

REPORT

issued by an Accredited Laboratory



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2001-11-26 F119272 1(1)

Equipment Authorization measurements on Transceiver Unit KRC 131 1004/1 with FCC ID: B5KAKRC1311004-1

(10 enclosures)

Test object

Transceiver Unit KRC 131 1004/1, R2A

Summary

Standard	Compliant	Enclosure	Remarks
FCC CFR 47			
2.1046 RF Power output	Yes	2	
2.1047 Modulation characteristics	Yes	3	
2.1049 Occupied bandwidth	Yes	4	Note 1
2.1051 Spurious emission at antenna	Yes	5	
2.1053 Field strength of spurious radiation	Yes	6	
2.1055 Frequency stability	Yes	7	
Intermodulation test	Yes	8	

Note 1: This unit must use reduced transmit power for the channels adjacent to each frequency block edge in order to comply.

SP Swedish National Testing and Research Institute Electronics - EMC

Lasse Bergsten
Deputy Technical Manager

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Technical Officer

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FCC ID: B5KAKRC1311004-1

Description - Equipment Under Test (EUT)

Equipment: GSM Base station transceiver 1900MHz
Tx Frequency range: 1930.2-1989.8 MHz
Tested Channels: 512: 1930.2 MHz
513: 1930.4 MHz
537: 1935.2 MHz
661: 1960.0 MHz
785: 1984.8 MHz
809: 1989.6 MHz
810: 1989.8 MHz
Product number: TRU: KRC 131 1004/1
Serial number: See Hardware list in enclosure 9

RF conducted measurements were done on
TRU: KRC 131 1004/1, R2A s/n: AE50006KC7
CDU-G19 BFL 119 153/1, R3A s/n: A40003DTR5
and
TRU: KRC 131 1004/1, R2A s/n: AE50006TKZ
CDU-G19 BFL 119 153/1, R4A s/n: A40003G31Q

All RF conducted measurements were done at the output connectors of CDU-G.

Manufacturer's
representative: Larry Lindström, Ericsson Radio Systems AB

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in FCC CFR47.

Reservation

The test results in this report apply only to the particular Equipment Under Test (EUT) as declared in the report.

Delivery of test object

The test object was delivered: 2001-11-05

Test engineers

Jonas Bremholt
Peter Grahn

Test witnesses

Lars Hagbjörk, Ericsson Radio Systems AB (partly)
Mats Iregren, Ericsson Radio Systems AB

RF Power output measurements according to 47CFR 2.1046

Date 2001-11-12--13	Temperature 22 °C ± 3 °C	Humidity 16 % ± 5 %
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Test set-up and Procedure

The measurements were made per J-STD-007A Vol 1. Measurements were made at CDU-G output connectors. The output was connected to a Peak power analyzer via a 50 ohm attenuator. The RF power was measured with variation in supply voltage at the highest power level. Test was performed on 24 V DC supply voltage system. The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
Boonton RF Peak power meter/analyzer	2002-11	503 144
Testo 615, Temperature and humidity meter	2003-08	503 505

Results

TRU, s/n: AE50006TKZ, output 1+2 (TCC) in cabinet 2206, revision R3A:

Nominal power 24 V DC

Rated output power level after CDU-G (maximum): 47 dBm

Test conditions		Transmitter power (dBm)		
		Channel 512	Channel 661	Channel 810
T _{nom} 22°C	V _{nom} 24 V AC	46.7	47.1	46.7
T _{nom} 22°C	V _{min} 20.4 V AC	46.7	47.1	46.7
	V _{max} 27.6 V AC	46.7	47.1	46.7
Measurement uncertainty		0.5 dB		

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TRU, s/n: AE50006KC7, output 1, without dTRU internal combiner, in cabinet 2206, revision R2C:

Nominal power 24 V DC

Rated output power level (maximum): 44.5 dBm

Test conditions		Transmitter power (dBm)		
		Channel 512	Channel 661	Channel 810
T_{nom} 22°C	V_{nom} 24 V AC	44.3	44.7	44.2
T_{nom} 22°C	V_{min} 20.4 V AC	44.3	44.7	44.3
	V_{max} 27.6 V AC	44.3	44.7	44.3
Measurement uncertainty		0.5 dB		

TRU, s/n: AE50006KC7, output 2, without dTRU internal combiner, in cabinet 2206, revision R2C:

Nominal power 24 V DC

Rated output power level after CDU-G (maximum): 44.5 dBm

Test conditions		Transmitter power (dBm)		
		Channel 512	Channel 661	Channel 810
T_{nom} 22°C	V_{nom} 24 V AC	44.3	44.7	44.4
T_{nom} 22°C	V_{min} 20.4 V AC	44.3	44.7	44.4
	V_{max} 27.6 V AC	44.4	44.7	44.3
Measurement uncertainty		0.5 dB		

TRU, s/n: AE50006KC7, output 1, with dTRU internal combiner, in cabinet 2206, revision R2C:

Nominal power 24 V DC

Rated output power level after CDU-G (maximum): 41 dBm

Test conditions		Transmitter power (dBm)		
		Channel 512	Channel 661	Channel 810
T _{nom} 22°C	V _{nom} 24 V AC	40.9	41.2	40.7
T _{nom} 22°C	V _{min} 20.4 V AC	40.9	41.2	40.7
	V _{max} 27.6 V AC	40.7	41.2	40.7
Measurement uncertainty		0.5 dB		

TRU, s/n: AE50006KC7, output 2, with dTRU internal combiner, in cabinet 2206, revision R2C:

Nominal power 24 V DC

Rated output power level after CDU-G (maximum): 41 dBm

Test conditions		Transmitter power (dBm)		
		Channel 512	Channel 661	Channel 810
T _{nom} 22°C	V _{nom} 24 V AC	40.9	41.2	40.7
T _{nom} 22°C	V _{min} 20.4 V AC	40.9	41.2	40.7
	V _{max} 27.6 V AC	40.9	41.2	40.7
Measurement uncertainty		0.5 dB		

Limits

The tolerance of the maximum rated output power shall not be greater than ± 2 dB.

Compliant?	Yes
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Modulation characteristics measurements according to 47CFR 2.1047

Date 2001-11-05	Temperature 20 °C ± 3 °C	Humidity 24 % ± 5 %
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Test set-up and Procedure

Measurement equipment	Calibration Due	SP number
R&S ESI 40 with option FSE-B7	2002-07	503 125
Testo 615, Temperature and humidity meter	2003-08	503 505

Results

TRU, s/n: AE50006KC7 in cabinet 2206, revision R2C

Nominal Voltage 24 V DC

44.5 dBm output power at Channel 512 (1930.2 MHz)

	Phase error (°)	
	TRU Output 1	TRU Output 2
	1	1
Maximum phase error (°)	1	

Limits

The tolerance of the maximum output phase error shall not be greater than 5 degrees.

Compliant?	Yes
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Sign:.....

Occupied bandwidth measurements according to 47CFR 2.1049

Date 2001-11-12	Temperature 22 °C ± 3 °C	Humidity 33 % ± 5 %
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Test set-up and Procedure

The measurements were made per J-STD-007A Vol 1. Measurements were made at CDU-G output connectors. The output was connected to a spectrum analyzer. The spectrum analyser was hooked up to an external 10 MHz reference standard during the measurements. The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
R&S ESI 40 with option FSE-B7	2002-07	503 125
Testo 615, Temperature and humidity meter	2003-08	503 505

Measurement uncertainty: 3.7 dB

Results

TRU, s/n: AE50006KC7 in cabinet 2206 R2C, TRU Output 1:

Diagram 1 Ch 512 OBW Reference level +36.5 dBm output power
Diagram 2 Ch 512 OBW 26 dB points +36.5 dBm output power
Diagram 3 Ch 512 OBW Band edge +36.5 dBm output power

Diagram 4 Ch 513 OBW Reference level +44.5 dBm output power
Diagram 5 Ch 513 OBW 26 dB points +44.5 dBm output power
Diagram 6 Ch 513 OBW Band edge +44.5 dBm output power

Diagram 7 Ch 810 OBW Reference level +32.5 dBm output power
Diagram 8 Ch 810 OBW 26 dB points +32.5 dBm output power
Diagram 9 Ch 810 OBW Band edge +32.5 dBm output power

Diagram 10 Ch 809 OBW Reference level +44.5 dBm output power
Diagram 11 Ch 809 OBW 26 dB points +44.5 dBm output power
Diagram 12 Ch 809 OBW Band edge +44.5 dBm output power

TRU, s/n: AE50006KC7 in cabinet 2206 R2C, TRU Output 2:

Diagram 13 Ch 512 OBW Reference level +38.5 dBm output power
Diagram 14 Ch 512 OBW 26 dB points +38.5 dBm output power
Diagram 15 Ch 512 OBW Band edge +38.5 dBm output power

Diagram 16 Ch 513 OBW Reference level +44.5 dBm output power
Diagram 17 Ch 513 OBW 26 dB points +44.5 dBm output power
Diagram 18 Ch 513 OBW Band edge +44.5 dBm output power

Diagram 19 Ch 810 OBW Reference level +32.5 dBm output power
Diagram 20 Ch 810 OBW 26 dB points +32.5 dBm output power

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Diagram 21 Ch 810 OBW Band edge +32.5 dBm output power

Diagram 22 Ch 809 OBW Reference level +44.5 dBm output power

Diagram 23 Ch 809 OBW 26 dB points +44.5 dBm output power

Diagram 24 Ch 809 OBW Band edge +44.5 dBm output power

TRU s/n: AE50006TKZ in cabinet 2206 R3A (TCC), TRU Output 1 (TX1+TX2):

Diagram 25 Ch 512 OBW Reference level +35 dBm output power

Diagram 26 Ch 512 OBW 26 dB points +35 dBm output power

Diagram 27 Ch 512 OBW Band edge +35 dBm output power

Diagram 28 Ch 513 OBW Reference level +47 dBm output power

Diagram 29 Ch 513 OBW 26 dB points +47 dBm output power

Diagram 30 Ch 513 OBW Band edge +47 dBm output power

Diagram 31 Ch 810 OBW Reference level +35 dBm output power

Diagram 32 Ch 810 OBW 26 dB points +35 dBm output power

Diagram 33 Ch 810 OBW Band edge +35 dBm output power

Diagram 34 Ch 809 OBW Reference level +47 dBm output power

Diagram 35 Ch 809 OBW 26 dB points +47 dBm output power

Diagram 36 Ch 809 OBW Band edge +47 dBm output power

Remarks

This unit must use reduced transmit power for the channels adjacent to each frequency block edge in order to comply.

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10 \log P$ dB.

Compliant?	Yes
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Diagram 1

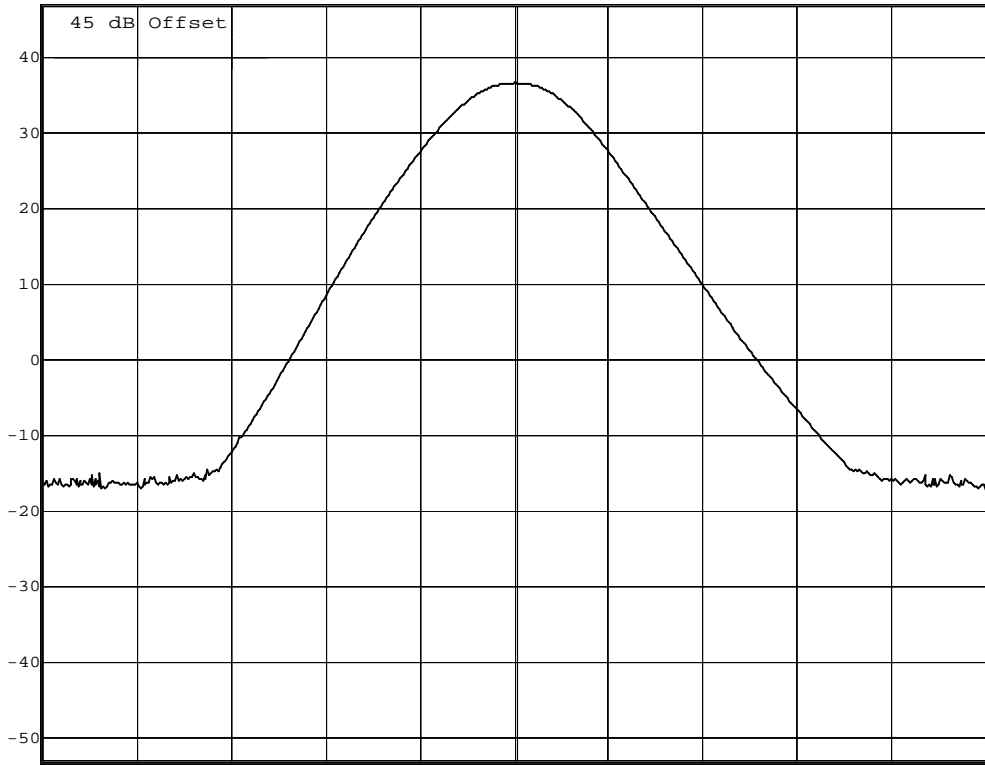
FCC ID: B5KAKRC1311004-1

Reference level



Ref Lvl
46.9 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Date: 12.NOV.2001 15:04:19

Ch 512

Sign:.....

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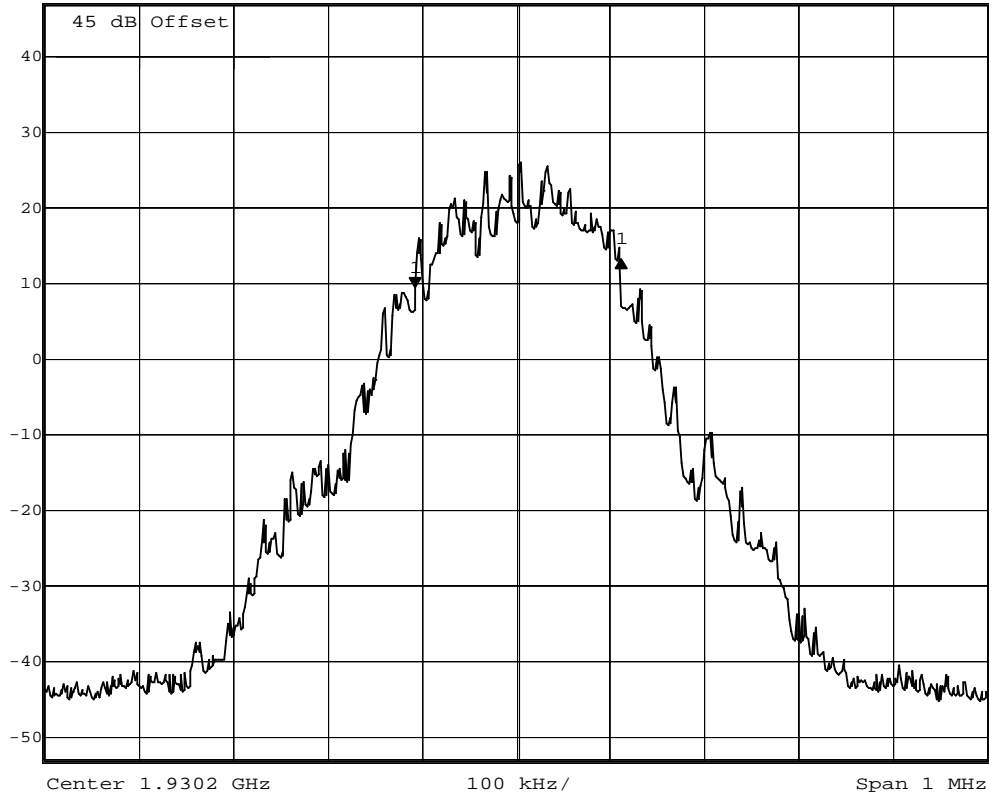
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Encl. 4
Diagram 2

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.94 dB	VBW	2 kHz	
46.9 dBm	218.43687375 kHz	SWT	640 ms	Unit dBm



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Ch 512

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Diagram 3

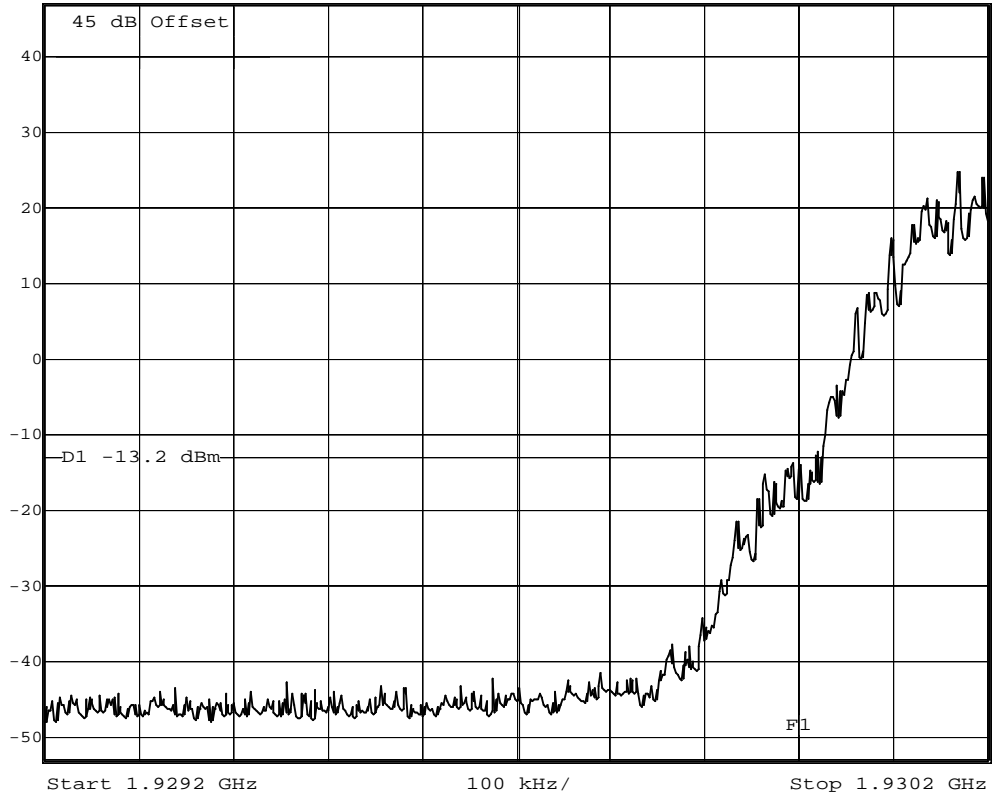
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Band edge level



Ref Lvl
46.9 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



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Ch 512

Sign:.....

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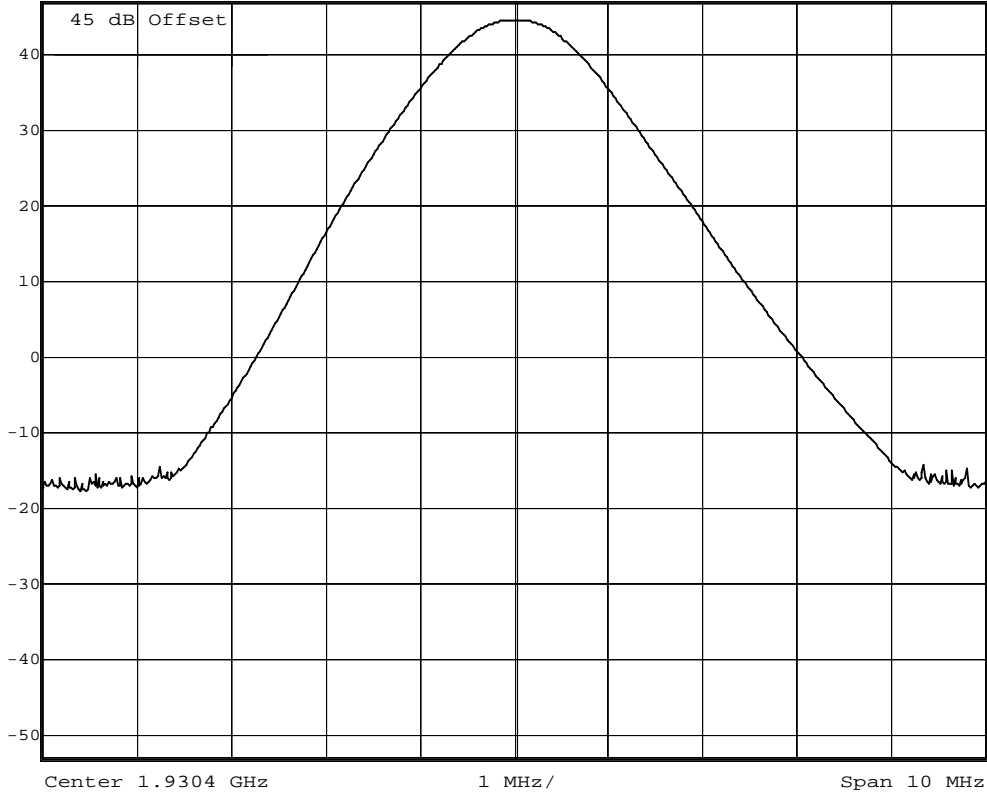
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Diagram 4

Reference level



Ref Lvl
46.9 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



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Ch 513

Sign:.....

