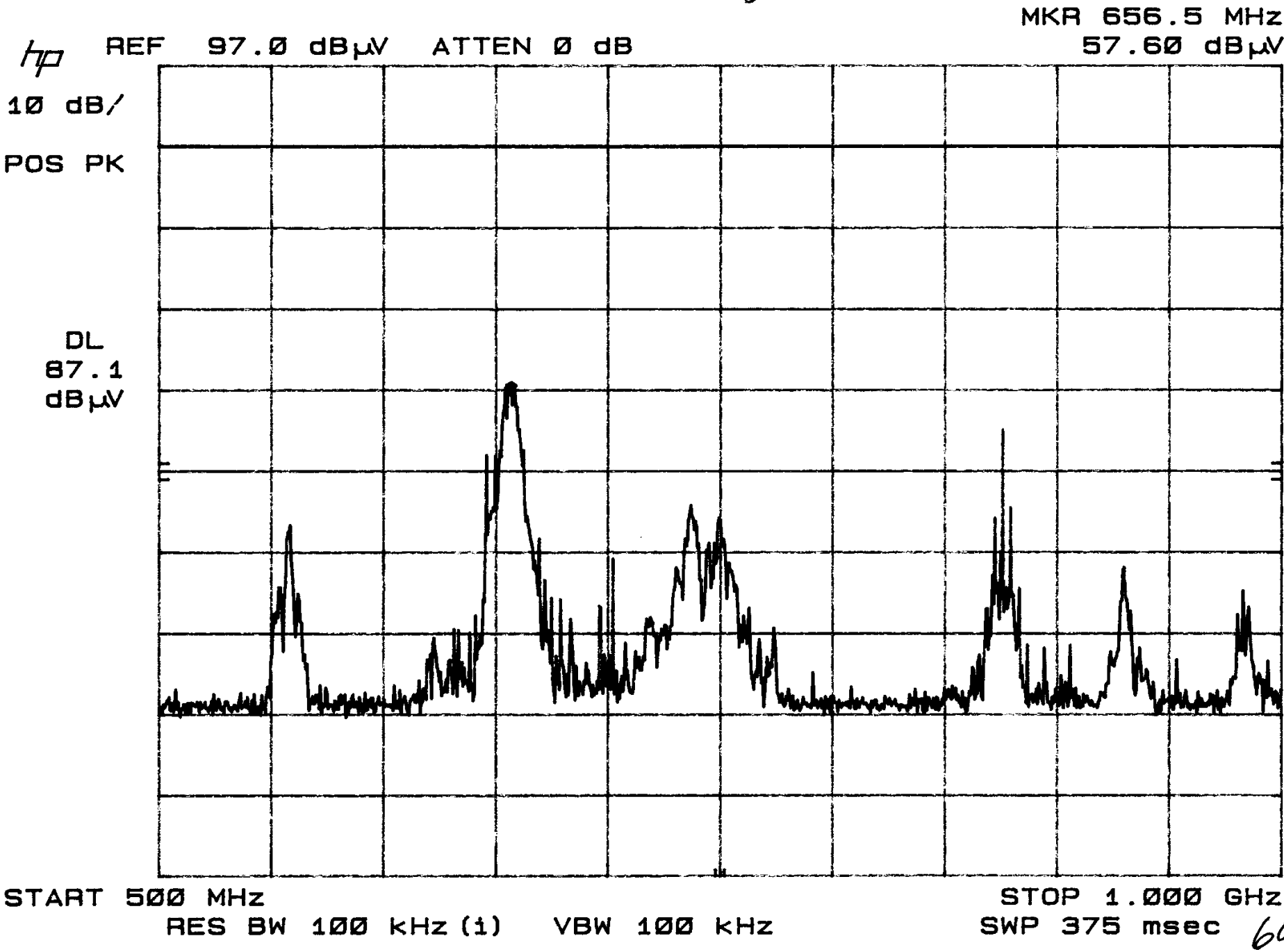
15.247(c)



CONDUCTED RF EMISSIONS

HIGH CH 11 (2462)

15.247(c)



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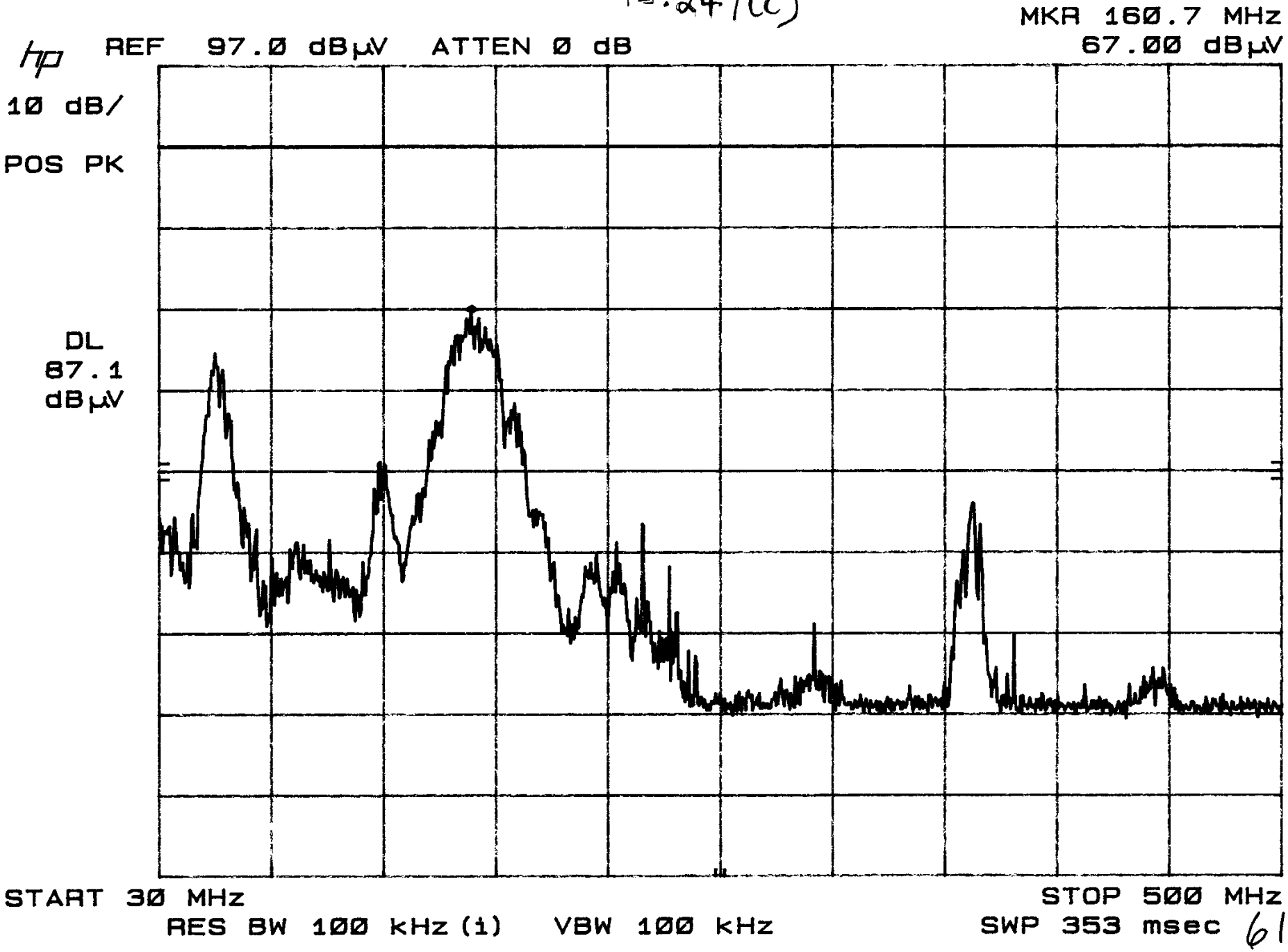
CONDUCTED RF EMISSIONS