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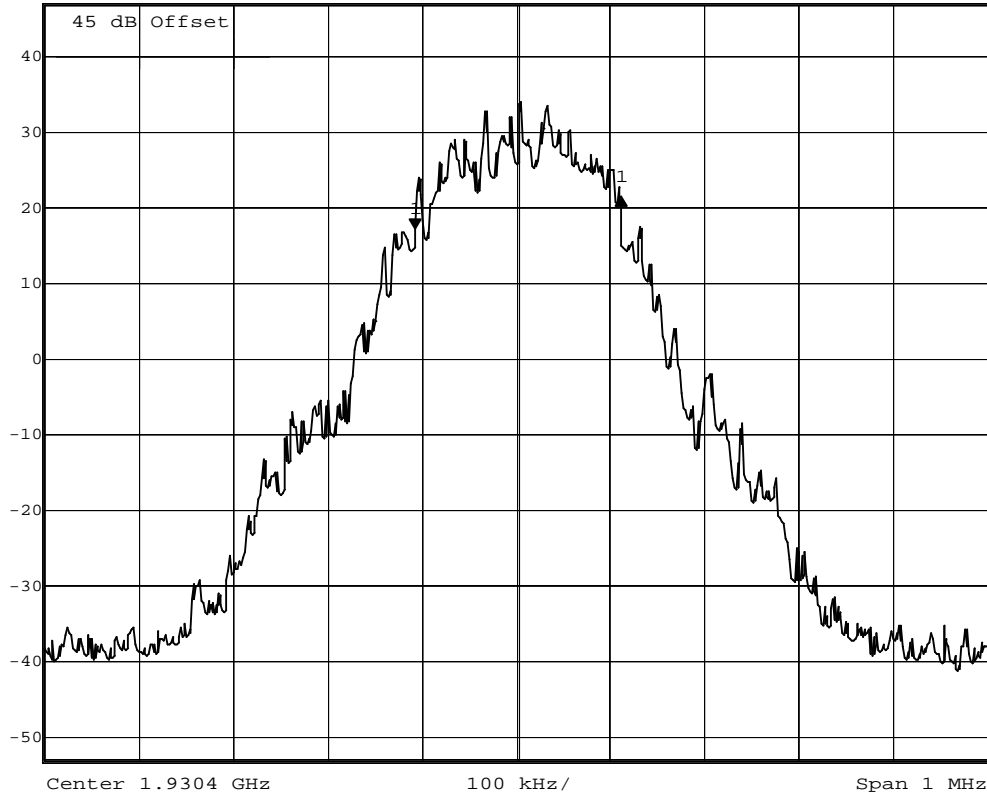
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Diagram 5

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	4.24 dB	VBW	2 kHz	
46.9 dBm	219.43887776 kHz	SWT	640 ms	Unit dBm



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Diagram 6

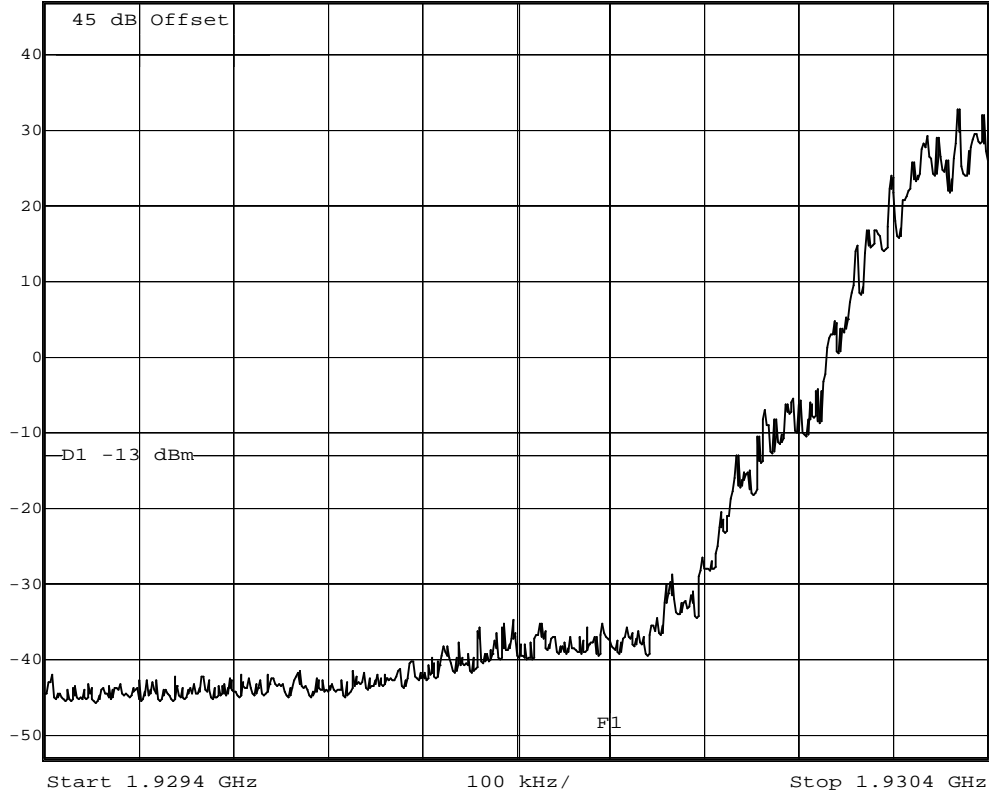
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Band edge level



Ref Lvl
46.9 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



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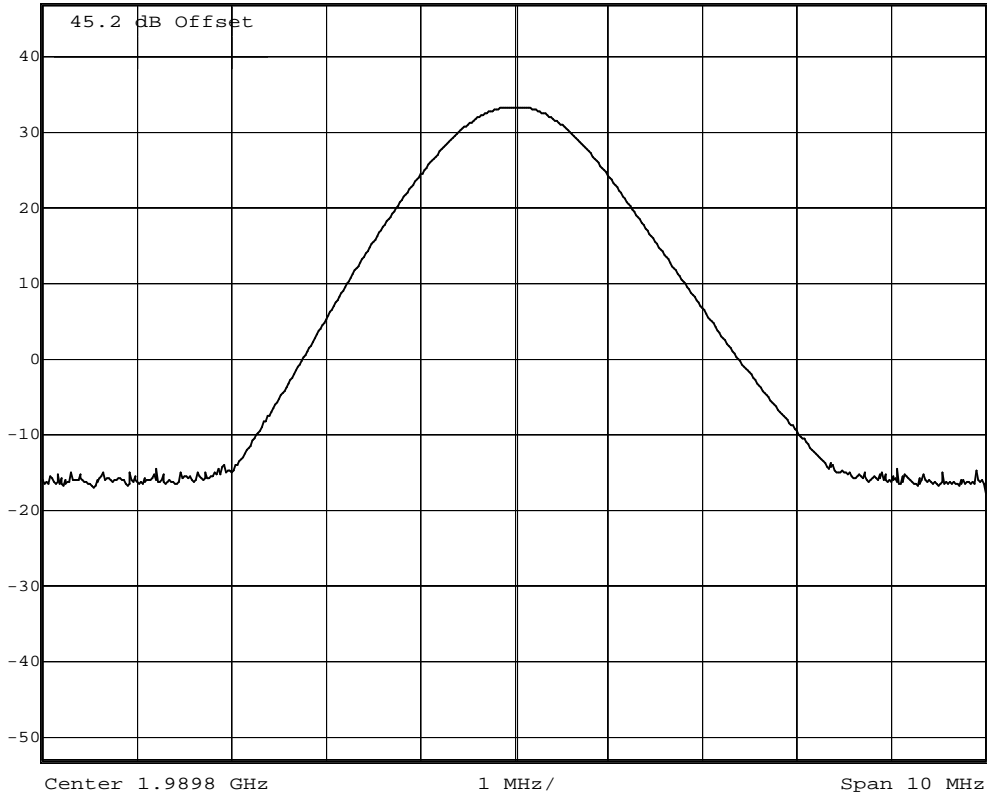
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Diagram 7

Reference level



Ref Lvl
47.1 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



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Ch 810

Sign:.....

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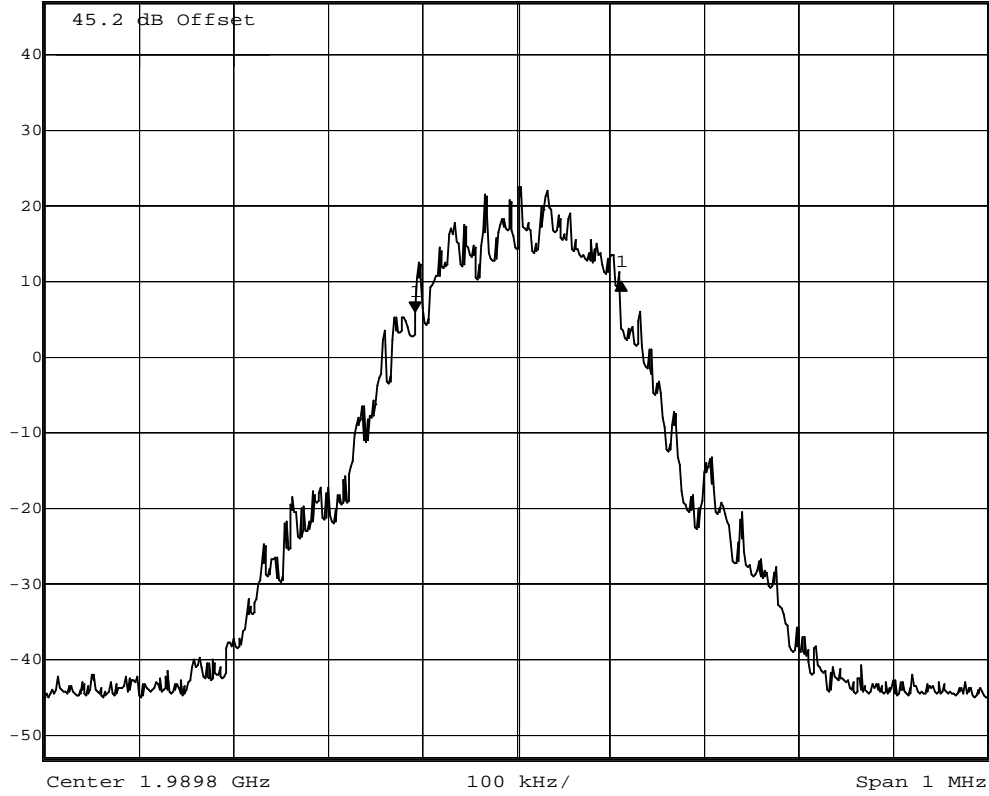
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Encl. 4
Diagram 8

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26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.86 dB	VBW	2 kHz	
47.1 dBm	217.43486974 kHz	SWT	640 ms	Unit dBm



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Ch 810

Sign:.....

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Encl. 4
Diagram 9

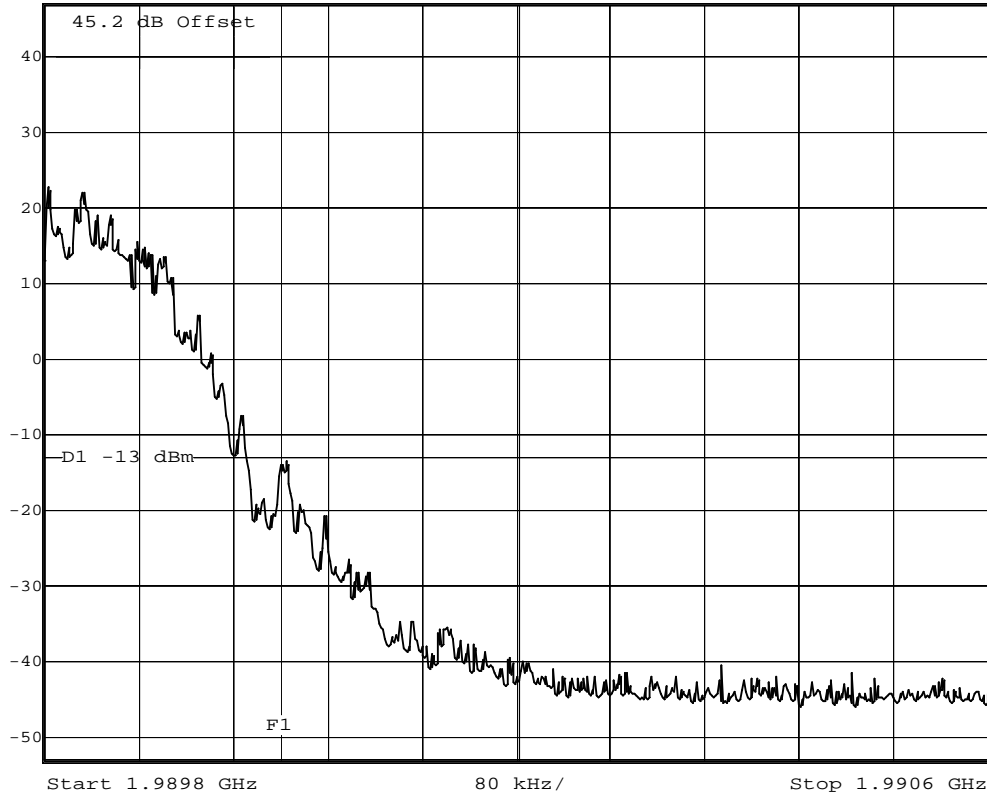
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Band edge level



Ref Lvl
47.1 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 500 ms Unit dBm



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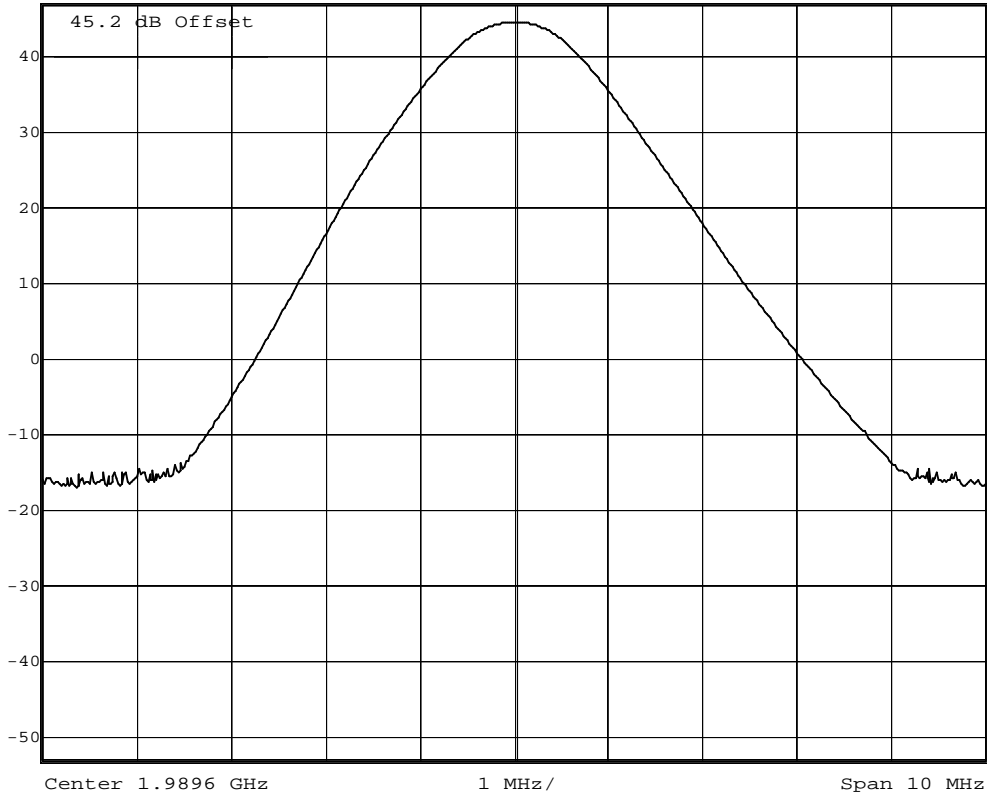
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Encl. 4
Diagram 10

Reference level



Ref Lvl
47.1 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



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Encl. 4
Diagram 11

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26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.93 dB	VBW	2 kHz	
47.1 dBm	218.43687375 kHz	SWT	640 ms	Unit dBm



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Ch 809

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Diagram 12

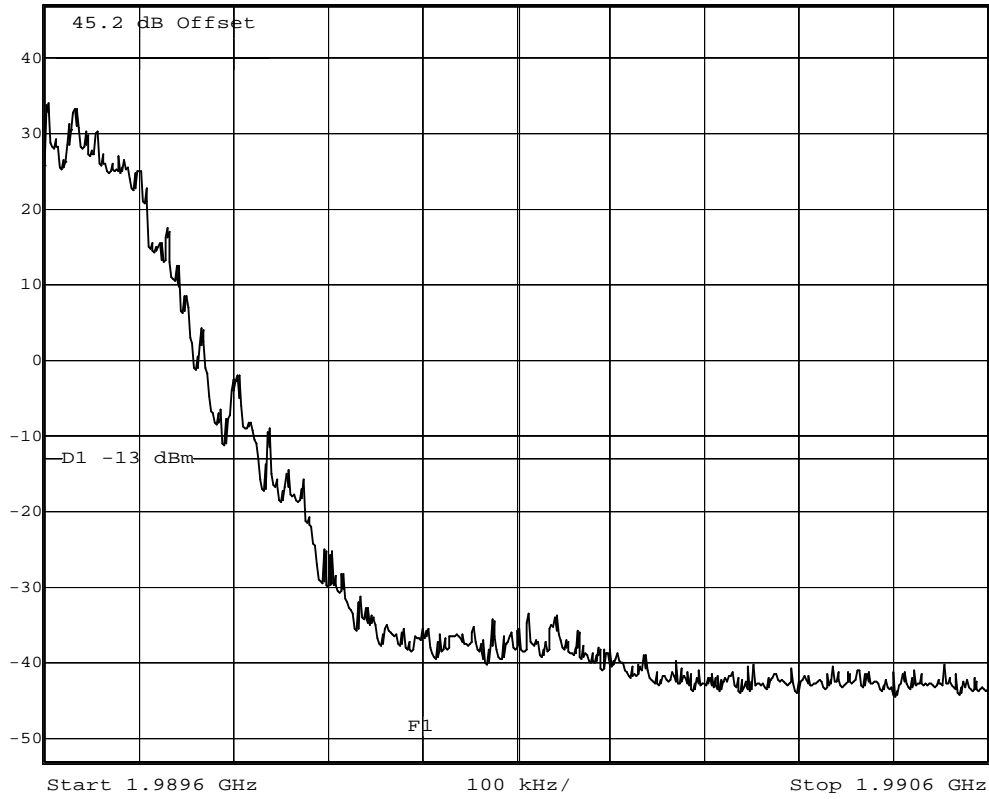
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Band edge level



Ref Lvl
47.1 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



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Diagram 13

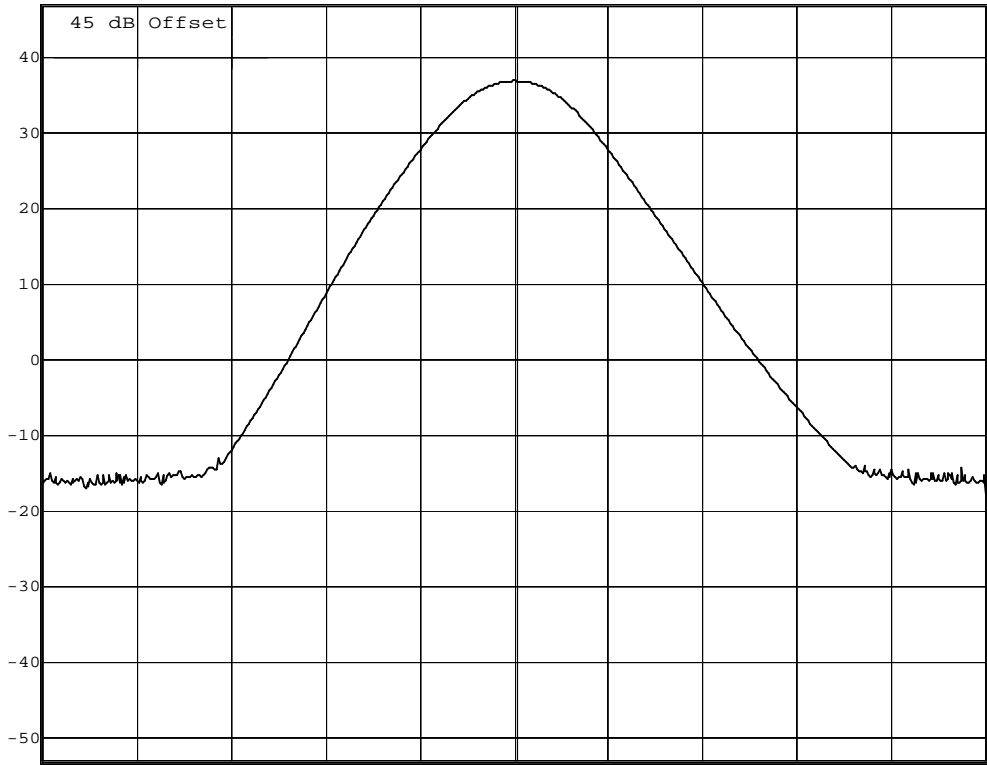
FCC ID: B5KAKRC1311004-1

Reference level



Ref Lvl
46.9 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Center 1.9302 GHz 1 MHz/ Span 10 MHz

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Diagram 14

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26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	4.02 dB	VBW	2 kHz	
46.9 dBm	219.43887775 kHz	SWT	640 ms	Unit dBm



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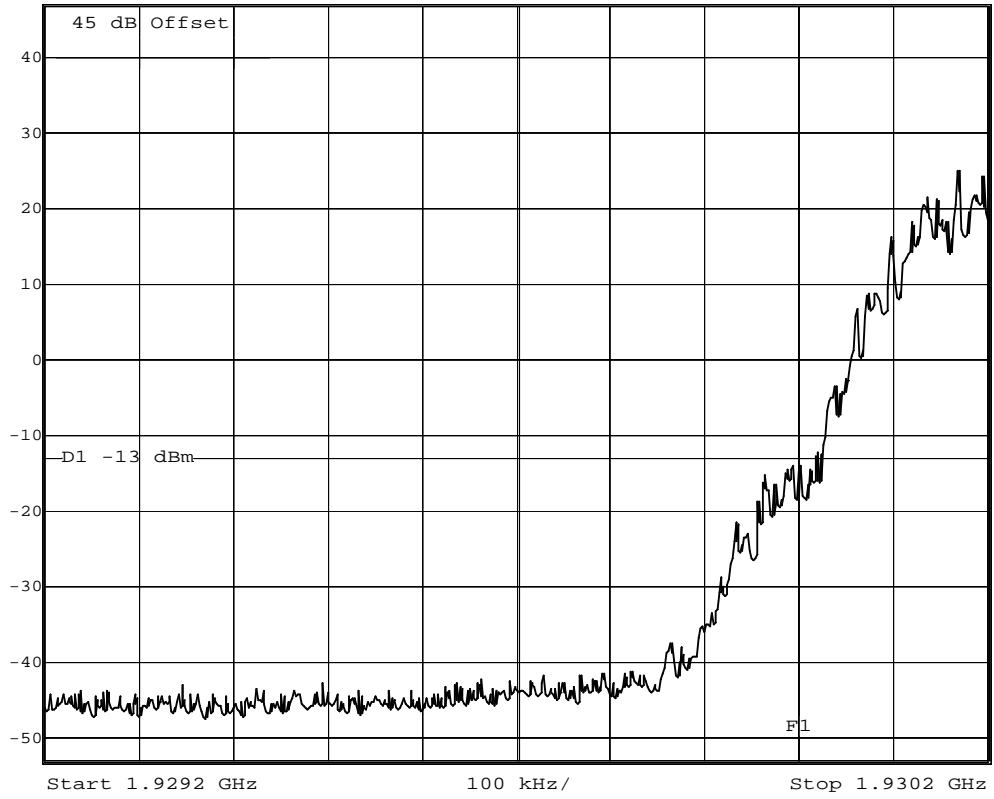
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Diagram 15

Band edge level



Ref Lvl
46.9 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



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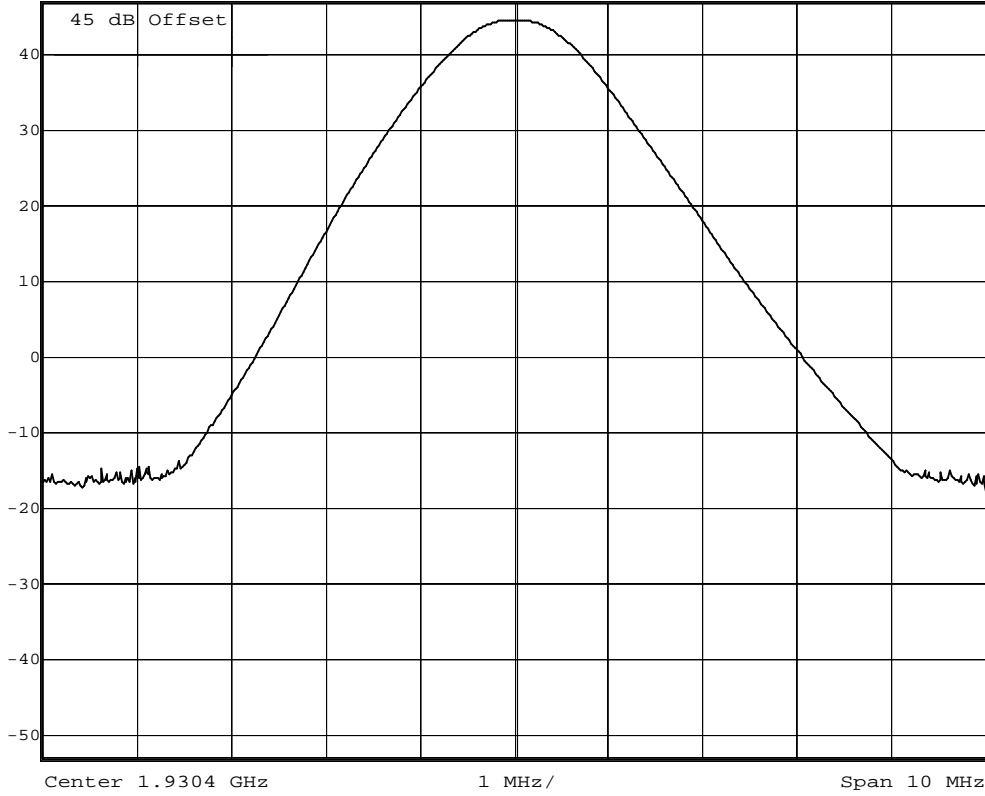
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Diagram 16

Reference level



Ref Lvl
46.9 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



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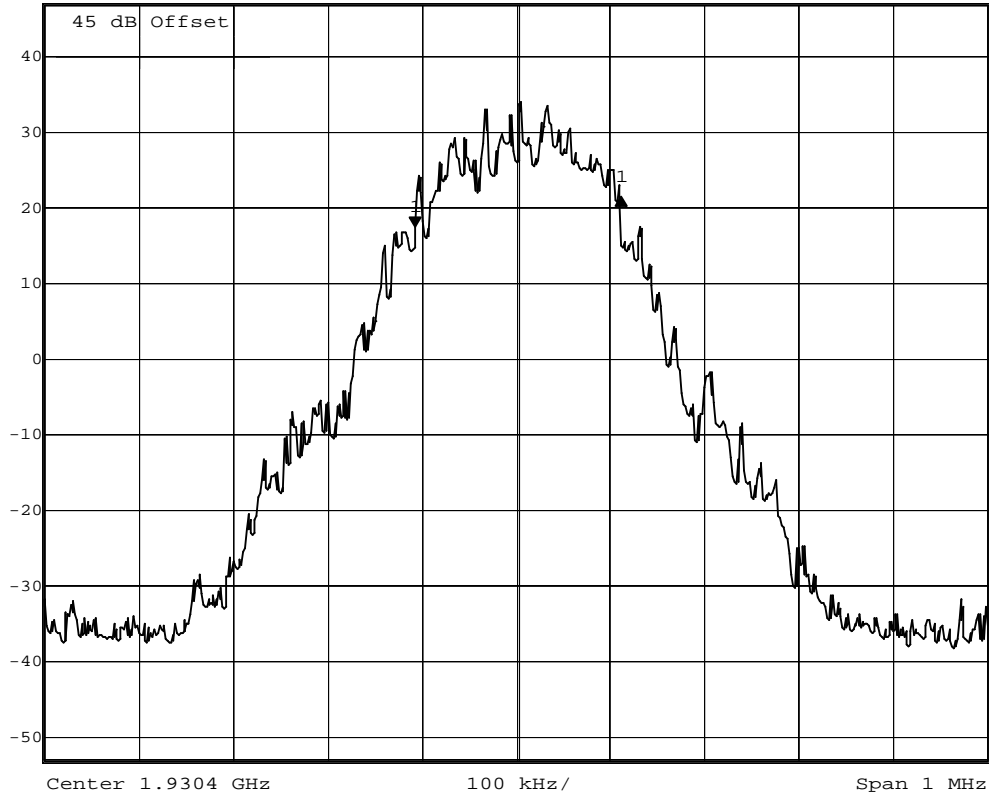
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Diagram 17

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26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	4.02 dB	VBW	2 kHz	
46.9 dBm	218.43687375 kHz	SWT	640 ms	Unit dBm



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Diagram 18

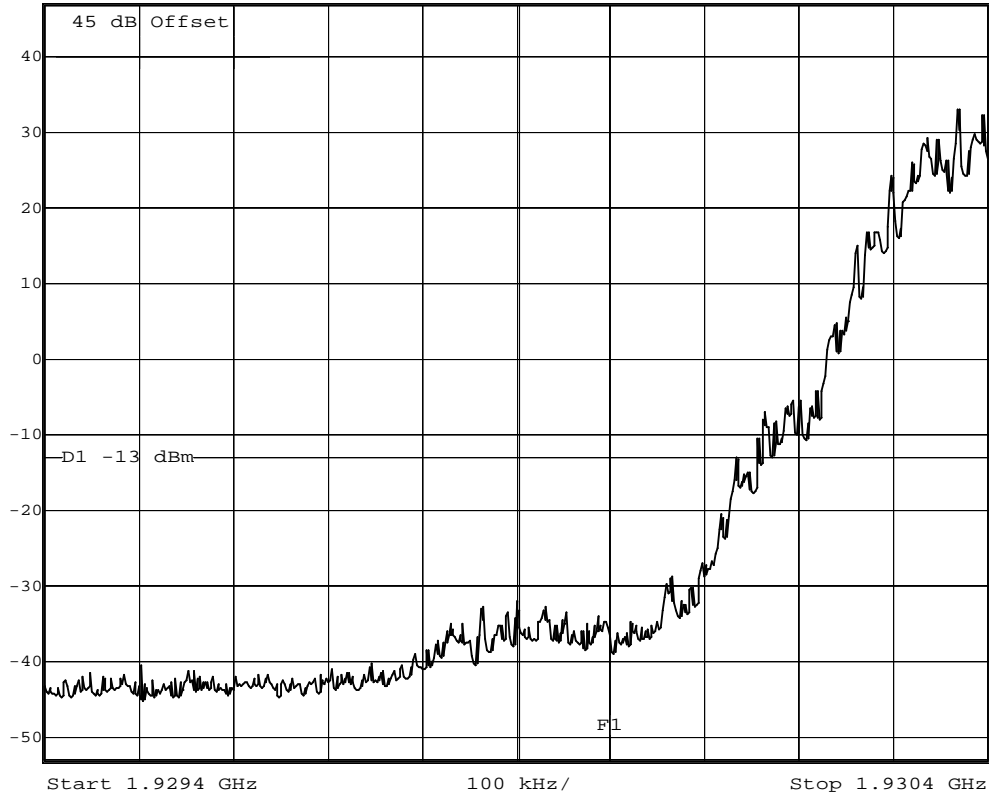
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Band edge level



Ref Lvl
46.9 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



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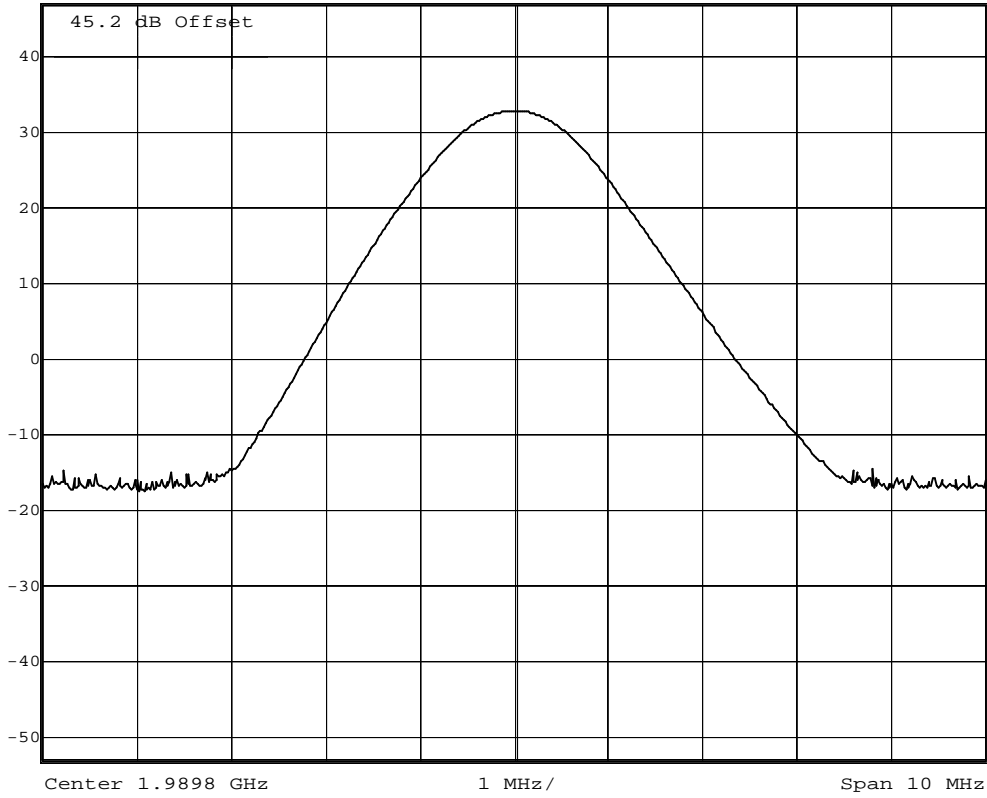
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Diagram 19

Reference level



Ref Lvl
47.1 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



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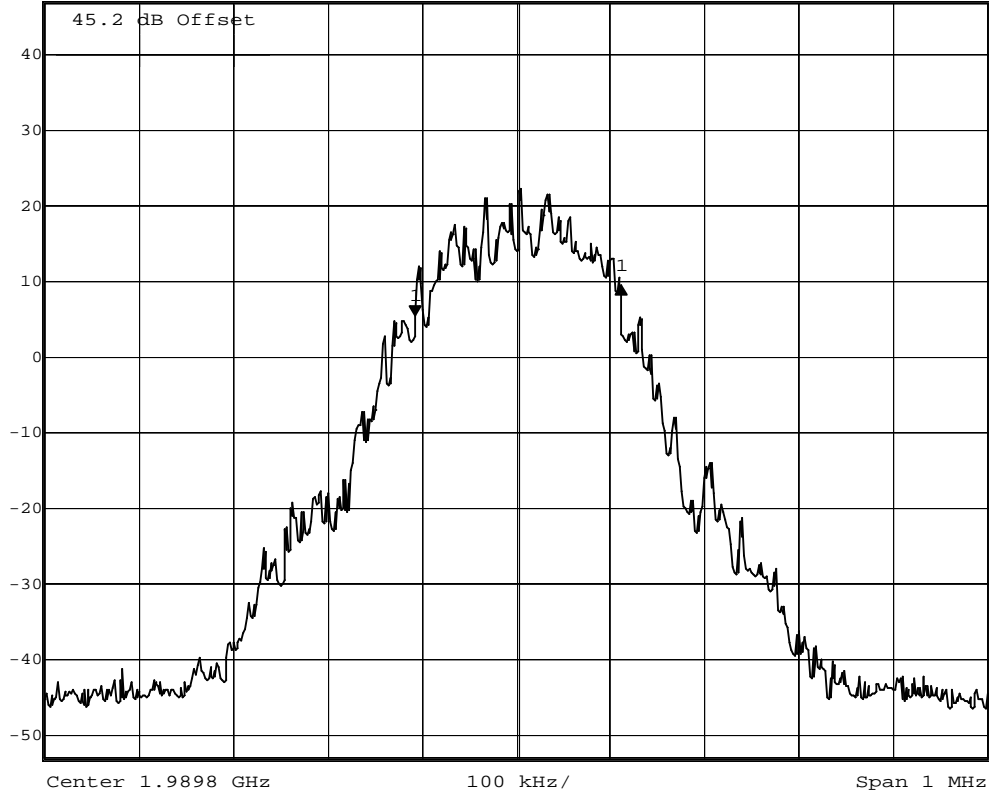
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Diagram 20

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26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.90 dB	VBW	2 kHz	
47.1 dBm	219.43887776 kHz	SWT	640 ms	Unit dBm



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Encl. 4
Diagram 21

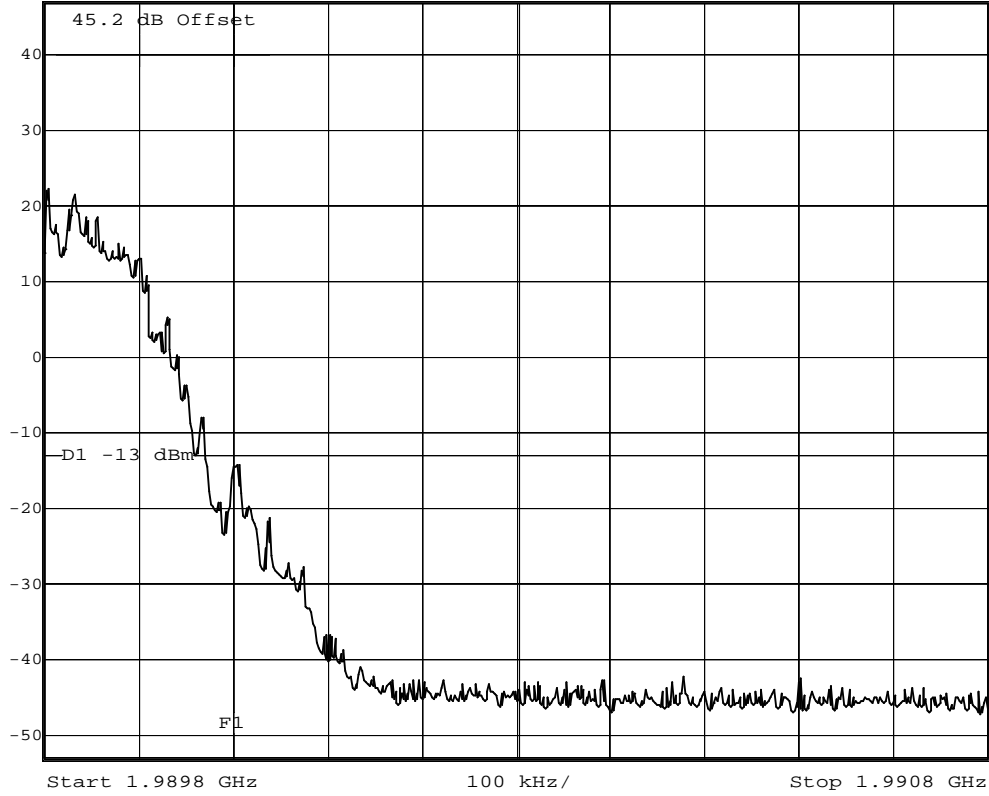
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
47.1 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 12.NOV.2001 13:44:25

Ch 810

Sign:.....

REPORT

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2001-11-26

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F119272

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24 (38)
Encl. 4
Diagram 22

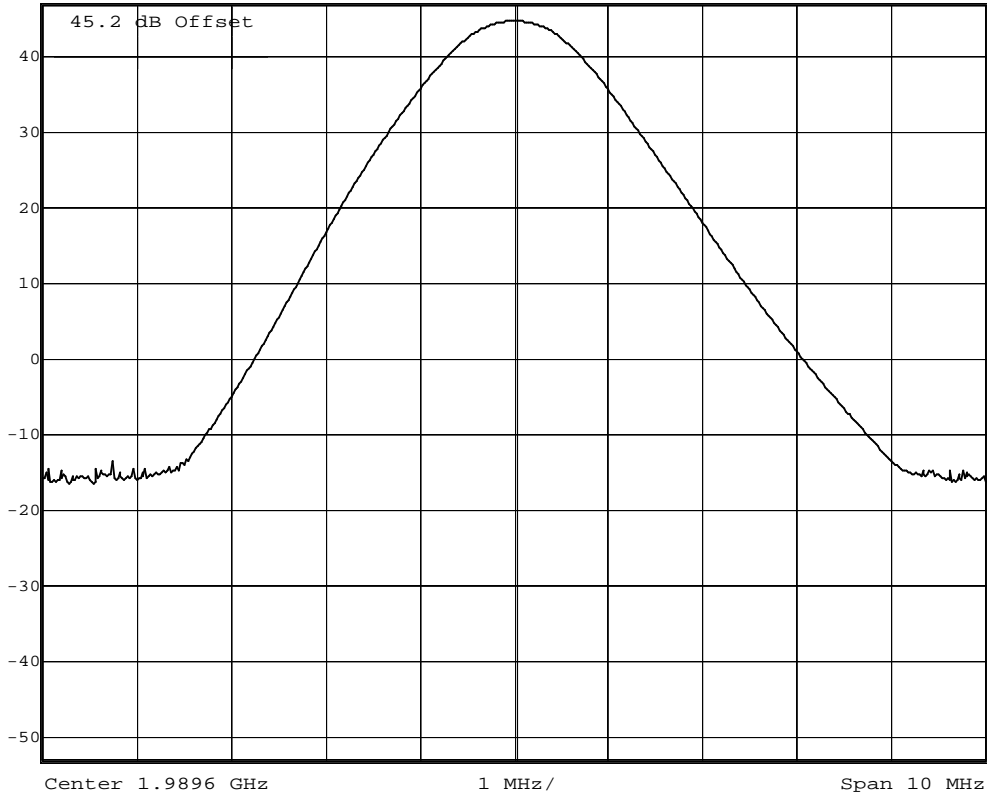
FCC ID: B5KAKRC1311004-1

Reference level



Ref Lvl
47.1 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Date: 12.NOV.2001 12:56:45

Ch 809

Sign:.....

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2001-11-26

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F119272

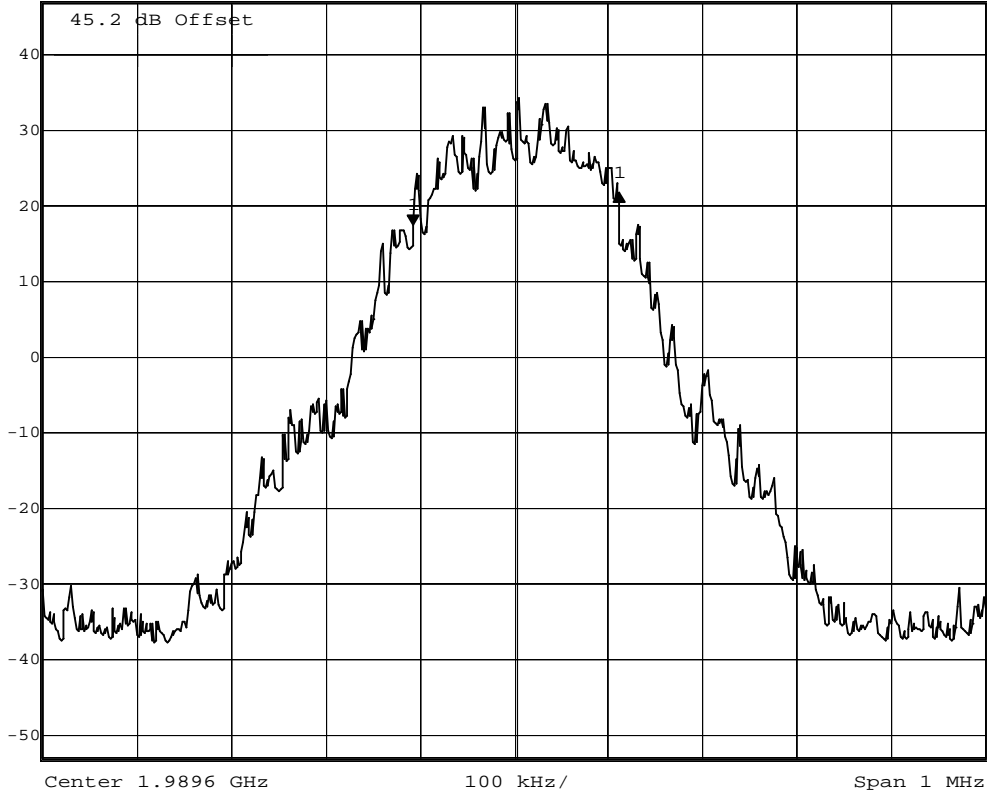
Sida/Page
25 (38)
Encl. 4
Diagram 23

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	4.10 dB	VBW	2 kHz	
47.1 dBm	218.43687375 kHz	SWT	640 ms	Unit dBm



Date: 12.NOV.2001 12:59:23

Ch 809

Sign:.....