HIGH CH 11 (2468)

15.247(c)



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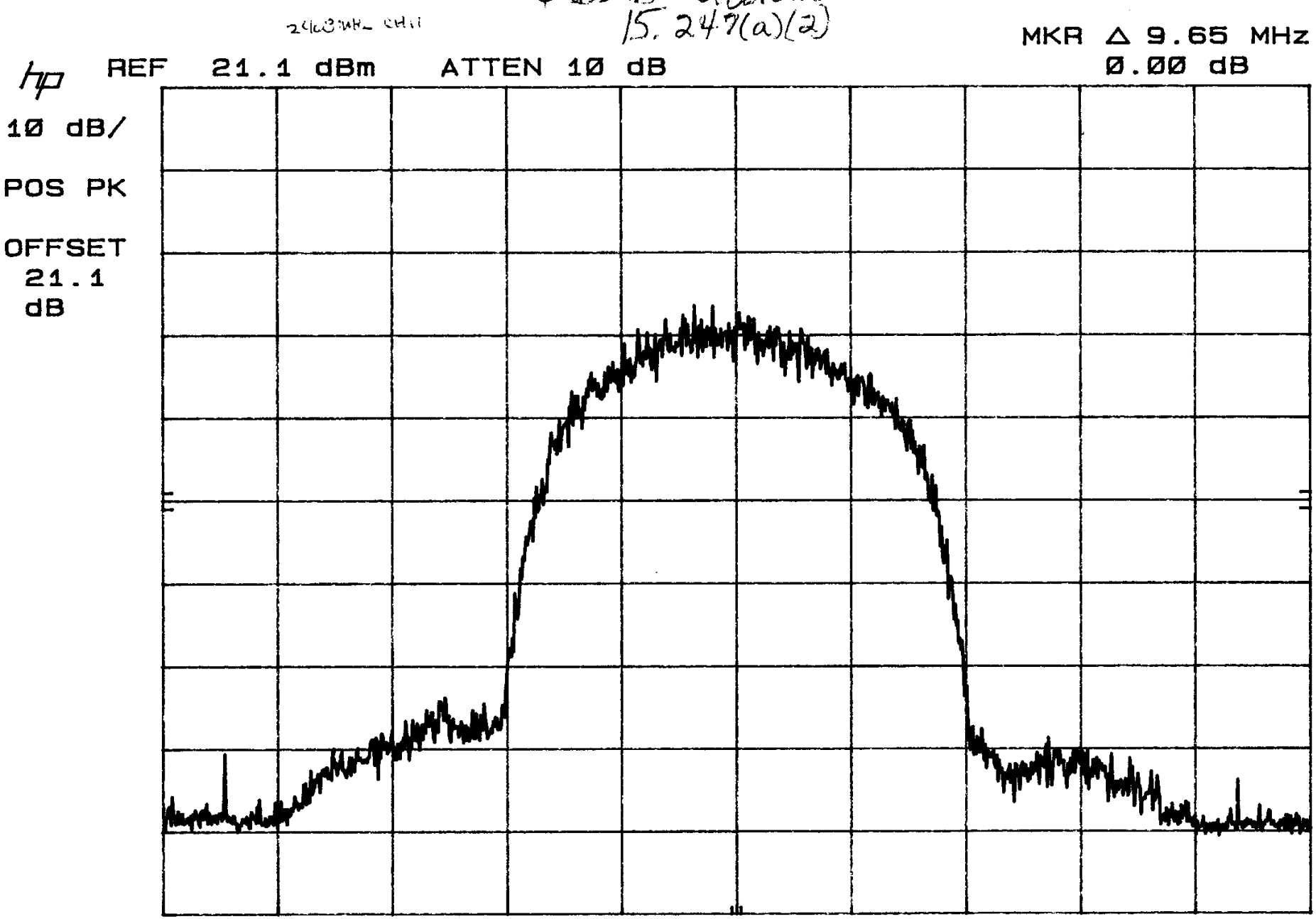
6 dB Bandwidth
15.247(a)(2)

2463MHz CH11



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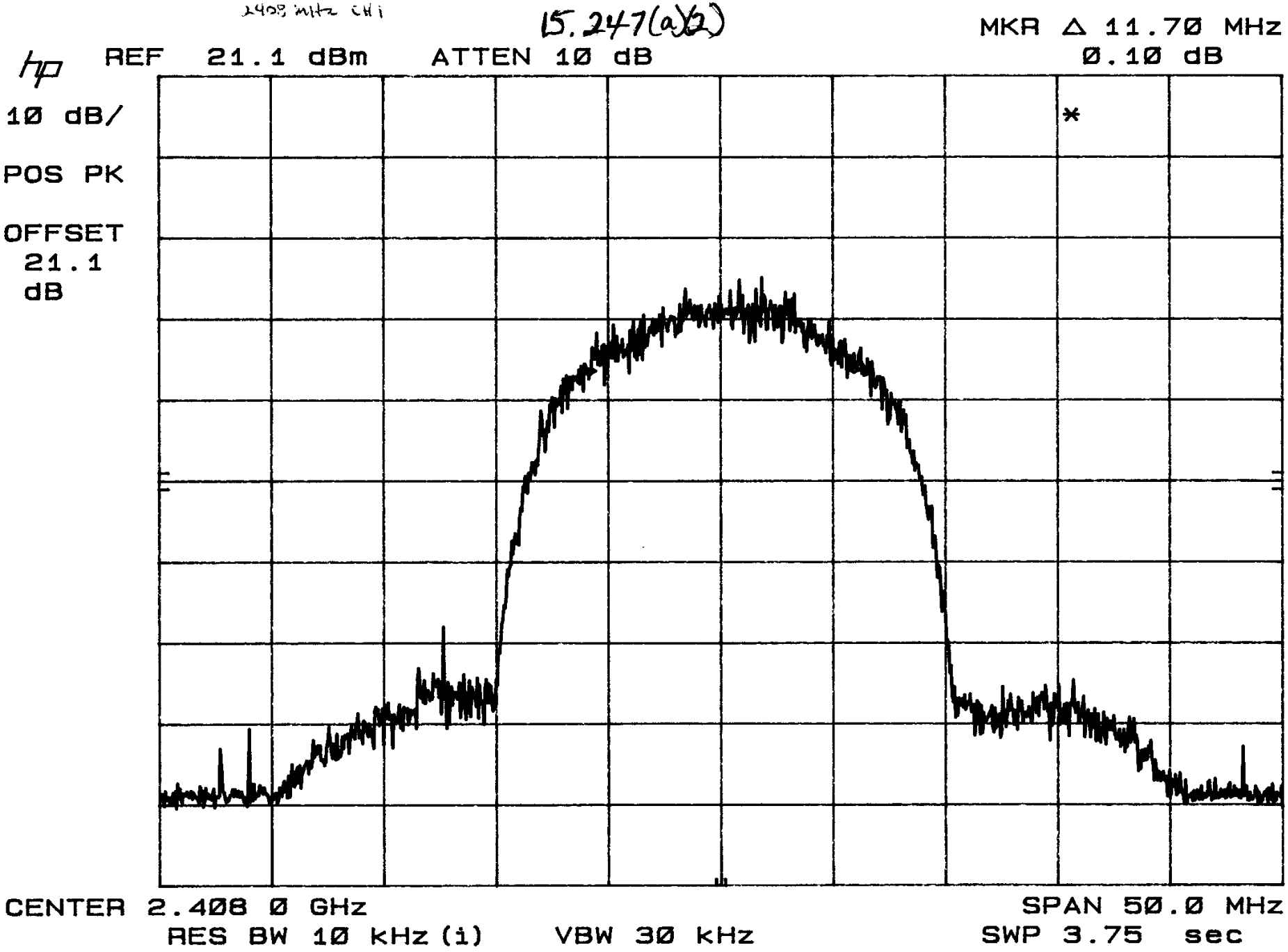
SOUTEK