REPORT

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2001-11-26

Beteckning/Reference
F119272

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26 (38)
Encl. 4
Diagram 24

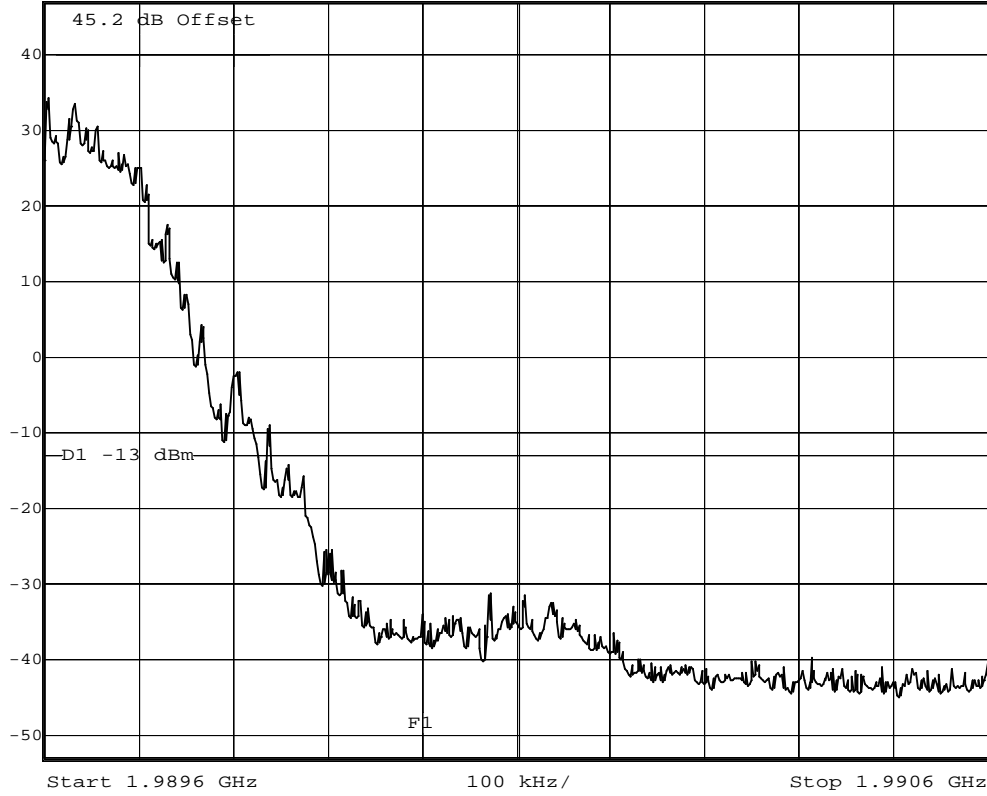
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
47.1 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 12.NOV.2001 13:17:15

Ch 809

Sign:.....

REPORT

FCC ID: B5KAKRC1311004-1

Datum/Date
2001-11-26

Beteckning/Reference
F119272

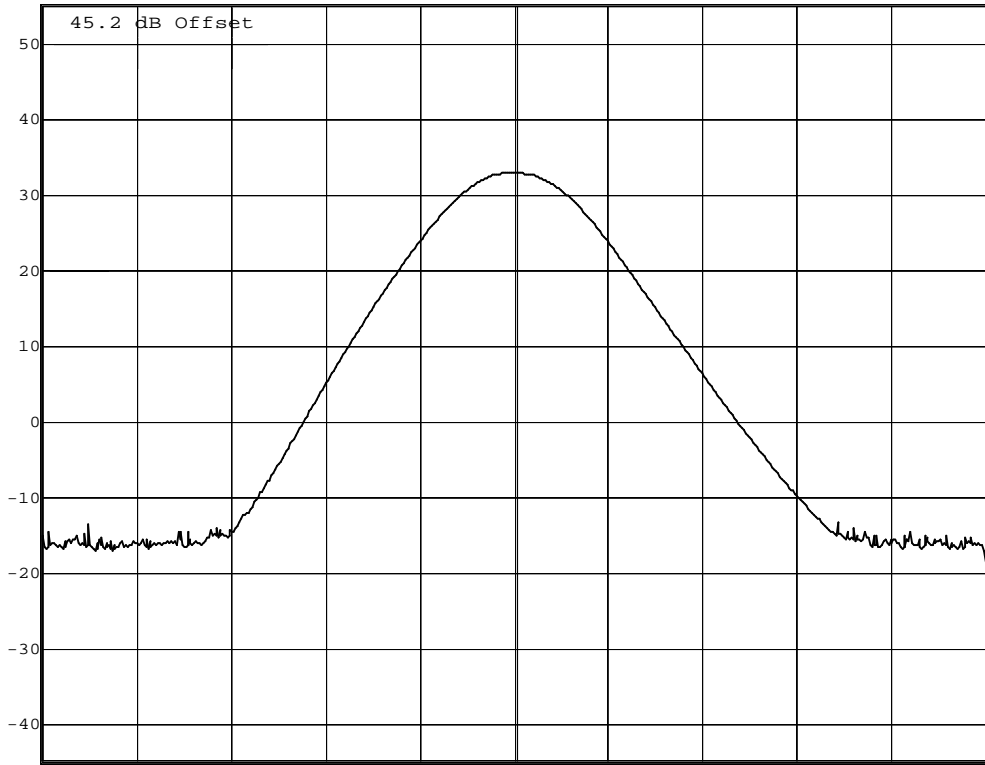
Sida/Page
27 (38)
Encl. 4
Diagram 25

Reference level



Ref Lvl
55.2 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Center 1.9302 GHz 1 MHz/ Span 10 MHz

Date: 14.NOV.2001 13:16:21

Ch 512

Sign:.....

REPORT

Datum/Date
2001-11-26

Beteckning/Reference
F119272

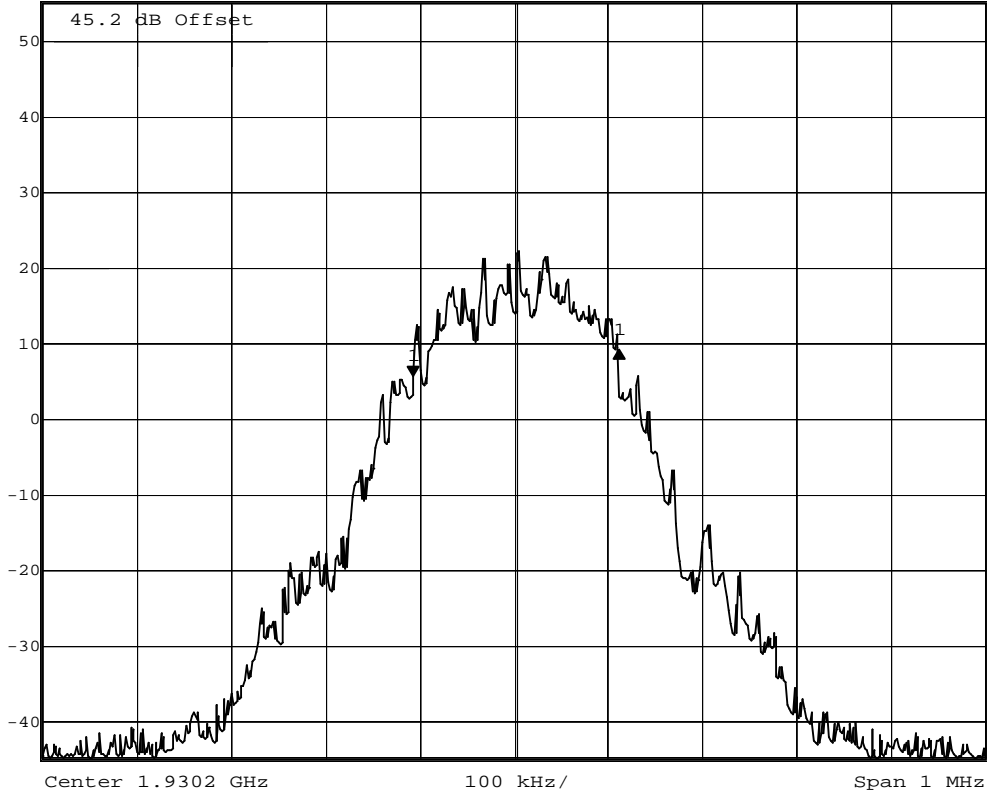
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28 (38)
Encl. 4
Diagram 26

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.47 dB	VBW	2 kHz	
55.2 dBm	219.43887776 kHz	SWT	640 ms	Unit dBm



Date: 14.NOV.2001 13:18:28

Ch 512

Sign:.....

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2001-11-26

Beteckning/Reference
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29 (38)
Encl. 4
Diagram 27

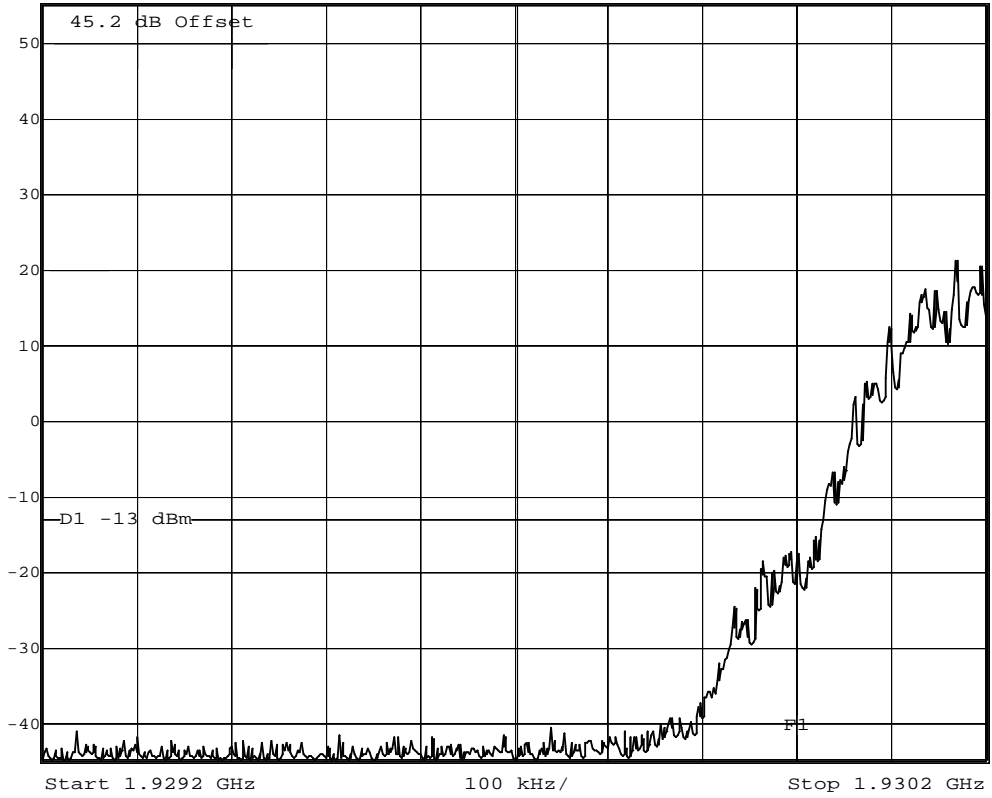
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
55.2 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 14.NOV.2001 13:03:07

Ch 512

Sign:.....

REPORT

FCC ID: B5KAKRC1311004-1

Datum/Date
2001-11-26

Beteckning/Reference
F119272

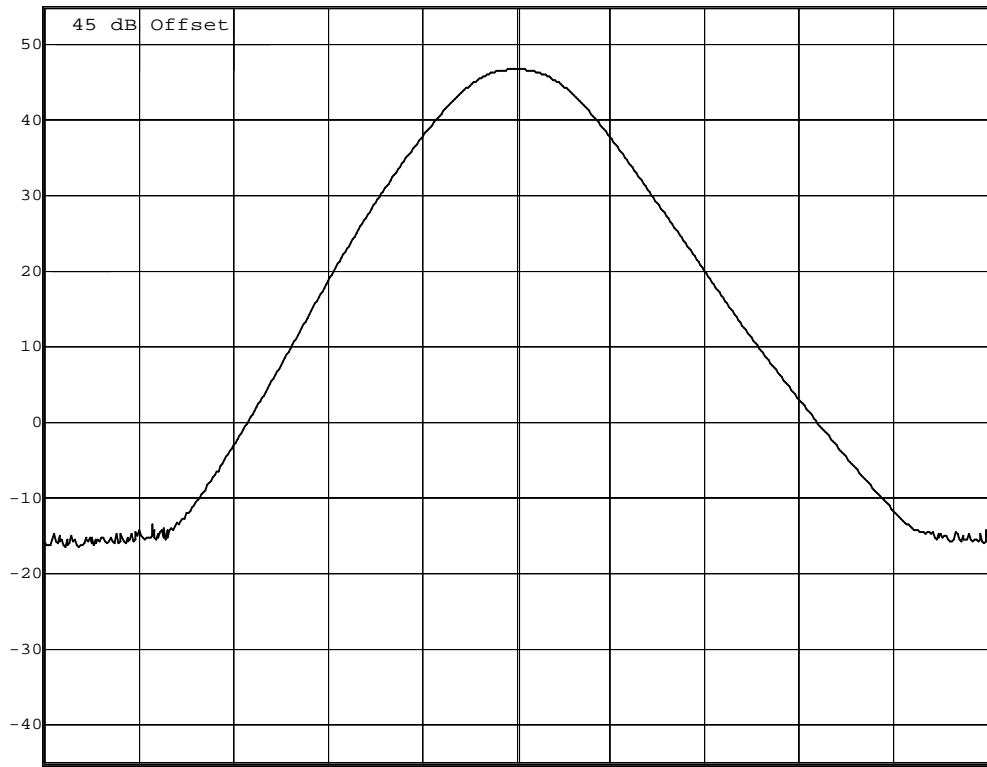
Sida/Page
30 (38)
Encl. 4
Diagram 28

Reference level



Ref Lvl
55 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Center 1.9304 GHz 1 MHz/ Span 10 MHz

Date: 14.NOV.2001 12:09:49

Ch 513

Sign:.....

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Datum/Date
2001-11-26

Betekning/Reference
F119272

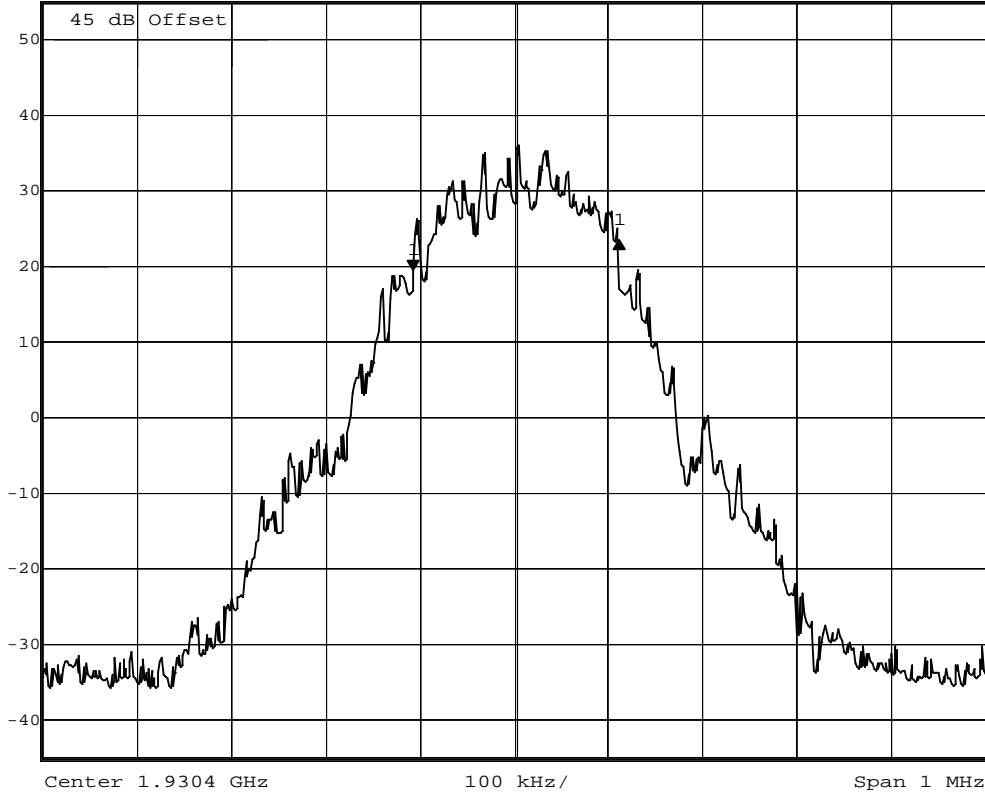
Sida/Page
31 (38)
Encl. 4
Diagram 29

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	4.02 dB	VBW	2 kHz	
55 dBm	217.43486974 kHz	SWT	640 ms	Unit dBm



Date: 14.NOV.2001 12:37:53

Ch 513

Sign:.....

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2001-11-26

Beteckning/Reference
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32 (38)
Encl. 4
Diagram 30

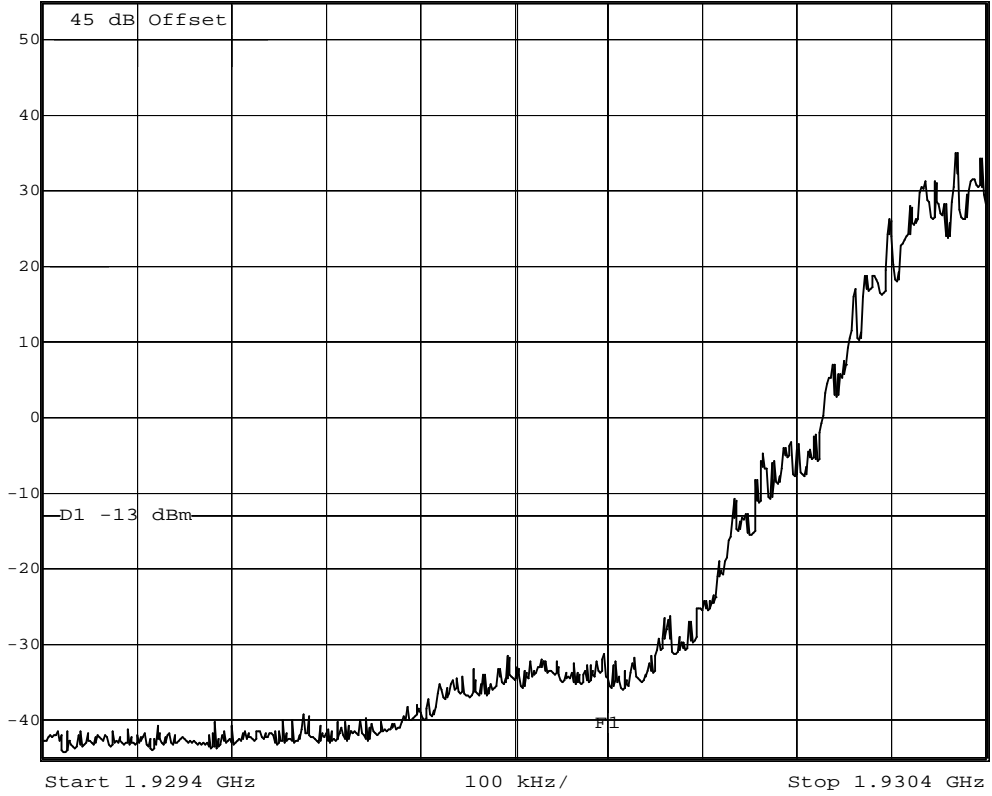
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
55 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 14.NOV.2001 12:39:47

Ch 513

Sign:.....

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2001-11-26

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33 (38)
Encl. 4
Diagram 31

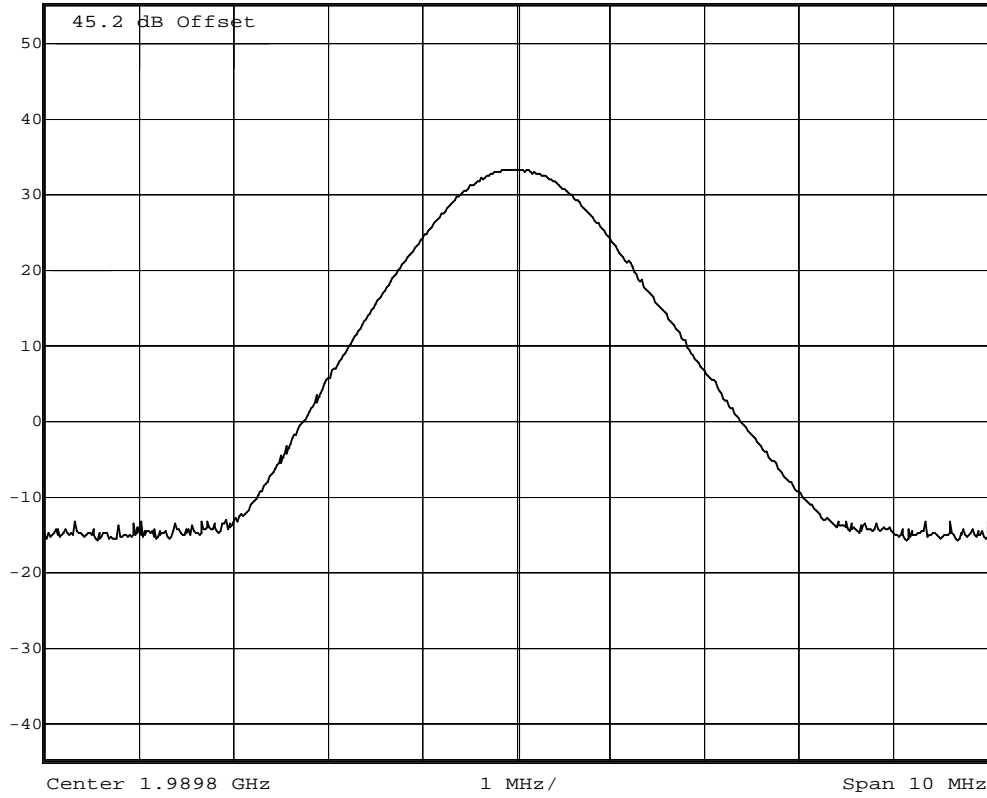
FCC ID: B5KAKRC1311004-1

Reference level



Ref Lvl
55.2 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Date: 14.NOV.2001 12:56:46

Ch 810

Sign:.....

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2001-11-26

Beteckning/Reference
F119272

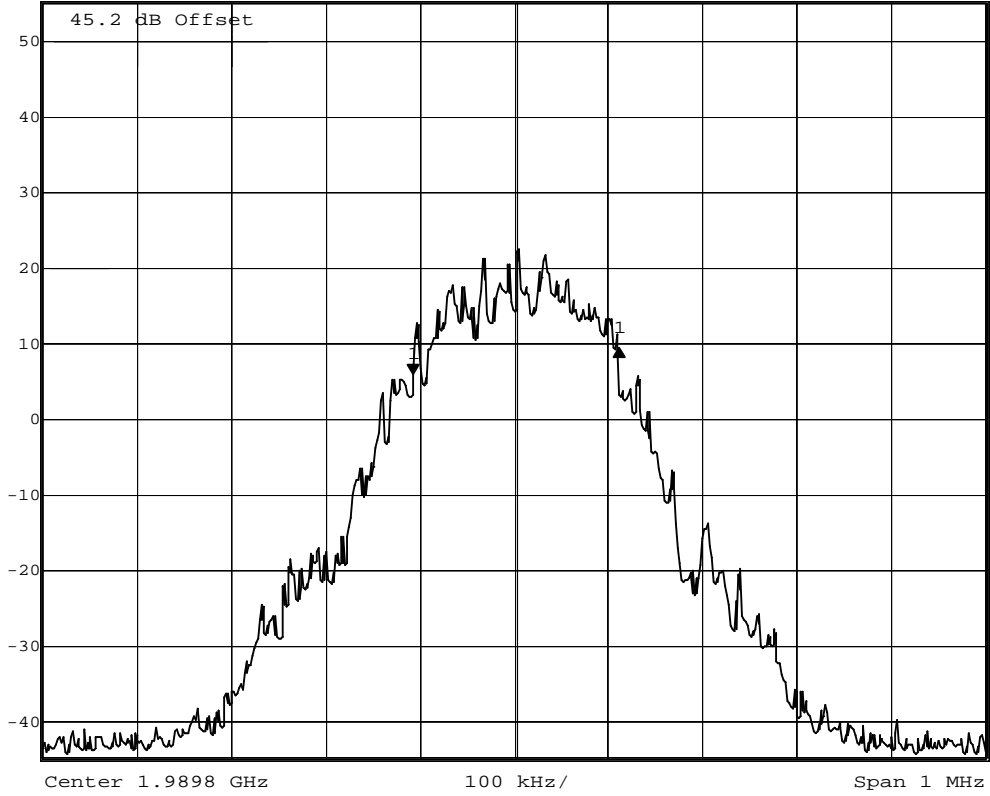
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Diagram 32

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.53 dB	VBW	2 kHz	
55.2 dBm	217.43486974 kHz	SWT	640 ms	Unit dBm



Date: 14.NOV.2001 13:00:53

Ch 810

Sign:.....

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Datum/Date
2001-11-26

Beteckning/Reference
F119272

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35 (38)
Encl. 4
Diagram 33

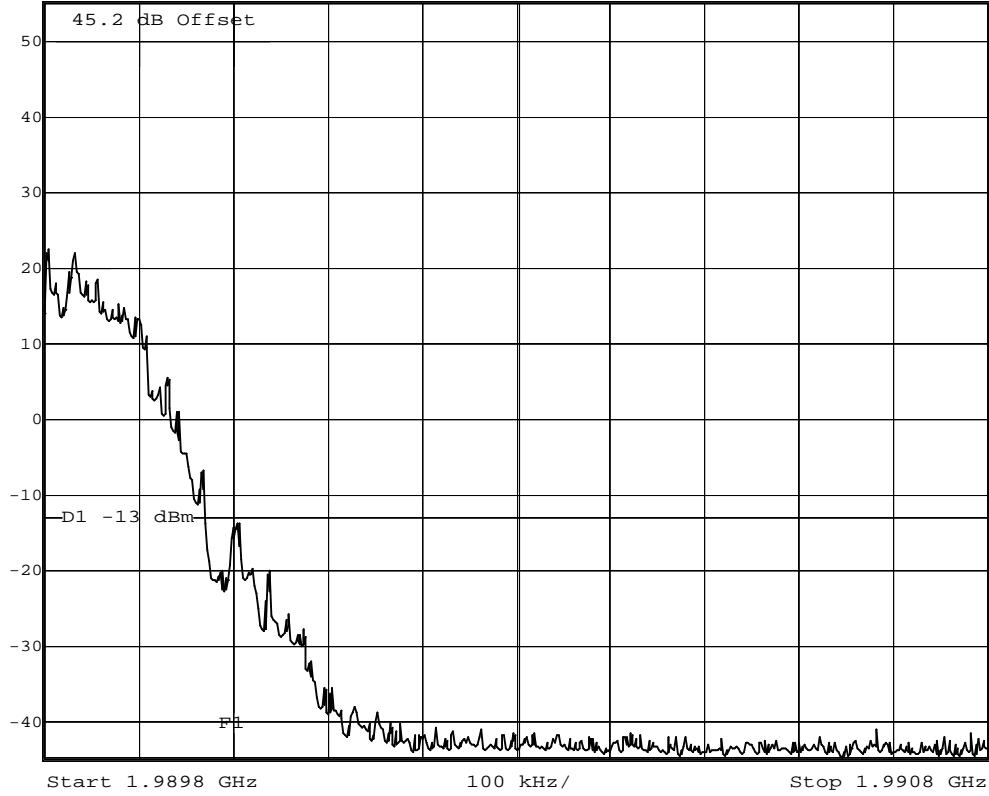
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
55.2 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 14.NOV.2001 12:55:18

Ch 810

Sign:.....

REPORT

FCC ID: B5KAKRC1311004-1

Datum/Date
2001-11-26

Beteckning/Reference
F119272

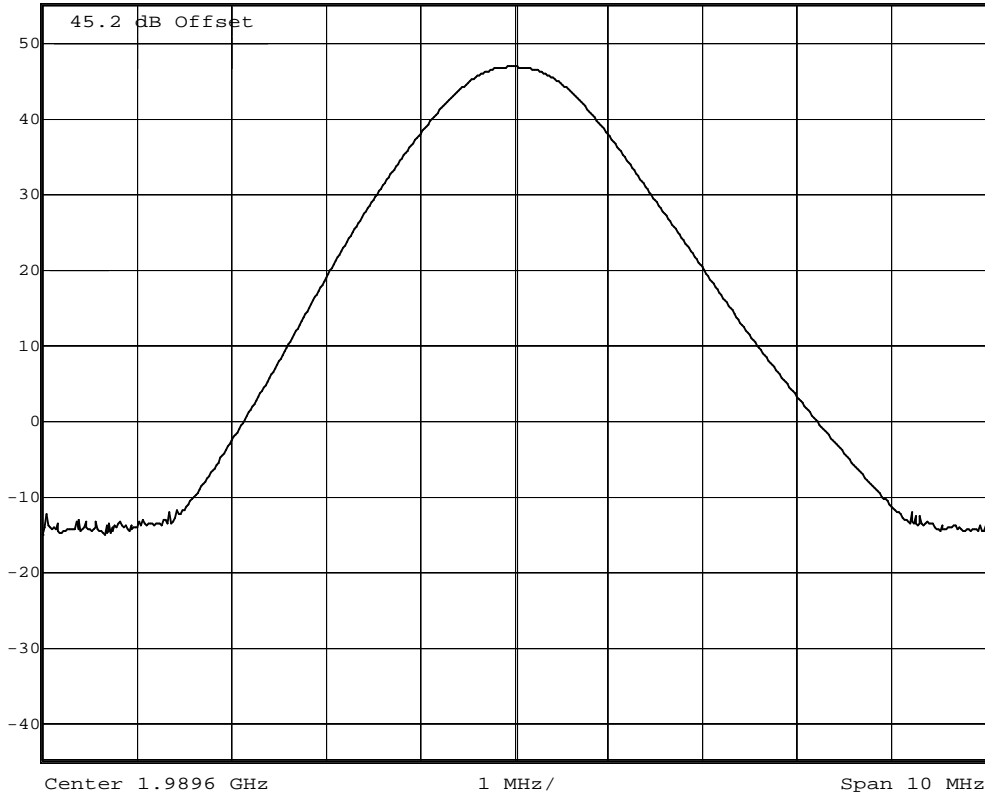
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Encl. 4
Diagram 34

Reference level



Ref Lvl
55.2 dBm

RBW	1 MHz	RF Att	20 dB
VBW	1 MHz		
SWT	5 ms	Unit	dBm



Date: 14.NOV.2001 12:47:24

Ch 809

Sign:.....

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Beteckning/Reference
F119272

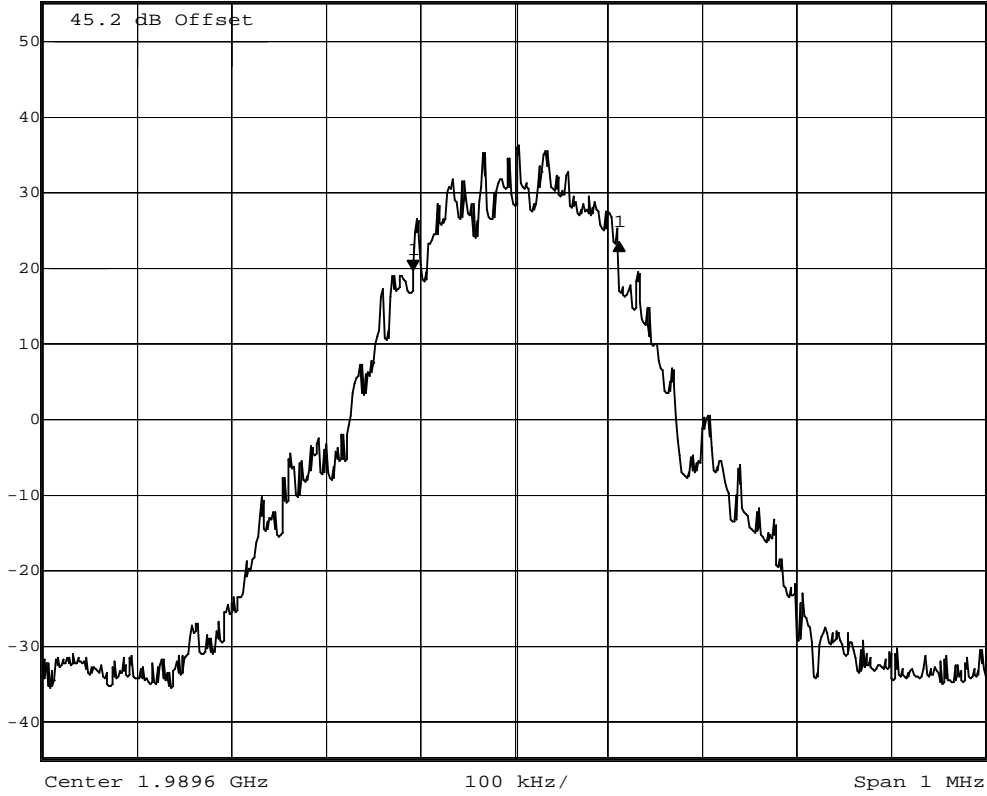
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37 (38)
Encl. 4
Diagram 35

FCC ID: B5KAKRC1311004-1

26 dB point



Delta 1 [T1]	RBW	2 kHz	RF Att	20 dB
Ref Lvl	3.82 dB	VBW	2 kHz	
55.2 dBm	218.43687375 kHz	SWT	640 ms	Unit dBm



Date: 14.NOV.2001 12:49:10

Ch 809

Sign:.....

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2001-11-26

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F119272

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Diagram 36

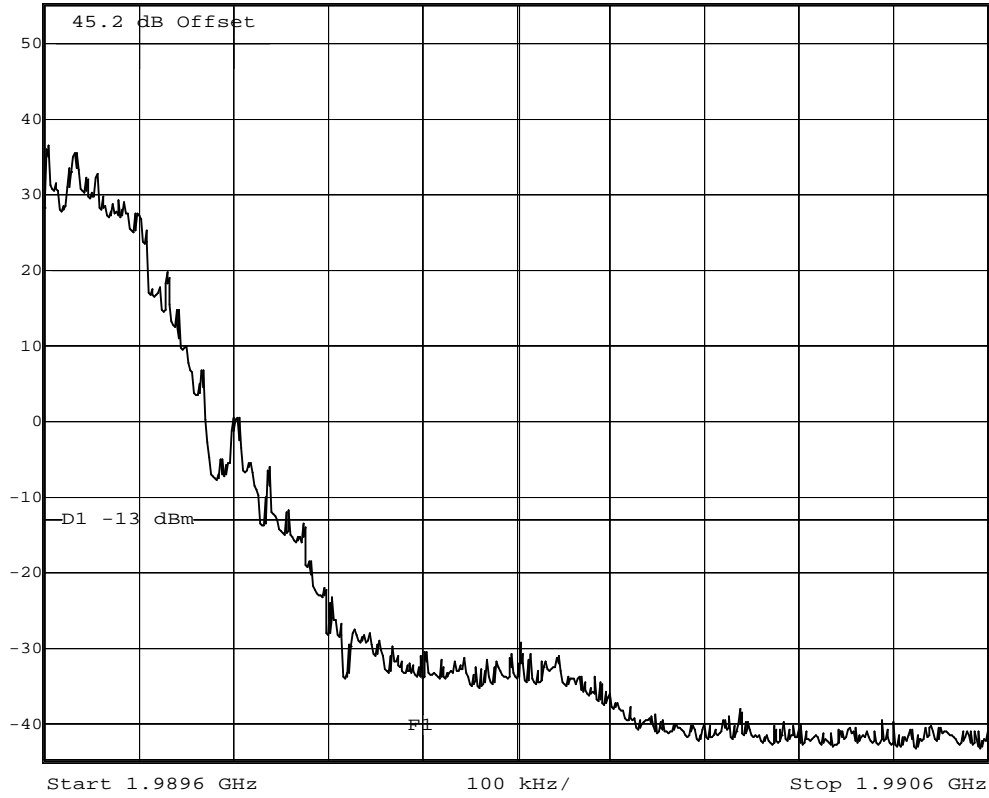
FCC ID: B5KAKRC1311004-1

Band edge level



Ref Lvl
55.2 dBm

RBW 2 kHz RF Att 20 dB
VBW 2 kHz
SWT 640 ms Unit dBm



Date: 14.NOV.2001 12:42:08

Ch 809

Sign:.....

Conducted spurious emission measurements according to 47CFR 2.1051

Date	Temperature	Humidity
2001-11-09	22 °C ± 3 °C	37 % ± 5 %
2001-11-14	21 °C ± 3 °C	16 % ± 5 %

Test set-up and Procedure

The measurement was made per J-STD-007A Vol 1. Measurements were made at CDU-G output connectors. The output was connected to a spectrum analyser. The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
R&S ESI 40 with option FSE-B7	2002-07	503 125
Testo 615, Temperature and humidity meter	2003-08	503 505

Measurement uncertainty: 3.7 dB

Results

TRU s/n: AE50006KC7 in cabinet 2206, revision R2C, without dTRU internal combiner:

- Diagram 1: TRX output 1, Ch 512, +44.5 dBm
- Diagram 2: TRX output 1, Ch 810, +44.5 dBm
- Diagram 3: TRX output 2, Ch 512, +44.5 dBm
- Diagram 4: TRX output 2, Ch 810, +44.5 dBm

TRU s/n: AE50006KC7 in cabinet 2206, revision R2C, with dTRU internal combiner:

- Diagram 5: TRU, Ch 512, +41 dBm and ch 537, +41 dBm
- Diagram 6: TRU, Ch 785, +41 dBm and ch 810, +41 dBm

TRU s/n: AE50006TKZ (TCC) in cabinet 2206, revision R3A

- Diagram 7: TRU, Ch 512, +47 dBm
- Diagram 8: TRU, Ch 810, +47 dBm

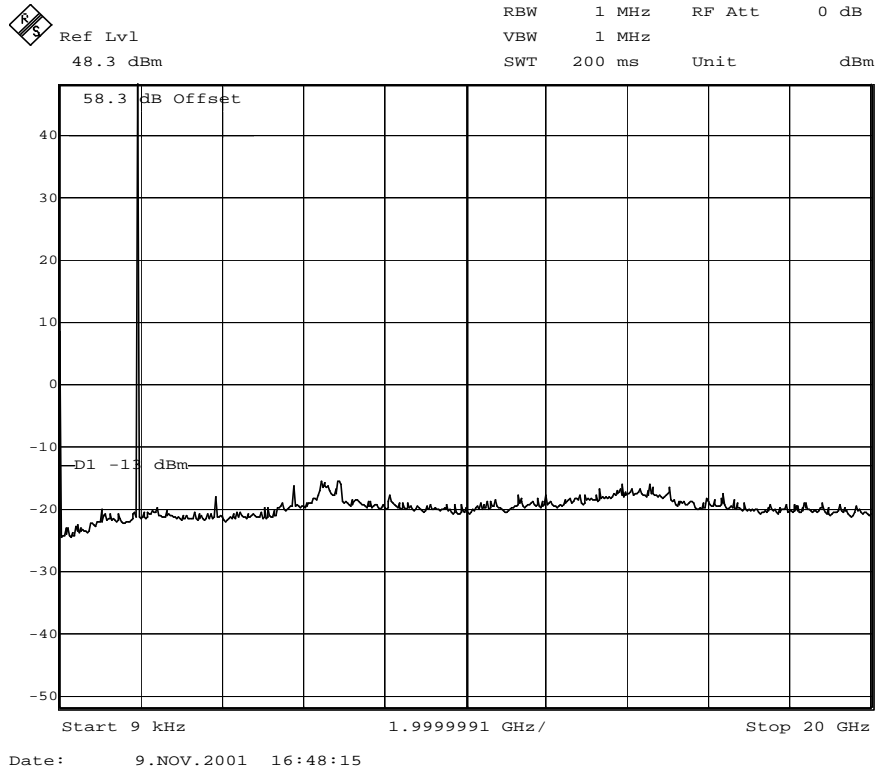
Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10 \log P$ dB.

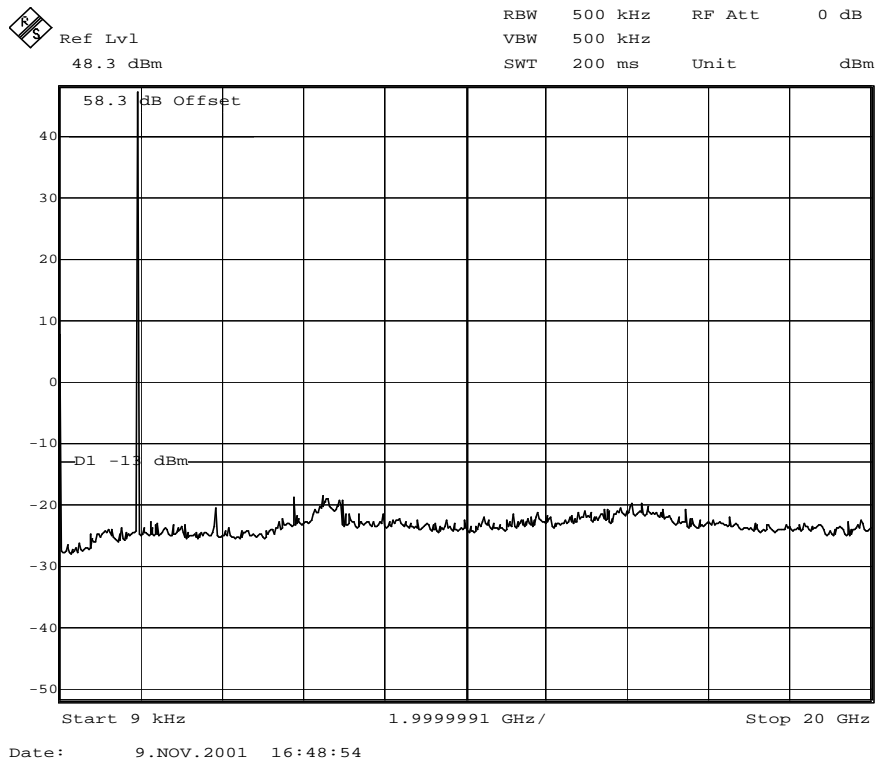
Compliant?	Yes
------------	-----

FCC ID: B5KAKRC1311004-1

Ch 512



RBW: 1 MHz



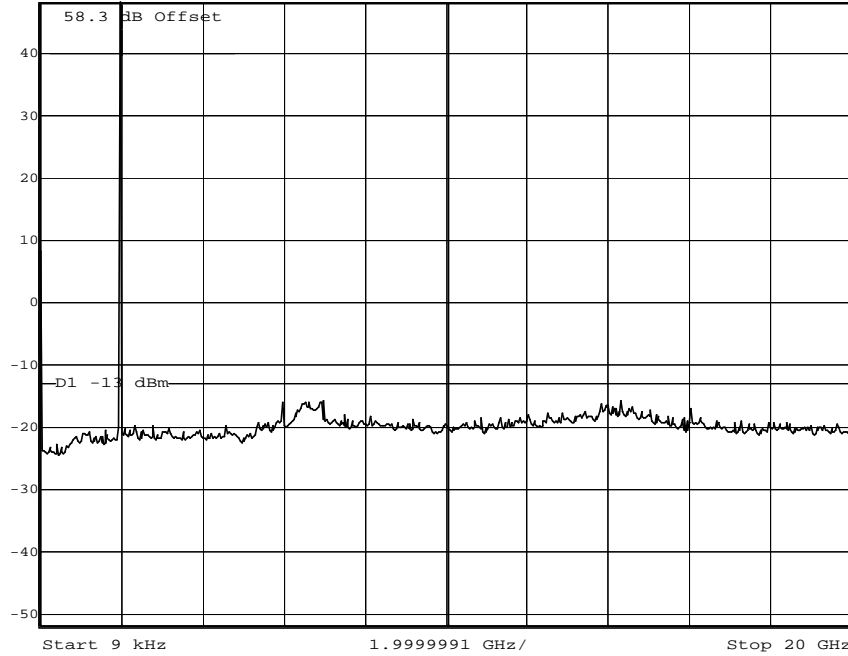
RBW: 500 kHz

Sign:.....

FCC ID: B5KAKRC1311004-1

Ch 810

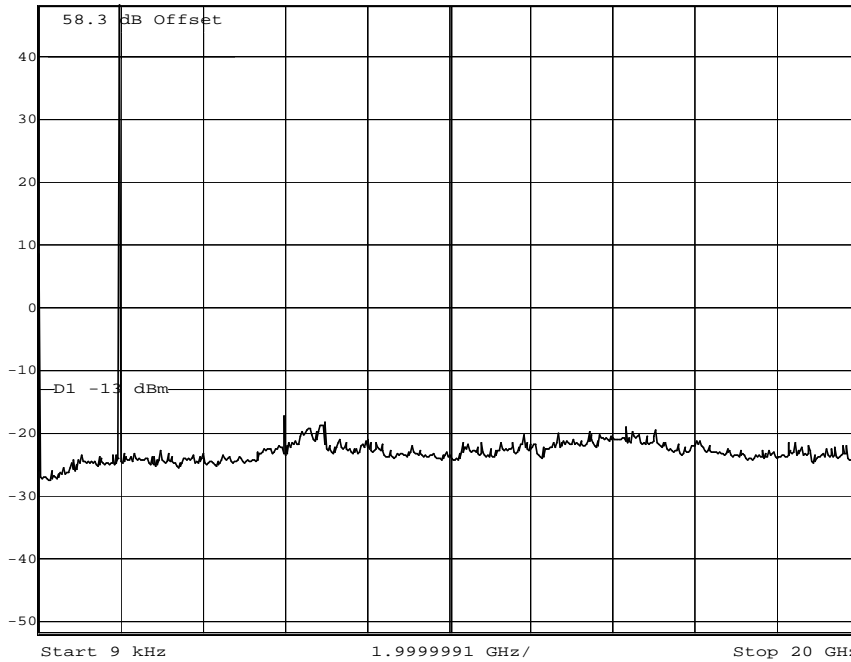
 Ref Lvl 48.3 dBm RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 16:40:50

RBW: 1 MHz

 Ref Lvl 48.3 dBm RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 16:50:32

RBW: 500 kHz

Sign:.....