6 dB Bandwidth

15.247(a)(2)

2408 MHz CH1

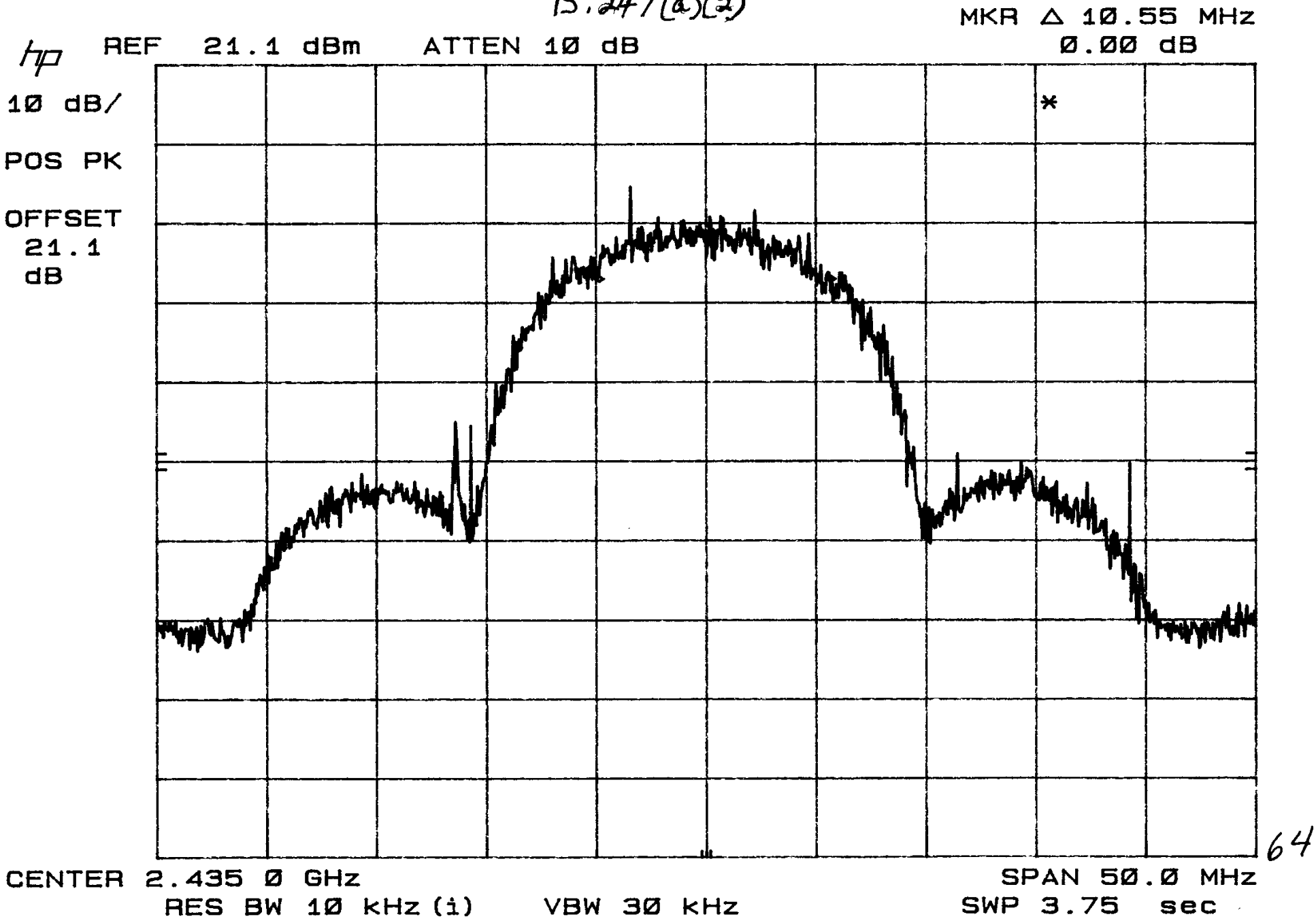


SOUTER

6 dB Bandwidth

15.247(a)(2)

2438 MHz CH6



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6 PEAK POWER SPECTRAL DENSITY EQUIPMENT/DATA

■ - SR-3, Shielded Room, 12’ x 20’ x 8’, Metal Chamber

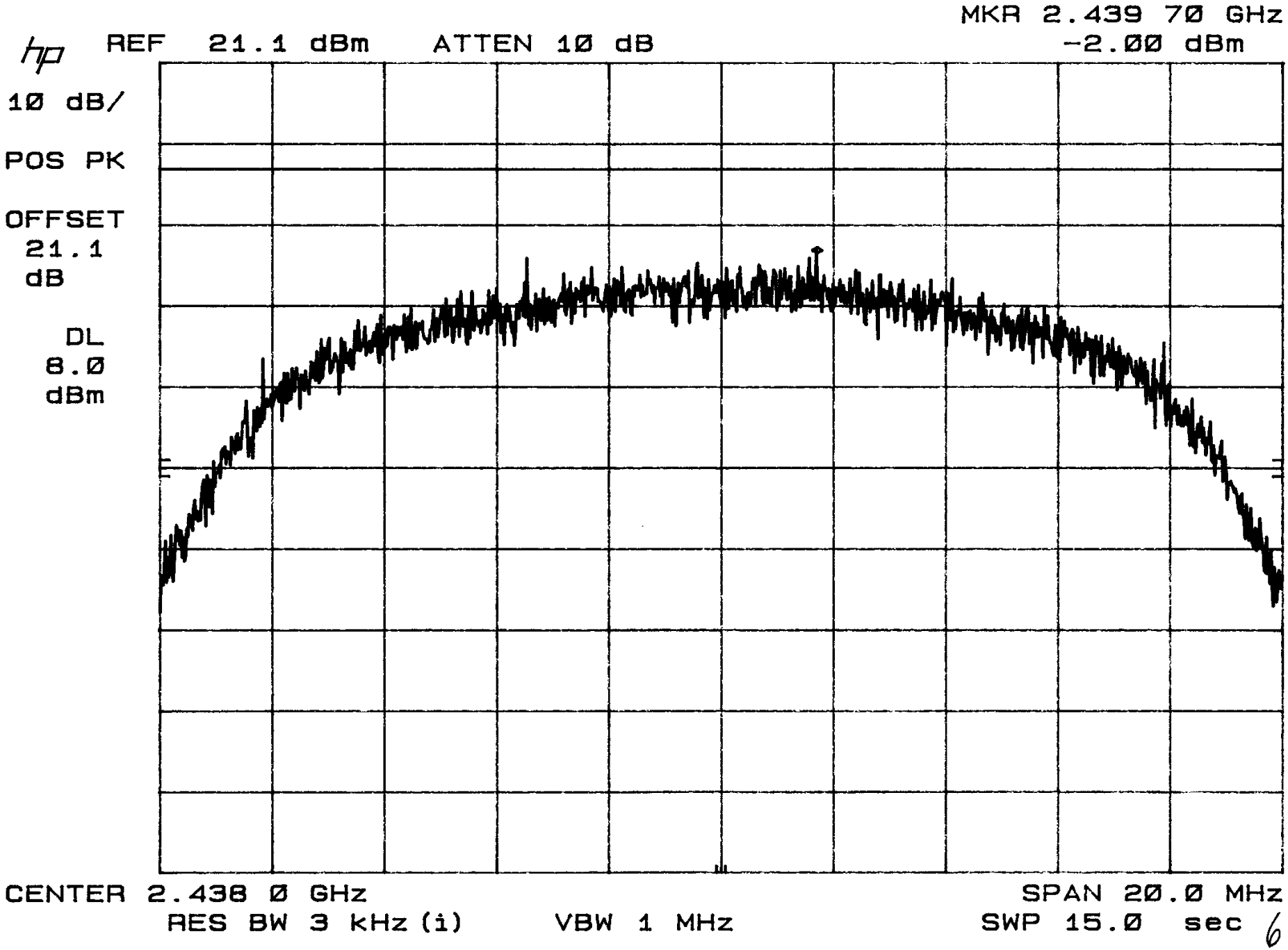
Test Equipment Used :