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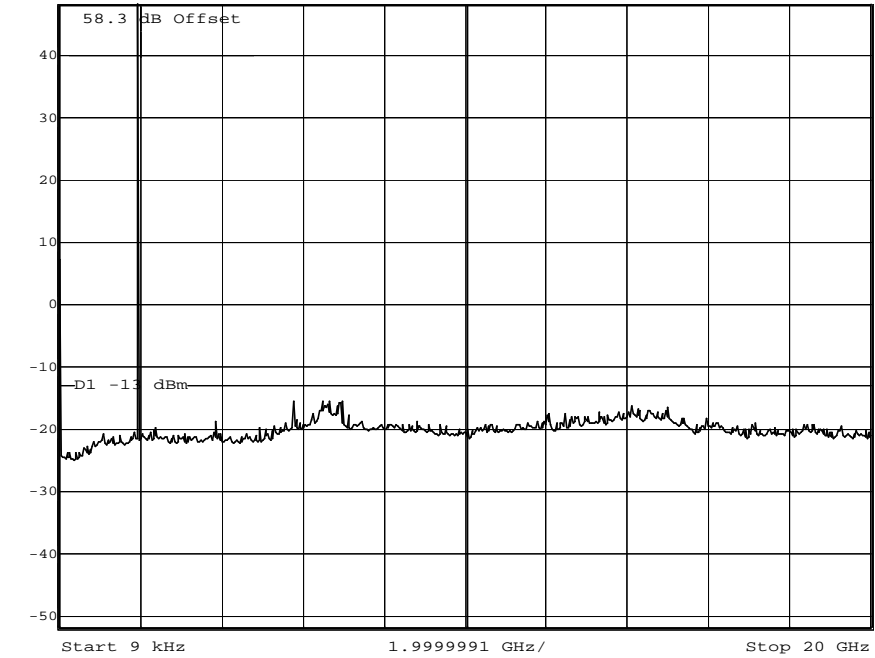
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Diagram 3

FCC ID: B5KAKRC1311004-1

Ch 512

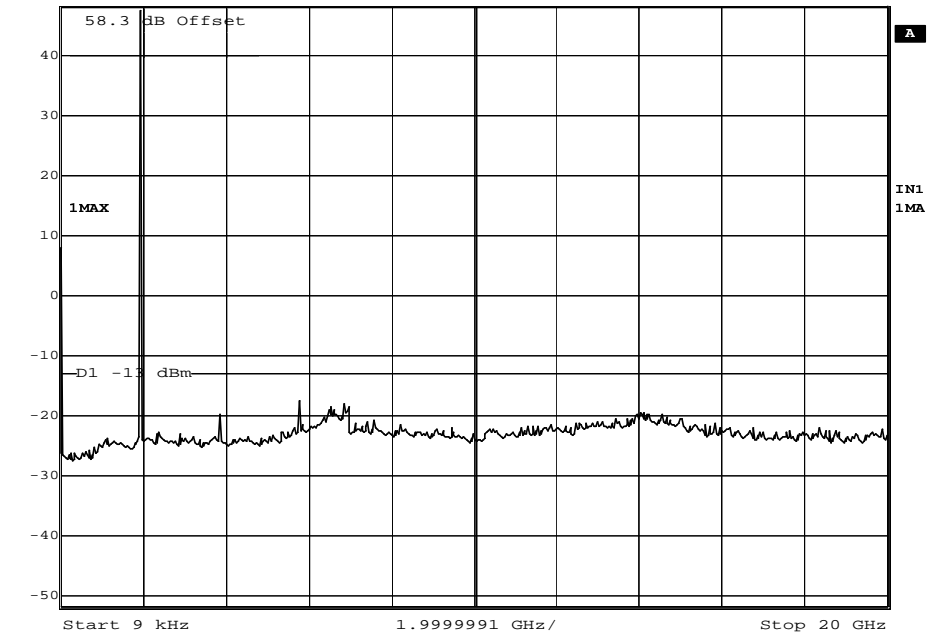
 Ref Lvl 48.3 dBm RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 17:00:24

RBW: 1 MHz

 Ref Lvl 48.3 dBm RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 17:01:12

RBW: 500 kHz

Sign:.....

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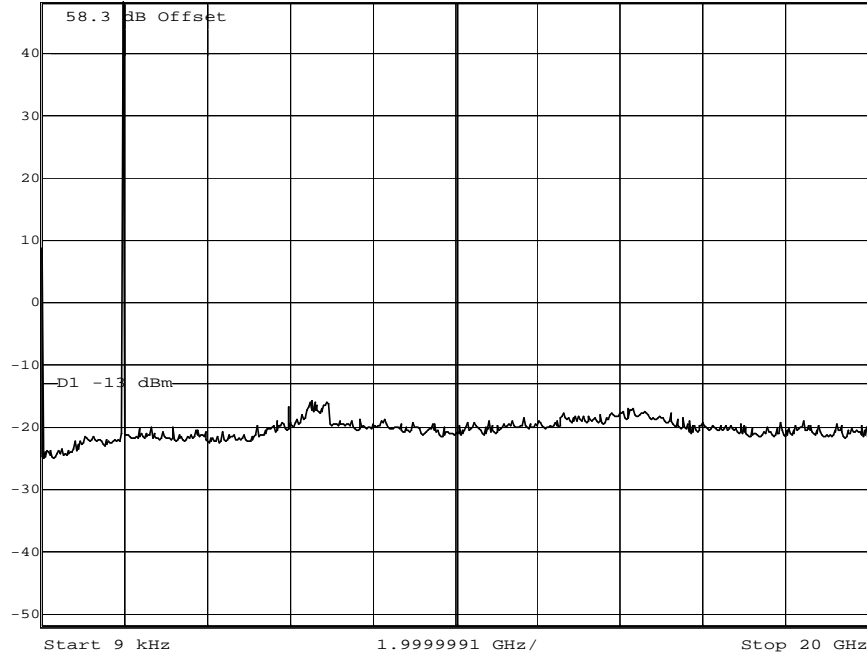
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Diagram 4

Ch 810



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



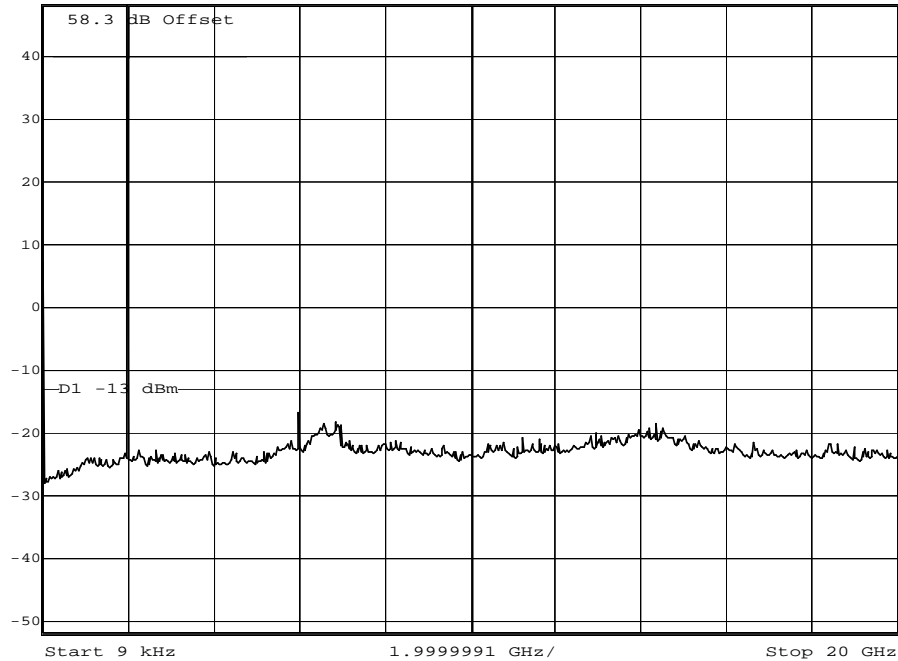
Date: 9.NOV.2001 16:58:34

RBW: 1 MHz



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 16:57:02

RBW: 500 kHz

Sign:.....

FCC ID: B5KAKRC1311004-1


Ch 512 and 537

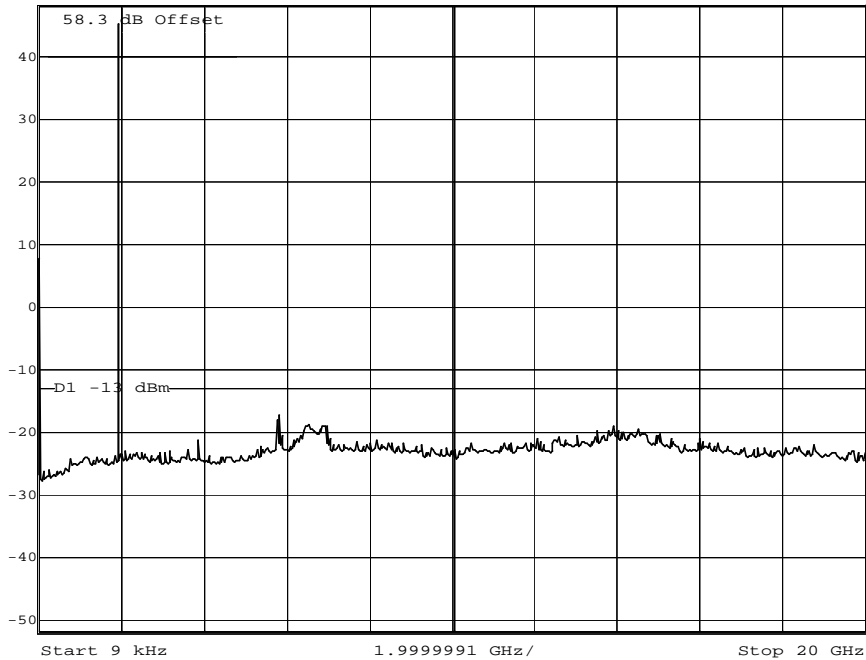
 Ref Lvl 48.3 dBm RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 16:21:20

RBW: 1 MHz

 Ref Lvl 48.3 dBm RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 17:12:48

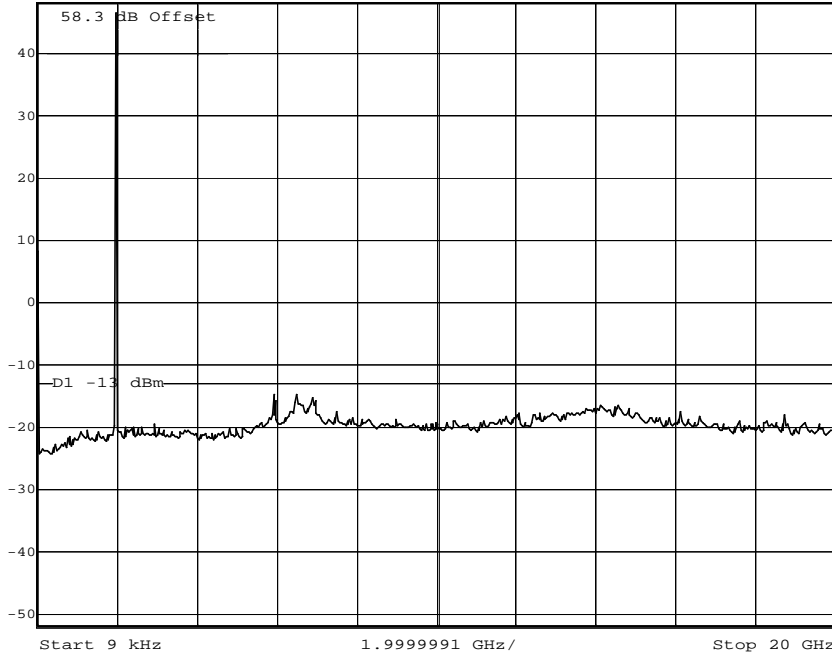
RBW: 500 kHz

Sign:.....

FCC ID: B5KAKRC1311004-1

Ch 537 and 512

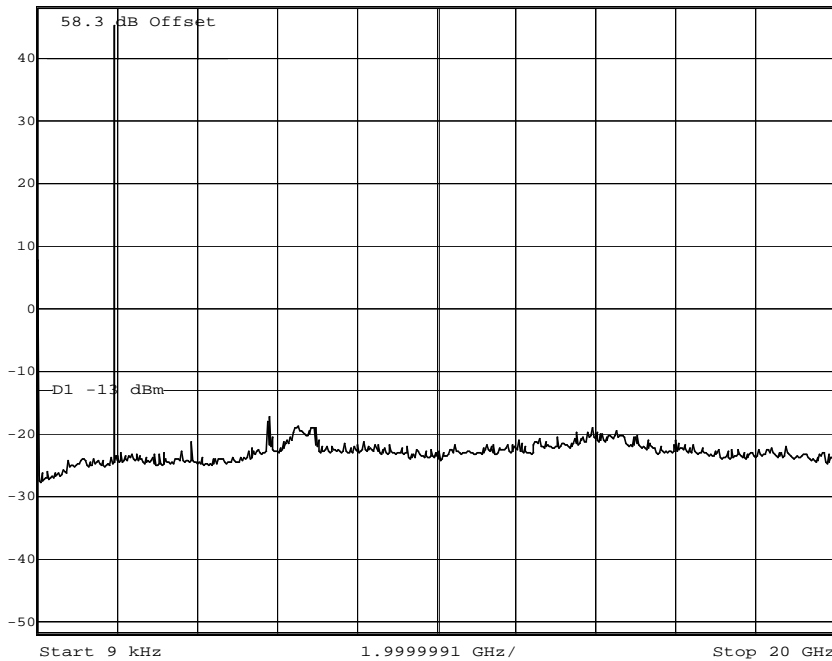
 Ref Lvl 48.3 dBm
RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 16:31:40

RBW: 1 MHz

 Ref Lvl 48.3 dBm
RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 9.NOV.2001 17:12:48

RBW: 500 kHz

Sign:.....

Field strength of spurious radiation measurements according to 47CFR 2.1053

Date	Temperature	Humidity
2001-11-08	21 °C ± 3 °C	31 % ± 5 %
2001-11-14	21 °C ± 3 °C	16 % ± 5 %

Test set-up and Procedure

The measurement procedure is per ANSI/TIA/EIA-603-1992. The substitution measurements were performed in an anechoic chamber. The chamber is listed at FCC, Columbia with registration number: 93866. Measurements were done at 3 m distance in the frequency range 9 kHz-18 GHz and at 1 m in the range 18-20 GHz. The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
Anechoic chamber	-	15:115
R&S ESI 26	2002-11	503 292
Control computer	-	503 479
Software: R&S ES-K1, ver. 1.60	-	-
Chase Bilog antenna CBL 6111A	2002-02	503 182
Schwarzbeck Precision dipole	2001-12	500 592
Schwarzbeck Precision dipole	2001-12	500 594
EMCO loop antenna 6502	2002-07	502 916
EMCO Horn Antenna 3115	2002-09	502 175
EMCO Horn Antenna 3115	2002-09	501 548
EMCO Horn Antenna 3116	2002-04	503 279
MITEQ Low Noise Amplifier	2002-02	503 277
Testo 615, Temperature and humidity meter	2003-08	503 505

The test set-up during spurious radiation measurements can be seen in the pictures below.

Cabinet 2106, revision R1A, 3-phase power supply



FCC ID: B5KAKRC1311004-1

24 V DC, Cabinet 2206, revision R3A



24 V DC, Cabinet 2206, revision R3A (TCC)



Results

Cabinet 2106, revision R2C, with internal combiner
 Nominal Voltage 3-phase power supply
 41 dBm output power

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
0.0098	-23 (antenna perpendicular to the EUT)	
0.00983	-29 (antenna parallell to the EUT)	
0.02329	-32 (antenna parallell to the EUT)	
0.23331	-29 (antenna perpendicular to the EUT)	
3896	-32.2	> 20 dB below limit
Measurement uncertainty		4.7 dB

Cabinet 2106, revision R2C, without internal combiner
 Nominal Voltage 3-phase power supply
 44.5 dBm output power

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical polarisation	Horizontal polarisation
0.00944	-23 (antenna perpendicular to the EUT)	
0.0098	-28 (antenna parallell to the EUT)	
0.02349	-31 (antenna perpendicular to the EUT)	
3862	-32.1	> 20 dB below limit
Measurement uncertainty		4.7 dB

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FCC ID: B5KAKRC1311004-1

Cabinet 2206, revision R3A, three modes at the same time: TCC, internal combiner and without internal combiner

Nominal Voltage 24 V DC

Output power TCC +47 dBm

Output power internal and without internal +44.5 dBm

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
0.00901	-20 (antenna perpendicular to the EUT)	
0.01378	-27 (antenna parallell to the EUT)	
0.01909	-25 (antenna perpendicular to the EUT)	
0.02329	-27 (antenna perpendicular to the EUT)	
3862	-32.1	> 20 dB below limit
Measurement uncertainty		4.7 dB

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10 \log P$ dB.

Compliant?	Yes
------------	-----

Sign:.....

Frequency stability measurements according to 47CFR 2.1055

Date	Temperature	Humidity
2001-11-05	20 °C ± 3 °C	24 % ± 5 %
2001-11-09	21 °C ± 3 °C	32 % ± 5 %

Test set-up and Procedure

The measurement was made per J-STD-007A Vol 1. Measurements were made at CDU-G output connectors. The output was connected to a spectrum analyser. The spectrum analyzer was hooked up to an external 10 MHz reference standard during measurement. The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
Climate chamber	2003-11	501 031
R&S ESI 40 with option FSE-B7	2002-07	503 125
Temperature probe	2002-01	500 239
Testo 610, Temperature and humidity meter	2003-08	503 498

Results

Nominal Voltage 24 V DC
44.5 dBm output power at Channel 512 (1930.2 MHz)

Test conditions		Frequency error (Hz)	
Supply voltage (V)	T (°C)	TRU Output 1	TRU Output 2
24.0	+20	-2	-1
24.0	+30	-3	-3
24.0	+40	-1	0
24.0	+50	0	-2
24.0	+10	-1	4
24.0	0	1	+2
24.0	-10	+1	-6
24.0	-20	-2	-3
24.0	-30	-1	+2
24.0	+21	-1	-5
27.6	+21	-6	+6
20.4	+21	+11	+1
Maximum freq. error (kHz)		0.011	
Measurement uncertainty		< ± 1 x 10 ⁻⁷	

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FCC ID: B5KAKRC1311004-1

Limits

The maximum frequency error shall not be greater than 0.05 ppm (98 Hz).

Compliant?	Yes
------------	-----

Sign:.....

Intermodulation test

Date	Temperature	Humidity
2001-11-09	21 °C ± 3 °C	38 % ± 5 %
2001-11-12	21 °C ± 3 °C	28 % ± 5 %

Test set-up and Procedure

The output was connected to a spectrum analyzer. The spectrum analyzer was hooked up to an external 10 MHz reference standard during measurement.

The transmitter was modulated with 270.8 kbs pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
R&S ESI 40 with option FSE-B7	2002-07	503 125
Testo 615, Temperature and humidity meter	2003-08	503 505

Results

Without dTRU internal combiner:

Diagram 1 TRU Output 1: Ch 512, +44.5 dBm
(TRU Output 2: Ch 537, +44.5 dBm terminated with 50 Ω)

Diagram 2 TRU Output 1: Ch 810, +44.5 dBm
(TRU Output 2: Ch 785, +44.5 dBm terminated with 50 Ω)

Diagram 3 TRU Output 2: Ch 512
(TRU Output 1: Ch 537, +44.5 dBm terminated with 50 Ω)

Diagram 4 TRU Output 2: Ch 810, +44.5 dBm
(TRU Output 1: Ch 785, +44.5 dBm terminated with 50 Ω)

With dTRU internal combiner:

Diagram 5 TRU Output 1: Ch 512, +41 dBm
TRU Output 2: Ch 537, +41 dBm

Diagram 6 TRU Output 1: Ch 785, +41 dBm
TRU Output 2: Ch 810, +41 dBm

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10 \log P$ dB.

Compliant?	Yes
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Diagram 1

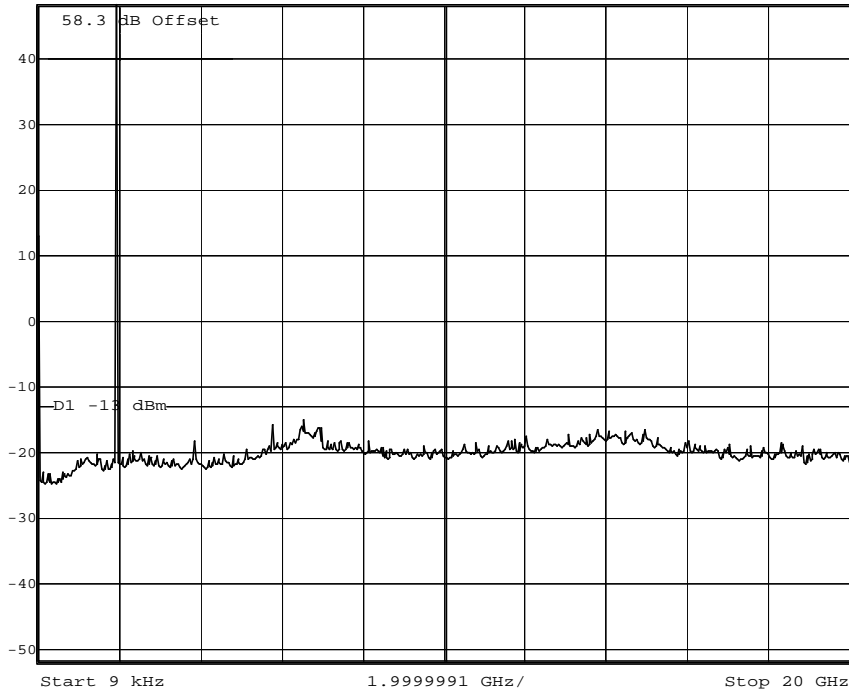
FCC ID: B5KAKRC1311004-1

Ch 512 and 537



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm

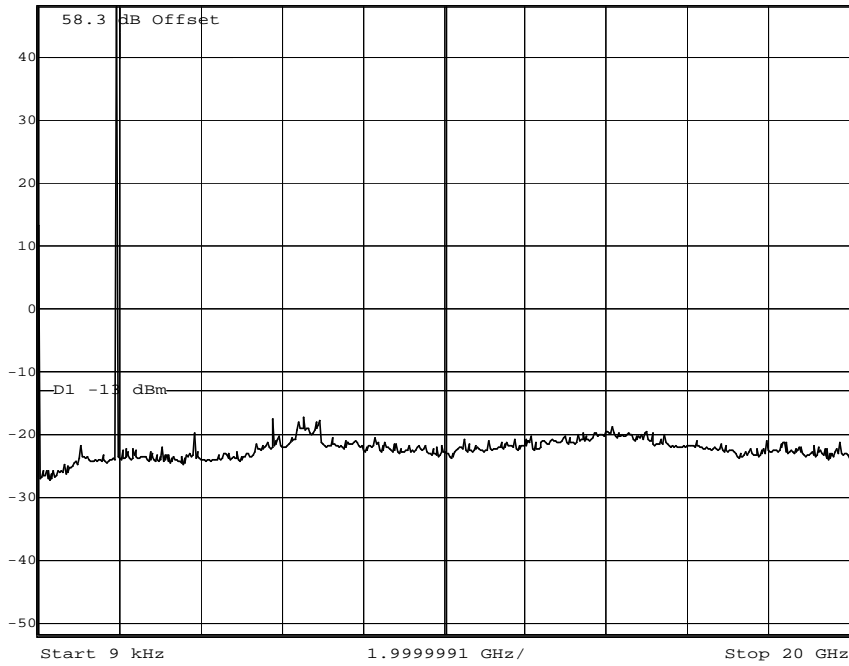


Date: 12.NOV.2001 08:39:07



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 12.NOV.2001 08:38:24

Sign:.....

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Diagram 2

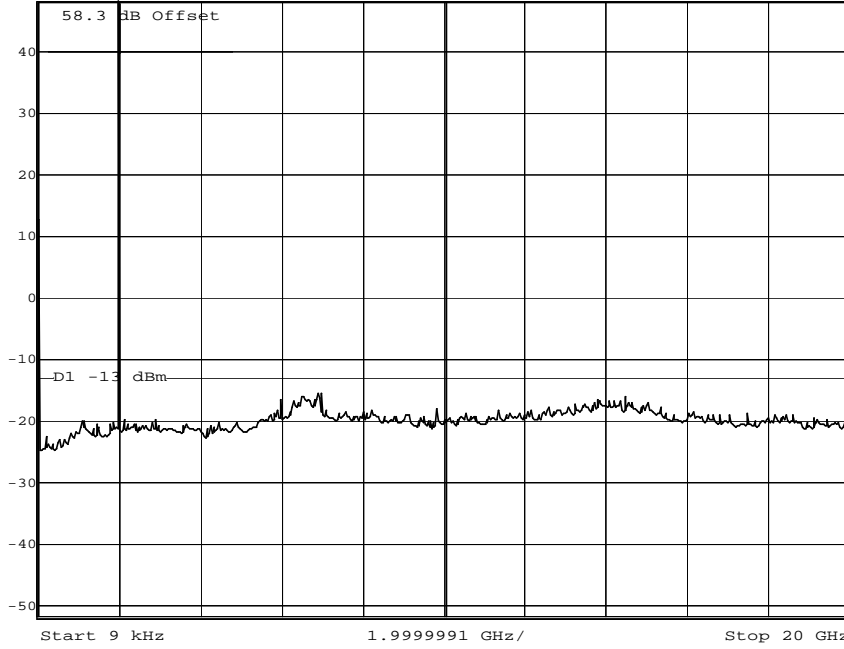
FCC ID: B5KAKRC1311004-1

Ch 810 and 785



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm

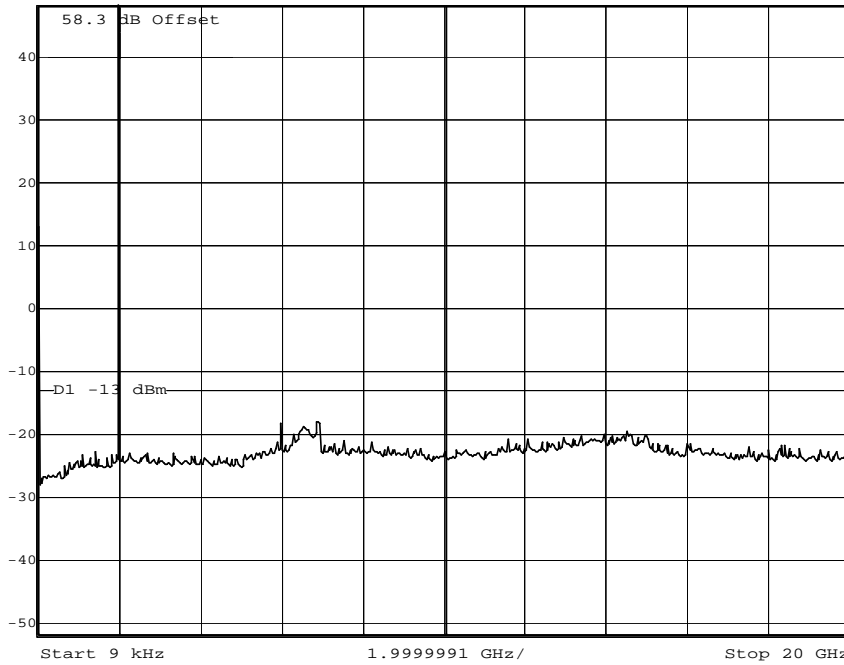


Date: 12.NOV.2001 08:41:33



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 12.NOV.2001 08:42:54

Sign:.....

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Diagram 3

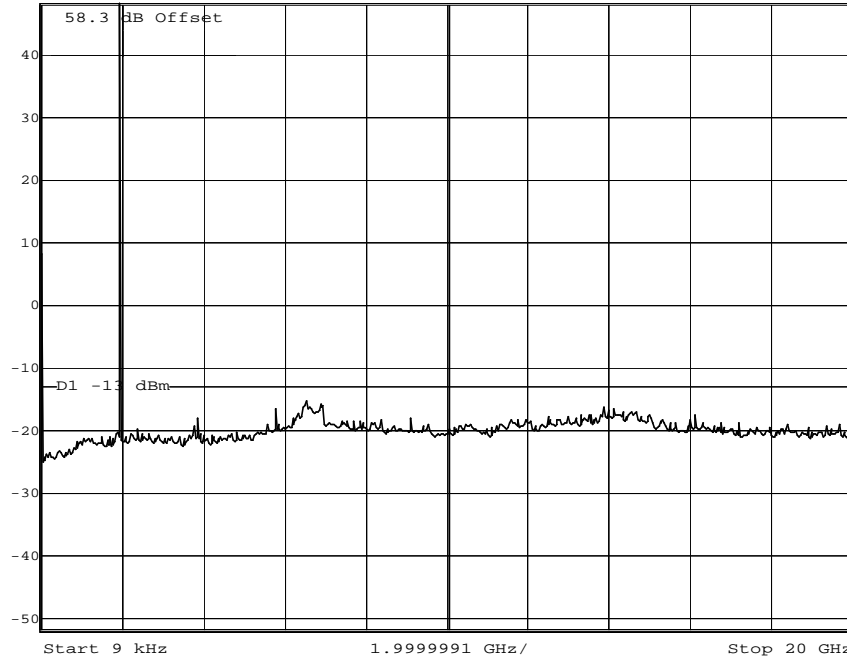
FCC ID: B5KAKRC1311004-1

Ch 537 and 512



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm

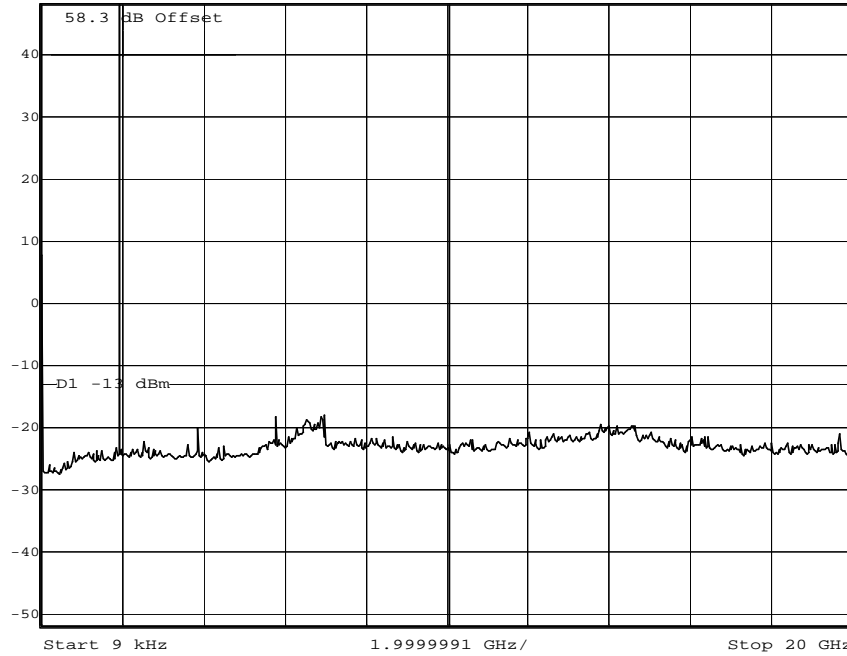


Date: 12.NOV.2001 08:57:28



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 12.NOV.2001 08:58:05

Sign:.....

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Diagram 4

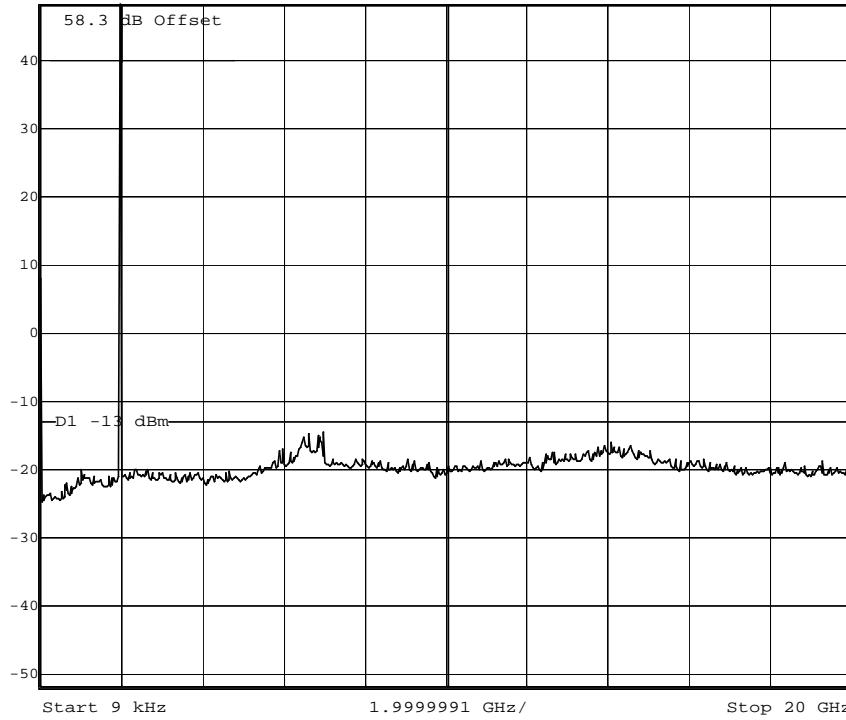
FCC ID: B5KAKRC1311004-1

Ch 785 and 810



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm

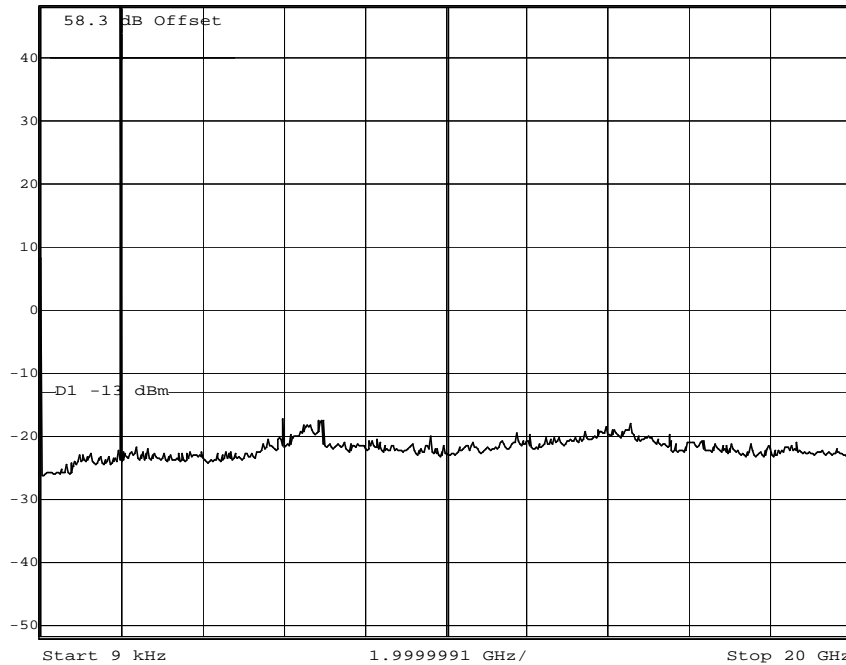


Date: 12.NOV.2001 08:53:11



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



Date: 12.NOV.2001 08:52:06

Sign:.....

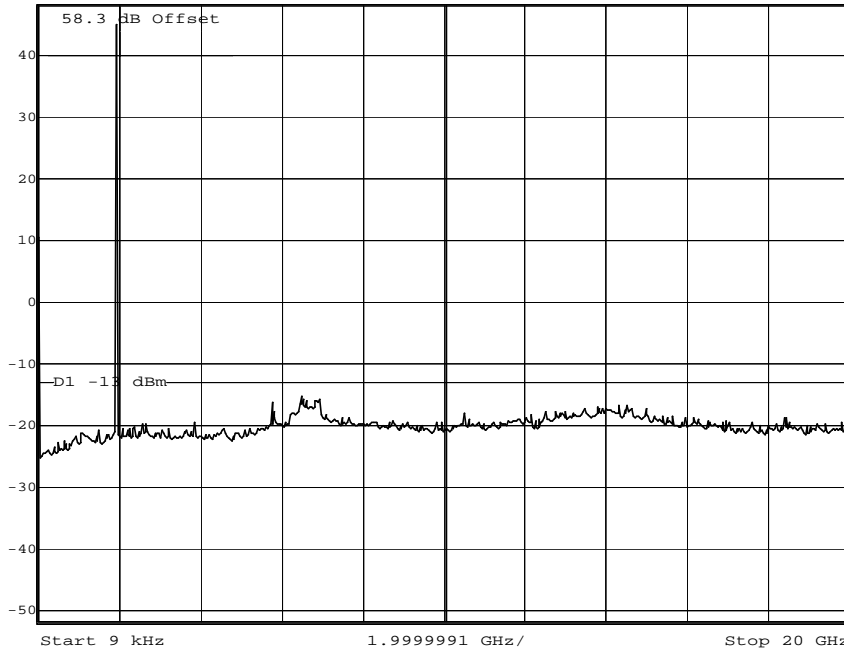
FCC ID: B5KAKRC1311004-1

Ch 512 and 537



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 200 ms Unit dBm



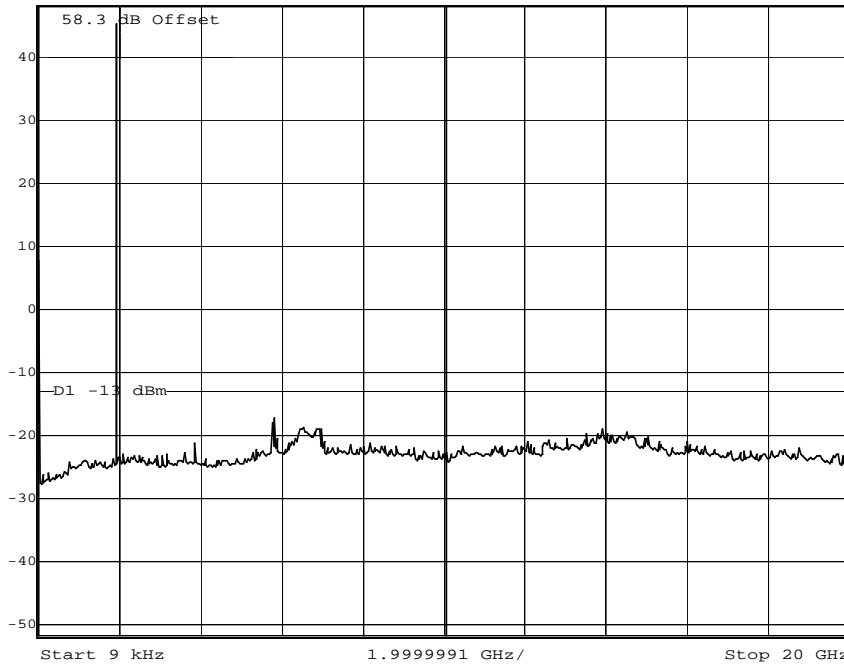
Date: 9.NOV.2001 16:21:20

RBW 1 MHz



Ref Lvl
48.3 dBm

RBW 500 kHz RF Att 0 dB
VBW 500 kHz
SWT 200 ms Unit dBm



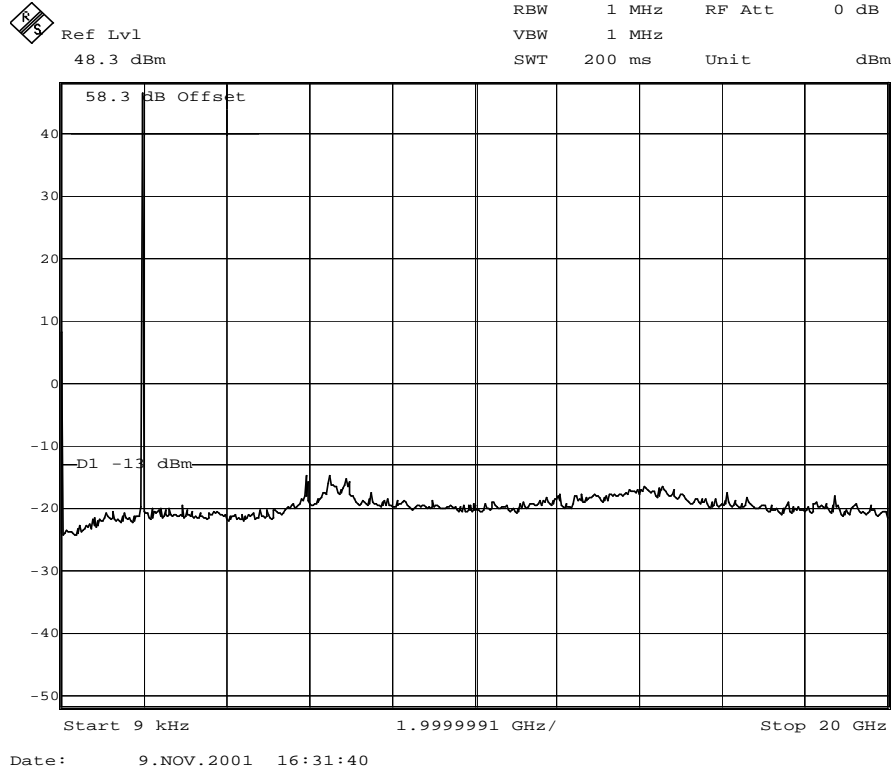
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RBW 500 kHz

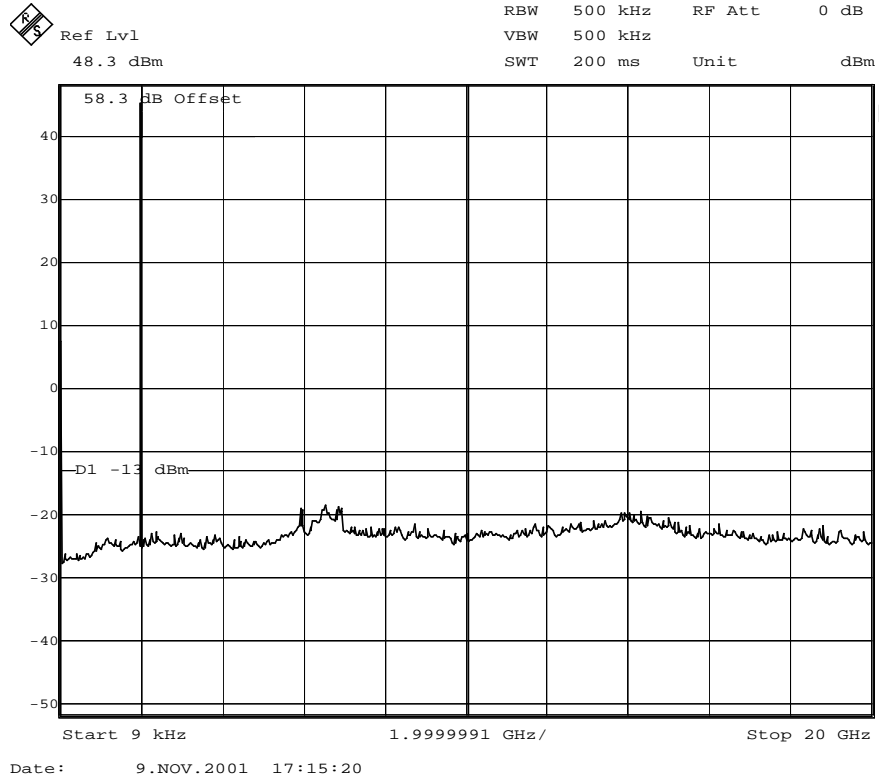
Sign:.....

FCC ID: B5KAKRC1311004-1

Ch 785 and 810



RBW 1 MHz



RBW 500 kHz

Sign:.....