8566B	407	Spectrum Analyzer	Hewlett Packard	02/02

3 dB Attenuator, Verified
Spectrum Analyzer, P/N 407, Model 8566B, Hewlett Packart, Cal 02/02

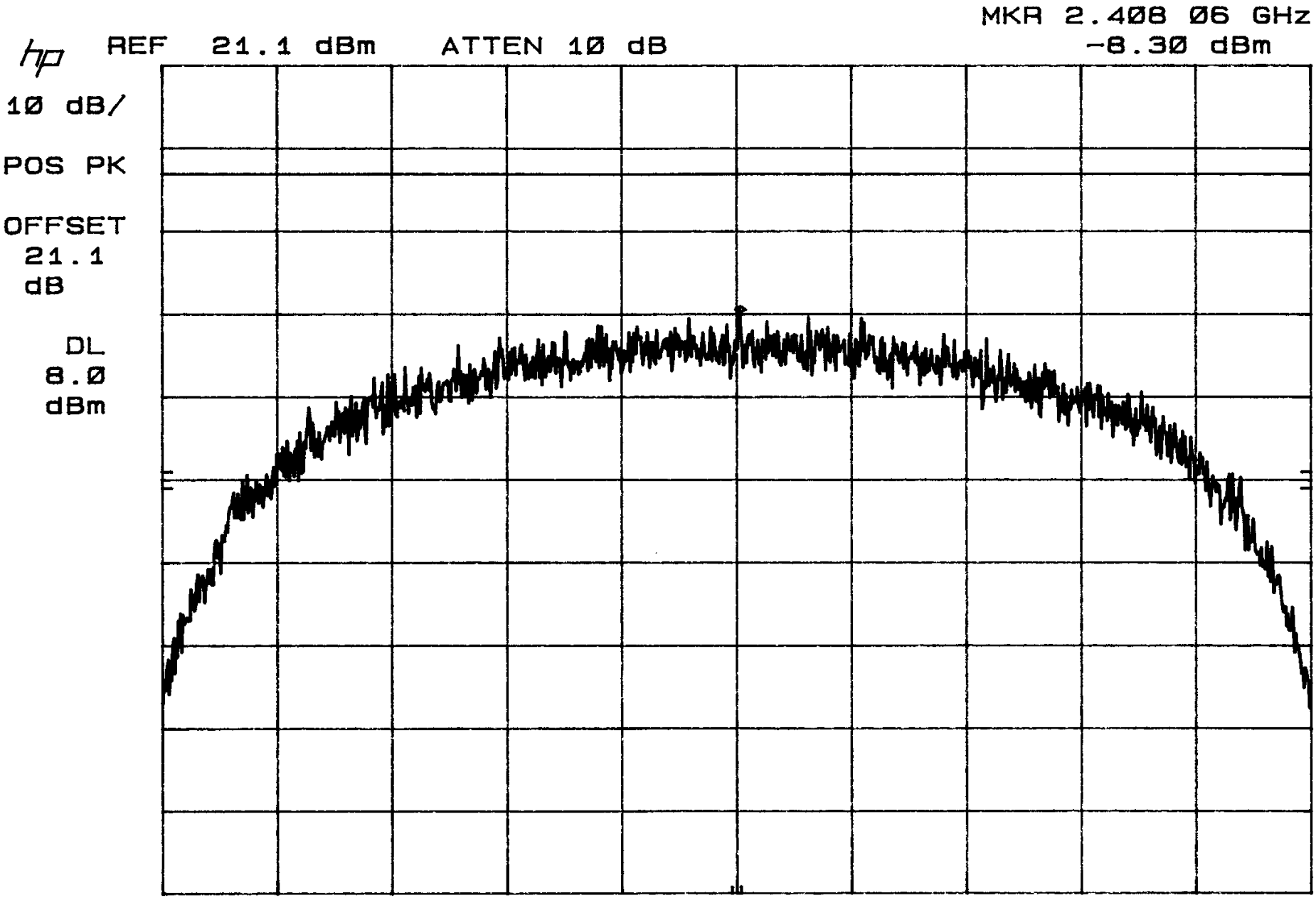
15.247(d) PEAK POWER SPECTRAL DENSITY SOUTHTEL

SKYMATE MID 2439MHz CHC 23.4dBm



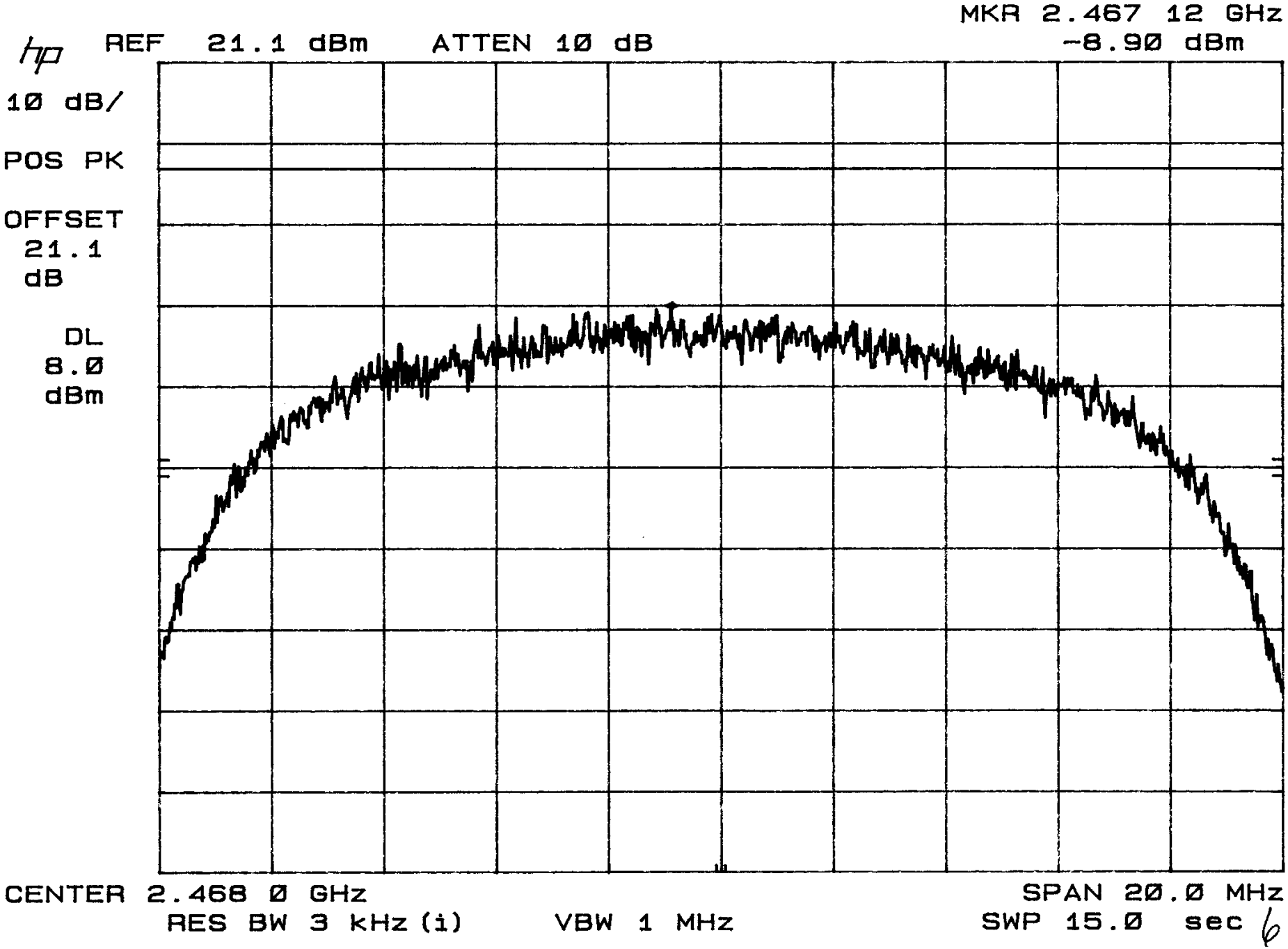
IS 247(d) PEAK POWER SPECTRAL DENSITY SOLECTEK

SKYMATE LOW 2408 MHz CH1 17dBm



15.247(d) PEAK POWER SPECTRAL DENSITY SOUTHTEK

SKYMATE HIGH 2467 MHz CH 11 17dBm



7 PEAK POWER EQUIPMENT/DATA (15.247(b)(1)

Note: Peak power output is software controled. Channels 1 and 11 has a maximum power output of 51 mW and channels 2 through 9 have a maximum power output of 200 mW.

Peak Power Output: 47 mW, Low, Channel 1, 2408 MHz
Peak Power Output: 185 mW, Mid, Channel 6, 2438 MHz
Peak Power Output: 48 mW, High, Channel 11, 2468 MHz

Peak Power Sensor, Hewlett Packard, Model 84811A, Cal 03/31/01
Power Meter, Hewlett Packard, Model 8900D, Cal 03/31/01

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8 ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests performed per CFR 47, *FCC Part 15, Paragraphs 15.205; 15.209; 15.247(a)(2); 15.247(b)(1); 15.247(c); and 15.247(d)* were
■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, *FCC Part 15, Paragraphs 15.205; 15.209; 15.247(a)(2); 15.247(b)(1); 15.247(c); and 15.247(d)*

- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:

Jim Owen
(EMC Engineer)

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Solectek Corporation
6370 Nancy Ridge Drive, Suite 109
San Diego CA 92121-3212

Test Report of
SkyMate
FCC Processing Gain Measurement

Solectek Corporation
FCC ID: KA324WAN6

Author: Juan Yin
Date: March 2001

Table of Contents

1 CW Jamming Margin Test Method

1.1 Theory of test and processing gain formula

The processing gain is measured using the continuous wave (CW) jamming margin method, performed under the guidance of the FCC rules, Part 15.247(e). A signal generator is used to inject a jammer into an established unidirectional system link. The test consists of stepping the signal generator across the passband of the system in 50kHz increments. At each point the jammer power required to degrade the system to a 1 x 10^{-5} Bit Error Rate (BER) is recorded as the Jammer signal level (J). The output power of the system transmitter is measured and recorded as the desired Signal level (S). The Jammer to Signal ratio (J/S) is then calculated at each interval within the passband. 20% of the worst (lowest) data points are discarded as permitted by the FCC. The lowest remaining J/S ratio is used to calculate the processing gain (G_P) using the following formula:

$$G_P = \frac{Es}{N_0} + M_J + L_{SYS}$$

E_S / N_0 = Required energy per symbol-to-noise ratio
M_J = Jamming margin, or J/S ratio
L_{SYS} = System implementation loss

The minimum required processing gain required by the FCC is **10d**B.

1.2 E_S/N_0 requirement

The SkyMate transceiver implements the Prism II chipset from Intersil. At the 11Mbit/s data rate Complementary Code Keying (CCK) modulation is used. Intersil's datasheet for the Prism II baseband processor details its implementation of the higher data rate modulation schemes (Part number HFA3861B, file number 4816). Figure 1 shows the theoretical (THY) and practical (BER) curves for CCK modulation modes at 5.5 and 11Mbit/s. These performance curves are referenced from Intersil's documented specifications.

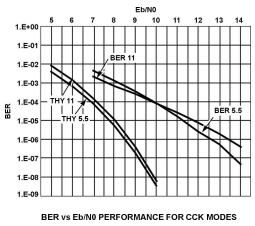

Figure 1 - BER vs. E_B/N_0 Performance for CCK Modulation

The required theoretical E_B/N_0 is 8dB for a $1x10^{-5}$ reference BER. Each symbol codes 8 bits in CCK modulation at 11Mbit/s. Therefore the corresponding E_S/N_0 is 8 times higher than the E_B/N_0 for a desired BER:

$$\frac{E_S}{N_0}(dB) = \frac{E_B}{N_0}(dB) + 10Log(n_{bits})$$

$E_B/N_0 = 8dB$ (for CCK modulation at $1x10^{-5}$ BER)
$n_{bits} = 8$ (bits per coded symbol)

The required E_S/N_0 for a BER of $1x10^{-5}$ is **17d**B.

1.3 Permitted system implementation loss

The FCC allows for **2dB** of system implementation loss (L_{SYS}) for practical limitations that degrade the performance below that of an optimum theoretical system.

1.4 Minimum allowable J/S ratio

Given the above requirements, the minimum allowable jamming margin (M_J) for the system is calculated:

$$G_P = 17dB + M_J + 2dB \geq 10dB$$
$$\Rightarrow M_J \geq -9dB$$

The minimum allowable Jamming to Signal level (J/S) is **–9d**B.

2 Test Setup

2.1 List of test equipment

Description	Brand	Calibration Dates/Due	Part Number
Synthesized Signal Generator, 9kHz-3.2GHz	Hewlett Packard	04/12/01	8648C
Peak Power Sensor, 100M-18GHz	Hewlett Packard	11/02/01	84811A
Peak Power Meter	Hewlett Packard	08/18/01	8900D
Spectrum Analyzer, 9kHZ-6.5GHz	Hewlett Packard	02/01/02	8595E
2-Way passive Power Splitter/Combiner	Mini-Circuits	NA	ZFSC-2-10G
4-Way passive Power Splitter/Combiner	Mini-Circuits	NA	ZA4PD-4
11dB/1W Adjustable Attenuator, DC-18GHz	Hewlett Packard	NA	8494B
70dB/1W Adjustable Attenuator, DC-18GHz	Hewlett Packard	NA	8495B
10dB/2W Power Attenuator	Mini-Circuits	NA	MCLBW-S10W2
10dB/2W Power Attenuator	Alan Microwave	NA	50SP10
20dB/2W Power Attenuator (x3)	Alan Microwave	NA	50SP20
50Ω/2W Termination	Pasternack	NA	PE6009

2.2 Setup diagram and description

The test setup is shown in Figure 2.

Two identical SkyMate units are used. SkyMate unit 'A' is configured by software to act as the Base station, while unit 'B' is configured as the Sub station. Both units will be running RF-Data Link Control diagnostic software in continuous single frame transmit/receive mode. In this mode, the Base will be continuously transmitting 1530 byte frames at 11Mbit/s. The Sub will receive and process these frames, using counters to display the number of frames and bytes received without error. The software will also keep track of the number and types of errors it finds in the received data. All the equipment except the Base station is contained within a screen room during the test.

The CW jammer is injected into the link using a passive combiner. The combined signals are then distributed equally between the Sub station, Spectrum Analyzer, and Peak Power Meter. Any differences in the actual power presented at the input ports of the three devices are noted across the system passband. These calibration factors are taken into account when actual measurements are made.

The output power of the Base station is adjusted to a nominal value of 20dBm. The adjustable attenuators are then set so that the power of the desired signal at the Sub station input port is –60dBm.

10dB or 20dB attenuating pads are placed on all ports of the passive splitters/combiners. This provides a good VSWR to each port and minimizes component interaction within the test setup.

Appropriate low-loss, shielded coaxial cables are used to interconnect the components of the test setup.

2.3 Measurement procedure

The maximum 6dB bandwidth of the system is 12MHz. At each 50kHz interval within this band, a measurement is made to determine the Jamming signal to desired Signal ratio (J/S). An error free link is first established with the power of the desired signal calibrated to –60dBm at the Sub station input port. The jammer signal is then introduced at a level low enough such that no receive errors result from it. The jamming signal is then increased at 0.1dB intervals until the Bit Error Rate (BER) degrades to $1x10^{-5}$

This is determined by monitoring the counters for received bytes and errors. For greater accuracy, 1000 frames are sampled, with 1530 bytes constituting one frame. 1.53 million bytes received with 122 errors or less corresponds to a minimum BER of $1x10^{-5}$.

$$\boldsymbol{BER} \equiv \frac{\boldsymbol{n_{errors}}}{1000\,\boldsymbol{frames} \times 1530\boldsymbol{bytes} \times 8\boldsymbol{bits}} \leq 10^{-5}$$

$$\Rightarrow n_{errors} \leq 122.4$$

Once the minimum BER is achieved, the desired signal is momentarily disabled and the power of the Jamming signal at the Sub station input port is measured. The measurements have been tabulated in Section 3.

3 Test Results

3.1 Data tables

System Bandwidth = f_{center} ± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2438.00	-120x50	-63.9	-59.9	-4.0
2438.05	-119x50	-63.5	-59.9	-3.6
2438.10	-118x50	-63.5	-59.9	-3.6
2438.15	-117x50	-63.6	-59.9	-3.7
2438.20	-116x50	-63.9	-59.9	-4.0
2438.25	-115x50	-64.4	-59.9	-4.5
2438.30	-114x50	-64.2	-59.9	-4.3
2438.35	-113x50	-64.7	-59.9	-4.8
2438.40	-112x50	-64.1	-59.9	-4.2
2438.45	-111x50	-64.0	-59.9	-4.1
2438.50	-110x51	-64.9	-59.9	-5.0
2438.55	-109x50	-65.0	-59.9	-5.1
2438.60	-108x50	-65.1	-59.9	-5.2
2438.65	-107x50	-65.0	-59.9	-5.1
2438.70	-106x50	-65.1	-59.9	-5.2
2438.75	-105x50	-65.0	-59.9	-5.1
2438.80	-104x50	-64.9	-59.9	-5.0
2438.85	-103x50	-65.3	-59.9	-5.4
2438.90	-102x50	-65.4	-59.9	-5.5
2438.95	-101x50	-65.5	-59.9	-5.6
2439.00	-100x50	-65.5	-59.9	-5.6
2439.05	-99x50	-65.5	-59.9	-5.6
2439.10	-98x50	-65.3	-59.9	-5.4
2439.15	-97x50	-65.6	-59.9	-5.7
2439.20	-96x50	-65.8	-59.9	-5.9
2439.25	-95x50	-66.0	-59.9	-6.1
2439.30	-94x50	-65.8	-59.9	-5.9
2439.35	-93x50	-65.8	-59.9	-5.9
2439.40	-92x50	-65.8	-59.9	-5.9
2439.45	-91x50	-65.8	-59.9	-5.9
2439.50	-90x50	-66.0	-59.9	-6.1
2439.55	-89x50	-66.4	-59.9	-6.5
2439.60	-88x50	-66.4	-59.9	-6.5
2439.65	-87x50	-66.4	-59.9	-6.5
2439.70	-86x50	-66.9	-59.9	-7.0
2439.75	-85x50	-67.1	-59.9	-7.2
2439.80	-84x50	-66.8	-59.9	-6.9
2439.85	-83x50	-66.7	-59.9	-6.8
2439.90	-82x50	-66.6	-59.9	-6.7
2439.95	-81x50	-66.1	-59.9	-6.2
2440.00	-80x50	-66.1	-59.9	-6.2

Table 1.1 – J/S values for (f_{center} - 120x50kHz) to (f_{center} - 80x50kHz)

System Bandwidth = f_{center}± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2440.00	-80x50	-66.1	-59.9	-6.2
2440.05	-79x50	-66.7	-59.9	-6.8
2440.10	-78x50	-66.8	-59.9	-6.9
2440.15	-77x50	-66.7	-59.9	-6.8
2440.20	-76x50	-66.7	-59.9	-6.8
2440.25	-75x50	-66.7	-59.9	-6.8
2440.30	-74x50	-67.1	-59.9	-7.2
2440.35	-73x50	-67.2	-59.9	-7.3
2440.40	-72x50	-67.0	-59.9	-7.1
2440.45	-71x50	-67.4	-59.9	-7.5
2440.50	-70x50	-67.4	-59.9	-7.5
2440.55	-69x50	-67.3	-59.9	-7.4
2440.60	-68x50	-66.9	-59.9	-7.0
2440.65	-67x50	-66.9	-59.9	-7.0
2440.70	-66x50	-67.1	-59.9	-7.2
2440.75	-65x50	-66.9	-59.9	-7.0
2440.80	-64x50	-67.0	-59.9	-7.1
2440.85	-63x50	-67.1	-59.9	-7.2
2440.90	-62x50	-67.3	-59.9	-7.4
2440.95	-61x50	-67.7	-59.9	-7.8
2441.00	-60x50	-67.6	-59.9	-7.7
2441.05	-59x50	-67.2	-59.9	-7.3
2441.10	-58x50	-67.8	-59.9	-7.9
2441.15	-57x50	-67.8	-59.9	-7.9
2441.20	-56x50	-67.7	-59.9	-7.8
2441.25	-55x50	-68.0	-59.9	-8.1
2441.30	-54x50	-67.9	-59.9	-8.0
2441.35	-53x50	-68.0	-59.9	-8.1
2441.40	-52x50	-67.9	-59.9	-8.0
2441.45	-51x50	-67.9	-59.9	-8.0
2441.50	-50x50	-68.6	-59.9	-8.7
2441.55	-49x50	-67.9	-59.9	-8.0
2441.60	-48x50	-67.9	-59.9	-8.0
2441.65	-47x50	-67.3	-59.9	-7.4
2441.70	-46x50	-67.7	-59.9	-7.8
2441.75	-45x50	-68.1	-59.9	-8.2
2441.80	-44x50	-68.1	-59.9	-8.2
2441.85	-43x50	-68.0	-59.9	-8.1
2441.90	-42x50	-68.0	-59.9	-8.1
2441.95	-41x50	-68.1	-59.9	-8.2
2442.00	-40x50	-68.8	-59.9	-8.9

Table 1.2 – J/S values for (f_{center} - 80x50kHz) to (f_{center} - 40x50kHz)

System Bandwidth = f_{center}± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2442.00	-40x50	-68.8	-59.9	-8.9
2442.05	-39x50	-68.5	-59.9	-8.6
2442.10	-38x50	-68.8	-59.9	-8.9
2442.15	-37x50	-68.4	-59.9	-8.5
2442.20	-36x50	-67.8	-59.9	-7.9
2442.25	-35x50	-67.8	-59.9	-7.9
2442.30	-34x50	-67.9	-59.9	-8.0
2442.35	-33x50	-68.0	-59.9	-8.1
2442.40	-32x50	-67.9	-59.9	-8.0
2442.45	-31x50	-68.0	-59.9	-8.1
2442.50	-30x50	-67.9	-59.9	-8.0
2442.55	-29x50	-67.5	-59.9	-7.6
2442.60	-28x50	-67.8	-59.9	-7.9
2442.65	-27x50	-68.0	-59.9	-8.1
2442.70	-26x50	-68.2	-59.9	-8.3
2442.75	-25x50	-68.5	-59.9	-8.6
2442.80	-24x50	-68.6	-59.9	-8.7
2442.85	-23x50	-67.9	-59.9	-8.0
2442.90	-22x50	-67.8	-59.9	-7.9
2442.95	-21x50	-67.8	-59.9	-7.9
2443.00	-20x50	-67.7	-59.9	-7.8
2443.05	-19x50	-67.3	-59.9	-7.4
2443.10	-18x50	-67.2	-59.9	-7.3
2443.15	-17x50	-67.3	-59.9	-7.4
2443.20	-16x50	-67.2	-59.9	-7.3
2443.25	-15x50	-67.2	-59.9	-7.3
2443.30	-14x50	-67.2	-59.9	-7.3
2443.35	-13x50	-67.5	-59.9	-7.6
2443.40	-12x50	-67.8	-59.9	-7.9
2443.45	-11x50	-67.7	-59.9	-7.8
2443.50	-10x50	-67.8	-59.9	-7.9
2443.55	-9x50	-67.5	-59.9	-7.6
2443.60	-8x50	-67.5	-59.9	-7.6
2443.65	-7x50	-67.3	-59.9	-7.4
2443.70	-6x50	-67.0	-59.9	-7.1
2443.75	-5x50	-67.1	-59.9	-7.2
2443.80	-4x50	-67.3	-59.9	-7.4
2443.85	-3x50	-67.7	-59.9	-7.8
2443.90	-2x50	-67.3	-59.9	-7.4
2443.95	-1x50	-67.3	-59.9	-7.4
2444.00	-0x50	-67.7	-59.9	-7.8

Table 1.3 – J/S values for (f_{center} - 40x50kHz) to (f_{center} - 0x50kHz)

System Bandwidth = f_{center} ± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2444.00	0x50	-67.7	-59.9	-7.8
2444.05	+1x50	-67.3	-59.9	-7.4
2444.10	+2x50	-67.3	-59.9	-7.4
2444.15	+3x50	-67.7	-59.9	-7.8
2444.20	+4x50	-67.4	-59.9	-7.5
2444.25	+5x50	-67.4	-59.9	-7.5
2444.30	+6x50	-67.4	-59.9	-7.5
2444.35	+7x50	-67.3	-59.9	-7.4
2444.40	+8x50	-67.4	-59.9	-7.5
2444.45	+9x50	-67.3	-59.9	-7.4
2444.50	+10x50	-67.3	-59.9	-7.4
2444.55	+11x50	-67.5	-59.9	-7.6
2444.60	+12x50	-67.0	-59.9	-7.1
2444.65	+13x50	-67.0	-59.9	-7.1
2444.70	+14x50	-67.0	-59.9	-7.1
2444.75	+15x50	-67.0	-59.9	-7.1
2444.80	+16x50	-66.9	-59.9	-7.0
2444.85	+17x50	-67.6	-59.9	-7.7
2444.90	+18x50	-67.3	-59.9	-7.4
2444.95	+19x50	-67.3	-59.9	-7.4
2445.00	+20x50	-67.2	-59.9	-7.3
2445.05	+21x50	-67.5	-59.9	-7.6
2445.10	+22x50	-67.5	-59.9	-7.6
2445.15	+23x50	-67.6	-59.9	-7.7
2445.20	+24x50	-67.4	-59.9	-7.5
2445.25	+25x50	-67.7	-59.9	-7.8
2445.30	+26x50	-67.4	-59.9	-7.5
2445.35	+27x50	-67.7	-59.9	-7.8
2445.40	+28x50	-67.2	-59.9	-7.3
2445.45	+29x50	-67.2	-59.9	-7.3
2445.50	+30x50	-67.3	-59.9	-7.4
2445.55	+31x50	-67.2	-59.9	-7.3
2445.60	+32x50	-67.4	-59.9	-7.5
2445.65	+33x50	-67.0	-59.9	-7.1
2445.70	+34x50	-67.2	-59.9	-7.3
2445.75	+35x50	-67.4	-59.9	-7.5
2445.80	+36x50	-67.7	-59.9	-7.8
2445.85	+37x50	-67.7	-59.9	-7.8
2445.90	+38x50	-67.6	-59.9	-7.7
2445.95	+39x50	-67.7	-59.9	-7.8
2446.00	+40x50	-67.9	-59.9	-8.0

Table 1.4 – J/S values for (f_{center} + 0x50kHz) to (f_{center} + 40x50kHz)

System Bandwidth = f_{center} ± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2446.00	+40x50	-67.9	-59.9	-8.0
2446.05	+41x50	-67.7	-59.9	-7.8
2446.10	+42x50	-67.5	-59.9	-7.6
2446.15	+43x50	-67.3	-59.9	-7.4
2446.20	+44x50	-67.3	-59.9	-7.4
2446.25	+45x50	-66.9	-59.9	-7.0
2446.30	+46x50	-66.9	-59.9	-7.0
2446.35	+47x50	-67.0	-59.9	-7.1
2446.40	+48x50	-66.9	-59.9	-7.0
2446.45	+49x50	-66.7	-59.9	-6.8
2446.50	+50x50	-66.7	-59.9	-6.8
2446.55	+51x50	-67.0	-59.9	-7.1
2446.60	+52x50	-66.9	-59.9	-7.0
2446.65	+53x50	-67.5	-59.9	-7.6
2446.70	+54x50	-67.5	-59.9	-7.6
2446.75	+55x50	-67.4	-59.9	-7.5
2446.80	+56x50	-66.9	-59.9	-7.0
2446.85	+57x50	-66.9	-59.9	-7.0
2446.90	+58x50	-67.2	-59.9	-7.3
2446.95	+59x50	-67.3	-59.9	-7.4
2447.00	+60x50	-66.7	-59.9	-6.8
2447.05	+61x50	-66.3	-59.9	-6.4
2447.10	+62x50	-66.3	-59.9	-6.4
2447.15	+63x50	-66.3	-59.9	-6.4
2447.20	+64x50	-66.0	-59.9	-6.1
2447.25	+65x50	-66.0	-59.9	-6.1
2447.30	+66x50	-66.7	-59.9	-6.8
2447.35	+67x50	-66.7	-59.9	-6.8
2447.40	+68x50	-66.8	-59.9	-6.9
2447.45	+69x50	-66.8	-59.9	-6.9
2447.50	+70x50	-66.9	-59.9	-7.0
2447.55	+71x50	-66.9	-59.9	-7.0
2447.60	+72x50	-66.2	-59.9	-6.3
2447.65	+73x50	-66.0	-59.9	-6.1
2447.70	+74x50	-66.0	-59.9	-6.1
2447.75	+75x50	-66.0	-59.9	-6.1
2447.80	+76x50	-65.9	-59.9	-6.0
2447.85	+77x50	-66.0	-59.9	-6.1
2447.90	+78x50	-65.9	-59.9	-6.0
2447.95	+79x50	-65.8	-59.9	-5.9
2448.00	+80x50	-66.0	-59.9	-6.1

Table 1.5 – J/S values for (f_{center} + 40x50kHz) to (f_{center} + 80x50kHz)

System Bandwidth = f_{center} ± 6MHz (6000kHz = 120x50 kHz)
System Channel = 2444 MHz

Frequency (MHz)	Frequency Offset (kHz)	J (dBm)	S (dBm)	J/S (dB)
2448.00	+80x50	-66.0	-59.9	-6.1
2448.05	+81x50	-66.1	-59.9	-6.2
2448.10	+82x50	-66.3	-59.9	-6.4
2448.15	+83x50	-66.7	-59.9	-6.8
2448.20	+84x50	-66.2	-59.9	-6.3
2448.25	+85x50	-66.2	-59.9	-6.3
2448.30	+86x50	-66.1	-59.9	-6.2
2448.35	+87x50	-66.0	-59.9	-6.1
2448.40	+88x50	-65.8	-59.9	-5.9
2448.45	+89x50	-65.7	-59.9	-5.8
2448.50	+90x50	-65.6	-59.9	-5.7
2448.55	+91x50	-65.7	-59.9	-5.8
2448.60	+92x50	-64.9	-59.9	-5.0
2448.65	+93x50	-65.3	-59.9	-5.4
2448.70	+94x50	-64.8	-59.9	-4.9
2448.75	+95x50	-64.7	-59.9	-4.8
2448.80	+96x50	-65.0	-59.9	-5.1
2448.85	+97x50	-65.1	-59.9	-5.2
2448.90	+98x50	-65.0	-59.9	-5.1
2448.95	+99x50	-64.8	-59.9	-4.9
2449.00	+100x50	-65.1	-59.9	-5.2
2449.05	+101x50	-64.7	-59.9	-4.8
2449.10	+102x50	-64.5	-59.9	-4.6
2449.15	+103x50	-64.4	-59.9	-4.5
2449.20	+104x50	-64.4	-59.9	-4.5
2449.25	+105x50	-64.7	-59.9	-4.8
2449.30	+106x50	-64.2	-59.9	-4.3
2449.35	+107x50	-64.0	-59.9	-4.1
2449.40	+108x50	-63.8	-59.9	-3.9
2449.45	+109x50	-63.0	-59.9	-3.1
2449.50	+110x50	-63.4	-59.9	-3.5
2449.55	+111x50	-63.5	-59.9	-3.6
2449.60	+112x50	-63.0	-59.9	-3.1
2449.65	+113x50	-62.9	-59.9	-3.0
2449.70	+114x50	-62.7	-59.9	-2.8
2449.75	+115x50	-62.5	-59.9	-2.6
2449.80	+116x50	-62.5	-59.9	-2.6
2449.85	+117x50	-62.2	-59.9	-2.3
2449.90	+118x50	-62.2	-59.9	-2.3
2449.95	+119x50	-62.2	-59.9	-2.3
2450.00	+120x50	-62.0	-59.9	-2.1

Table 1.6 – J/S values for (f_{center} + 80x50kHz) to (f_{center} + 120x50kHz)

3.2 Summary J/S values

All the measured J/S values are collected in Table 2 and sorted in ascending order. The lowest 20% of the points are then discarded. The remaining lowest J/S measurement is **–7.8d**B.

Table 1	Table 2	Table3	Table4	Table5	Table6
-7.2	~~-8.9~~	~~-8.9~~	~~-8.0~~	~~-8.0~~	-6.8
-7.0	~~-8.7~~	~~-8.9~~	~~-7.8~~	~~-7.8~~	-6.4
-6.9	~~-8.2~~	~~-8.7~~	~~-7.8~~	-7.6	-6.3
-6.8	~~-8.2~~	~~-8.6~~	~~-7.8~~	-7.6	-6.3
-6.7	~~-8.2~~	~~-8.6~~	~~-7.8~~	-7.6	-6.2
-6.5	~~-8.1~~	~~-8.5~~	~~-7.8~~	-7.5	-6.2
-6.5	~~-8.1~~	~~-8.3~~	~~-7.8~~	-7.4	-6.1
-6.5	~~-8.1~~	~~-8.1~~	~~-7.8~~	-7.4	-6.1
-6.2	~~-8.1~~	~~-8.1~~	-7.7	-7.4	-5.9
-6.2	~~-8.0~~	~~-8.1~~	-7.7	-7.3	-5.8
-6.1	~~-8.0~~	~~-8.0~~	-7.7	-7.1	-5.8
-6.1	~~-8.0~~	~~-8.0~~	-7.6	-7.1	-5.7
-5.9	~~-8.0~~	~~-8.0~~	-7.6	-7.0	-5.4
-5.9	~~-8.0~~	~~-8.0~~	-7.6	-7.0	-5.2
-5.9	~~-7.9~~	~~-7.9~~	-7.5	-7.0	-5.2
-5.9	~~-7.9~~	~~-7.9~~	-7.5	-7.0	-5.1
-5.9	-7.8	~~-7.9~~	-7.5	-7.0	-5.1
-5.7	-7.8	~~-7.9~~	-7.5	-7.0	-5.0
-5.6	-7.8	~~-7.9~~	-7.5	-7.0	-4.9
-5.6	-7.7	~~-7.9~~	-7.5	-7.0	-4.9
-5.6	-7.5	~~-7.9~~	-7.5	-6.9	-4.8
-5.5	-7.5	~~-7.8~~	-7.5	-6.9	-4.8
-5.4	-7.4	**J/S =- 7.8**	-7.4	-6.8	-4.8
-5.4	-7.4	-7.8	-7.4	-6.8	-4.6
-5.2	-7.4	-7.8	-7.4	-6.8	-4.5
-5.2	-7.3	-7.6	-7.4	-6.8	-4.5
-5.1	-7.3	-7.6	-7.4	-6.8	-4.3
-5.1	-7.2	-7.6	-7.4	-6.4	-4.1
-5.1	-7.2	-7.6	-7.4	-6.4	-3.9
-5.0	-7.2	-7.4	-7.4	-6.4	-3.6
-5.0	-7.1	-7.4	-7.3	-6.3	-3.5
-4.8	-7.1	-7.4	-7.3	-6.1	-3.1
-4.5	-7.0	-7.4	-7.3	-6.1	-3.1
-4.3	-7.0	-7.4	-7.3	-6.1	-3.0
-4.2	-7.0	-7.4	-7.3	-6.1	-2.8
-4.1	-6.9	-7.3	-7.1	-6.1	-2.6
-4.0	-6.8	-7.3	-7.1	-6.1	-2.6
-4.0	-6.8	-7.3	-7.1	-6.1	-2.3
-3.7	-6.8	-7.3	-7.1	-6.0	-2.3
-3.6	-6.8	-7.2	-7.1	-6.0	-2.3
-3.6	-6.2	-7.1	-7.0	-5.9	-2.1

Table 2 –J/S Values sorted in ascending order

3.3 Measured processing gain

Summary of processing gain figures:

$E_S/N_0 = 17dB$ (Required energy per symbol - to – noise ratio)
$M_J = -7.8dB$ (Jamming margin, or J/S ratio)
$L_{SYS} = 2\ dB$ (System implementation loss)

These values are used to determine the processing gain:

$$G_P = 17dB + (-7.8dB) + 2dB$$
$$= 11.2dB$$

11.2 dB of processing gain falls within the acceptable FCC limits required under part 15.247(e) rules.