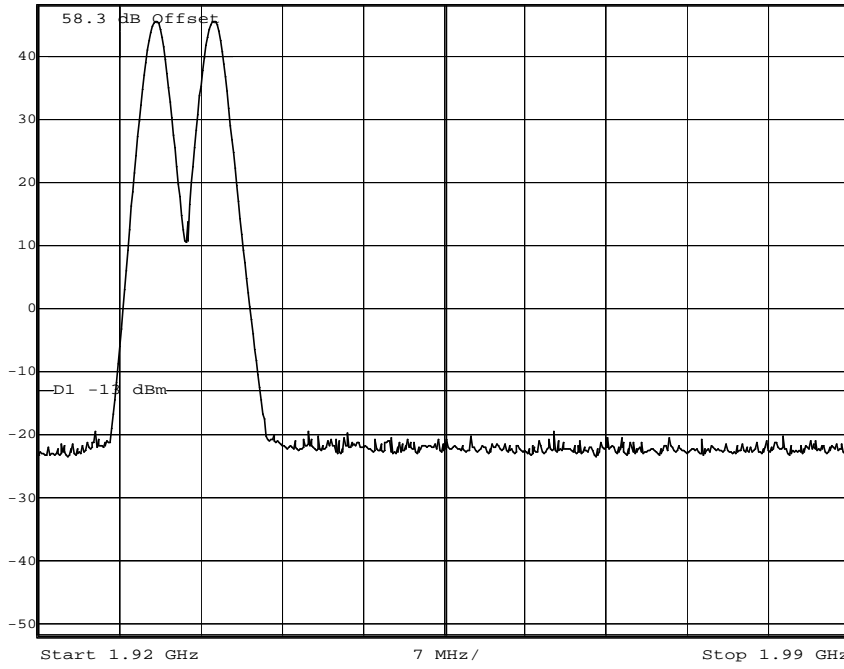
FCC ID: B5KAKRC1311004-1

Ch 512 and 537 (1920-1990)



Ref Lvl
48.3 dBm

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 5 ms Unit dBm



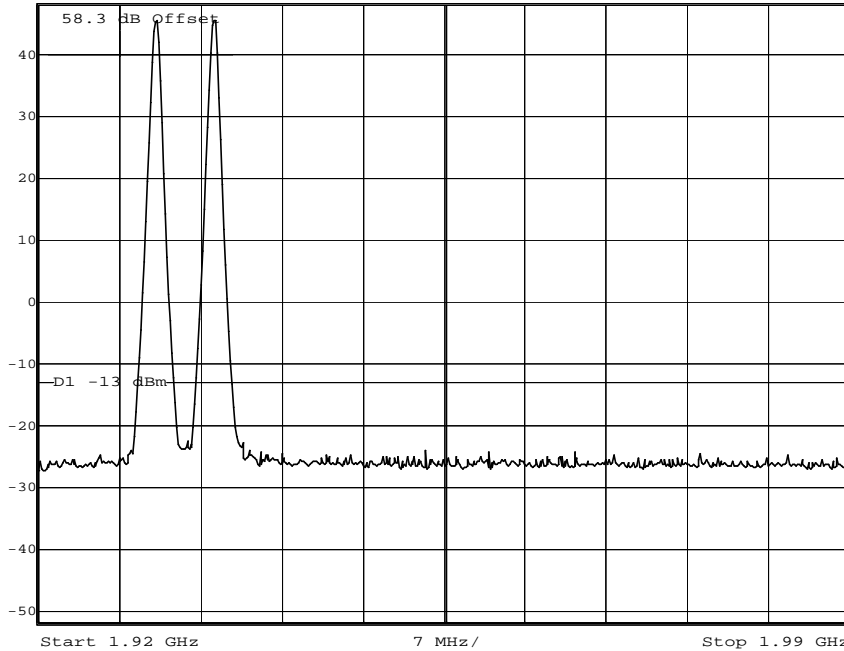
Date: 12.NOV.2001 09:16:02

RBW 1 MHz



Ref Lvl
48.3 dBm

RBW 300 kHz RF Att 0 dB
VBW 300 kHz
SWT 5 ms Unit dBm



Date: 12.NOV.2001 09:15:03

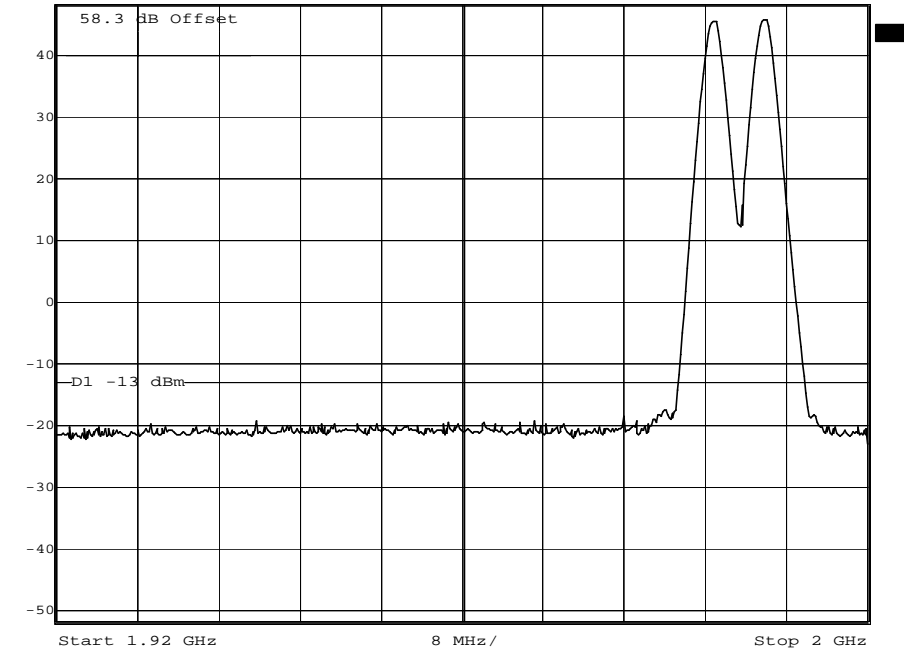
RBW 300 kHz

FCC ID: B5KAKRC1311004-1

Ch 785 and 810 (1920-1990)

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 5 ms Unit dBm

Ref Lvl 48.3 dBm

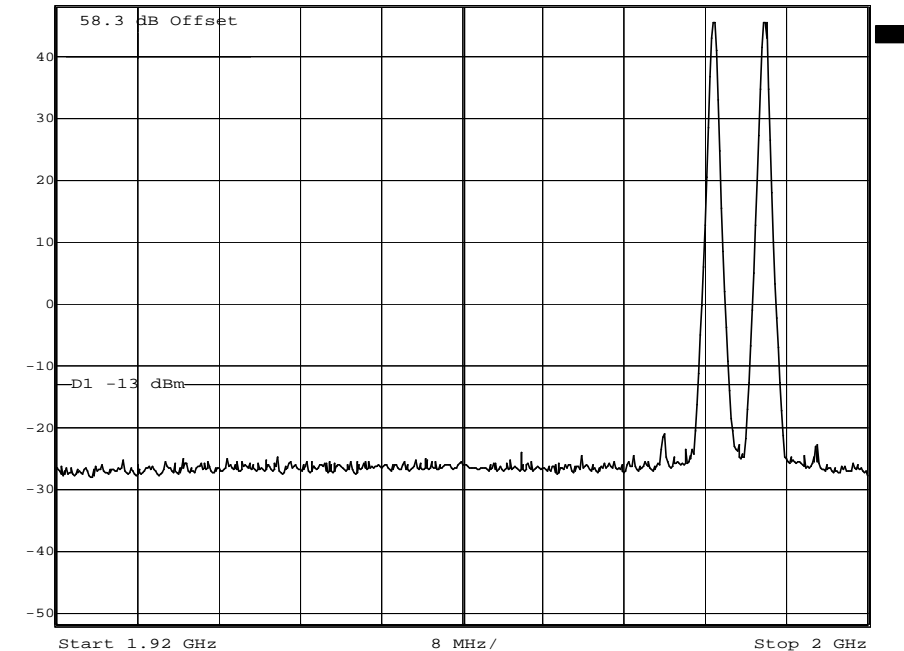


Date: 12.NOV.2001 09:18:53

RBW 1 MHz

RBW 300 kHz RF Att 0 dB
VBW 300 kHz
SWT 5 ms Unit dBm

Ref Lvl 48.3 dBm



Date: 12.NOV.2001 09:20:18

RBW 300 kHz

Sign:.....

EUT Hardware configuration list RBS 2206 revision R2C

Unit	Product Number	Serial Number	Revision
Cabinet	SEB 112 1095/1	S763376949	R2C
ACCU-01	BMG 980 07/1	S792035457	R1A
FCU-01	BGM 136 1001/2	A082276419	R2A
DC-filter 01	KFE 101 11 45/1	TR20000202	R1A/A
6 x Bias Injector	KRY 101 1587/1	--	R2B
CDU shelf	BFL 119 406/1	--	R3A
CDU-G 19	BFL 119 153/1	A40003DTR5	R3A
CDU-G 19	BFL 119 153/1	A40003DN5P	R3A
CDU-G 19	BFL 119 153/1	A40003E006	R3A
CXU-10	KRY 101 1856/1	A40003DBDR	R3A
TRU shelf	BFL 119 407/1	--	R3A
dTRU-19	KRC 131 1004/1	AE50006KC7	R2A
dTRU-19	KRC 131 1004/1	AE50006L04	R2A
dTRU-19	KRC 131 1004/1	AE50006LOG	R2A
dTRU-19	KRC 131 1004/1	AE50004ZHF	R1C/B
dTRU-19	KRC 131 1004/1	AE50004ZHT	R1C/B
dTRU-19	KRC 131 1004/1	AE50004ZHN	R1C/B
IDM 01	BMG 980 06/1	T671029109	R2A
PSU/ DXU shelf	BFL 119 408/1	--	R2A
PSU-AC	BML 231 202/1	A081648600	R2D/A
PSU-AC	BML 231 202/1	A081778925	R2D/A
PSU-AC	BML 231 202/1	A081761623	R2D/A
PSU-AC	BML 231 202/1	A081711762	R2D/A
DXU-21	BOE 602 14/1	A101486956	R4D
TMA-CM-01	SDK 107 881/1	SA22250862	R1B
Dummy	SXK1075029/1	--	R1B
Dummy	SXK1075030/1	--	R1B
Dummy	SXK1075030/1	--	R1B

EUT Hardware configuration list RBS 2206 revision R3A

Unit	Product Number	Serial Number	Revision
Cabinet	SEB 112 1095/1	S763387769	R3A
ACCU-01	BMG 980 07/1	S792038113	R1A
FCU-01	BGM 136 1001/2	A082484438	R2C
DC-filter 01	KFE 101 11 45/1	TR20000498	R1A
6 x Bias Injector	KRY 101 1587/1	--	R2B
CDU shelf	BFL 119 406/1	--	R3A
CDU-G 19	BFL 119 153/1	A40003G31Q	R4A
CDU-G 19	BFL 119 153/1	A40003G34V	R4A
CDU-G 19	BFL 119 153/1	A40003G6CL	R4A
ASU-01	KRY 112 54/1	A40003EFX3	R2A
Dummy	SXX 107 5031/1	--	R1B
CXU-10	KRY 101 1856/1	A40003EKGQ	R3B
Dummy	SXX 107 5031/1	--	R1B
TRU shelf	BFL 119 407/1	--	R3A
dTRU-19	KRC 131 1004/1	AE50006TKZ	R2A
dTRU-19	KRC 131 1004/1	AE50006RU6	R2A
dTRU-19	KRC 131 1004/1	AE50006TKU	R2A
dTRU-19	KRC 131 1004/1	AE50006W2D	R2A
dTRU-19	KRC 131 1004/1	AE50006TKQ	R2A
dTRU-19	KRC 131 1004/1	AE50006TKR	R2A
IDM 01	BMG 980 06/1	T671029428	R2A
PSU/ DXU shelf	BFL 119 408/1	--	R2A
PSU-AC	BML 231 202/1	A081778955	R2D/A
PSU-AC	BML 231 202/1	A081778994	R2D/A
PSU-AC	BML 231 202/1	A081790333	R2D/A
PSU-AC	BML 231 202/1	A081778998	R2D/A
DXU-21	BOE 602 14/1	A101501814	R4F
TMA-CM-01	SDK 107 881/1	SA22290460	R1B
Dummy	SXX 107 5029/1	--	R1B
Dummy	SXX 107 5030/1	--	R1B
Dummy	SXX 107 5030/1	--	R1B

EUT Hardware configuration list RBS 2106 revision R1A

Unit	Product Number	Serial Number	Revision
Cabinet	SEB 112 113 604	TOR 1001 7	R1A
ACCU 02 CU	BMG 815 073/1	A441160360	P1G
FCU-01	BGM 136 1001/2	A082506627	R2C
ADM01	--	--	--
ACCU-02-DU	B6M98011/1	A441159888	R2A
6 x Bias Injector	KRY 101 1587/1	--	R2B
CDU shelf	BFL 119 406/1	--	R3A
CDU-G 19	BFL 119 153/1	A40003FWM6	R4A
CDU-G 19	BFL 119 153/1	A40003FTU7	R4A
CDU-G 19	BFL 119 153/1	A40003FTU3	R4A
CXU-10	KRY 101 1856/1	A40003DBDR	R3A
DC/DC	BMR96011/1	A082515492	R2E
DC/DC	BMR96011/1	A082515474	R2E
TRU shelf	BFL 119 407/1	--	
dTRU-19	KRC 131 1004/1	AE50006KC3	R2A
dTRU-19	KRC 131 1004/1	AE50006KBU	R2A
dTRU-19	KRC 131 1004/1	AE50006KC5	R2A
dTRU-19	KRC 131 1004/1	AE50004NSL	R1C/B
dTRU-19	KRC 131 1004/1	AE50004PMF	R1C/B
dTRU-19	KRC 131 1004/1	AE50004ZHN	R1C/B
IDM 01	BMG 980 06/1	T671029303	R2A
PSU/ DXU shelf	BFL 119 408/1	--	--
PSU-AC	BML 231 202/1	A082521532	R2F
PSU-AC	BML 231 202/1	A082521510	R2F
PSU-AC	BML 231 202/1	A082515308	R2F
PSU-AC	BML 231 202/1	A082515277	R2F
DXU-21	BOE 602 14/1	A101574504	R4F
TMA-CM-01	SDK 107 881/1	SA22300334	R2B
Dummy	SXK1075029/1	--	R1B
Dummy	SXK1075029/1	--	R1B
Dummy	SXK1075029/1	--	R1B
ASU01	KRY11254/1	A40003EFWM	R2A
CXU01	KRY1011856/1	A40003F62T	R3B

Software	Revision
LZY 213 1162/1	B5AE

Description of EUT

The EUT is a dTRU that can be installed in a 1900 MHz GSM Base station configured with 6 double transceiver units that are designed to provide mobile telephone users with a connection to a mobile network or the PSTN.

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Photos

RBS 2206 Cabinet R3A

Front view



Rear view



Open door view



Sign:.....

FCC ID: B5KAKRC1311004-1

Top shelf view



Upper middle shelf view

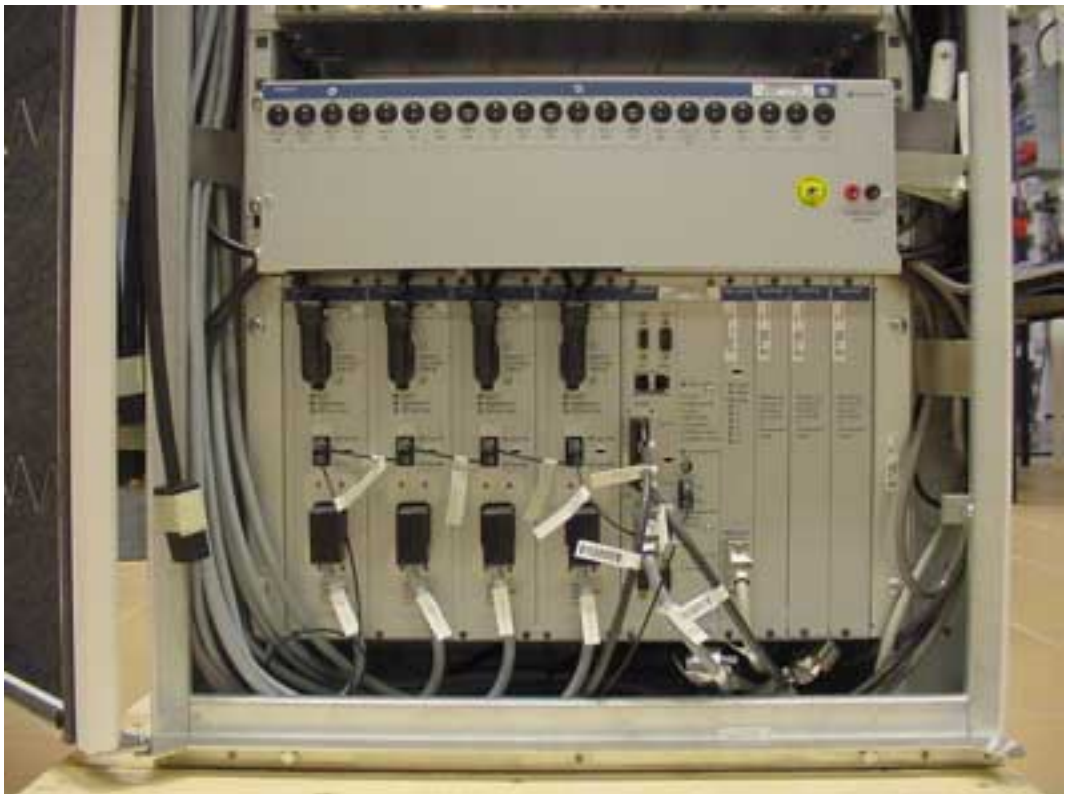


FCC ID: B5KAKRC1311004-1

Lower middle shelf view



Bottom shelf view



FCC ID: B5KAKRC1311004-1

RBS 2206 Cabinet R2C

Front view



Rear view



Open door view



Top shelf view

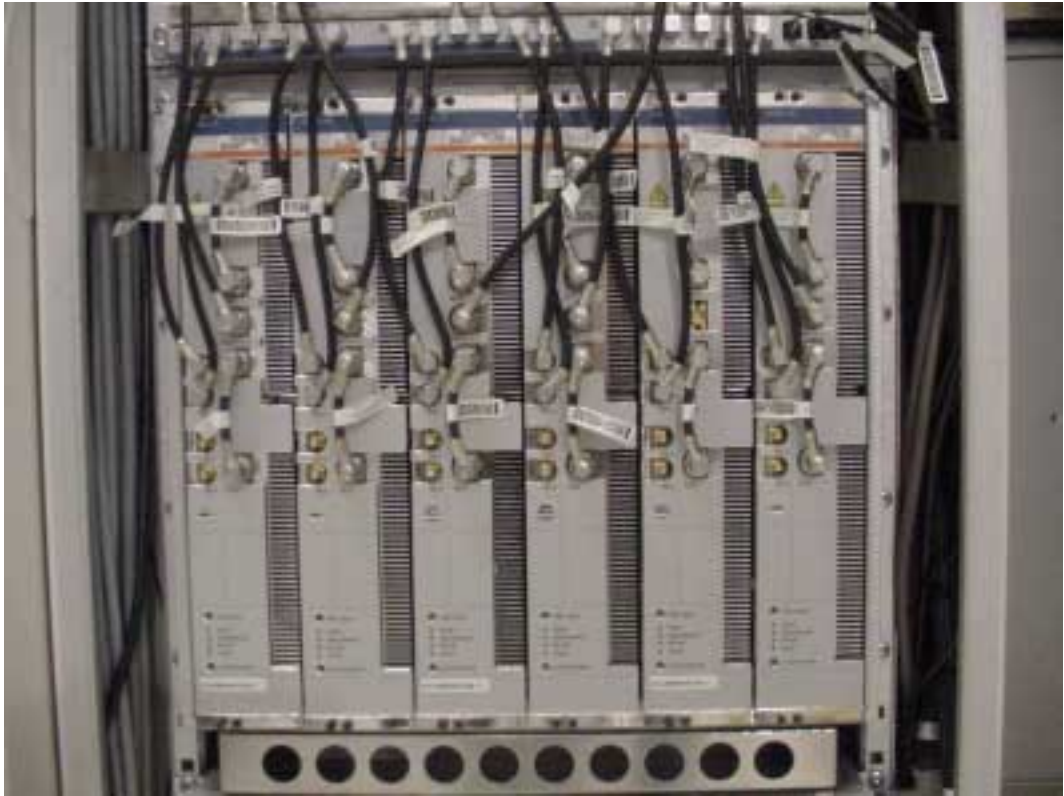


Upper middle shelf view



FCC ID: B5KAKRC1311004-1

Lower middle shelf view



Bottom shelf view



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FCC ID: B5KAKRC1311004-1

RBS 2106 Cabinet R1A

Front view



Rear view



Sign:.....

FCC ID: B5KAKRC1311004-1

Top right shelf view



Top left shelf view



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FCC ID: B5KAKRC1311004-1

Left bottom shelf view



Sign:.....

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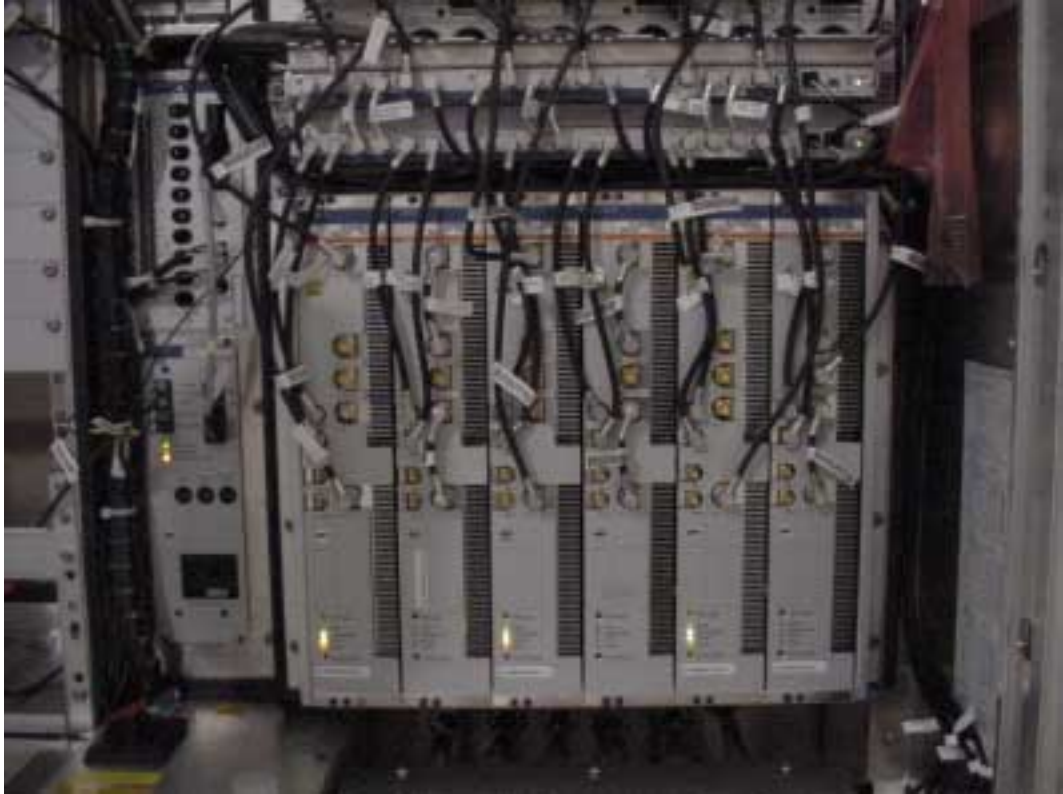
Datum/Date
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FCC ID: B5KAKRC1311004-1

Right bottom shelf view



Sign:.....

FCC ID: B5KAKRC1311004-1

Transceiver Unit KRC 131 1004/1, R2A

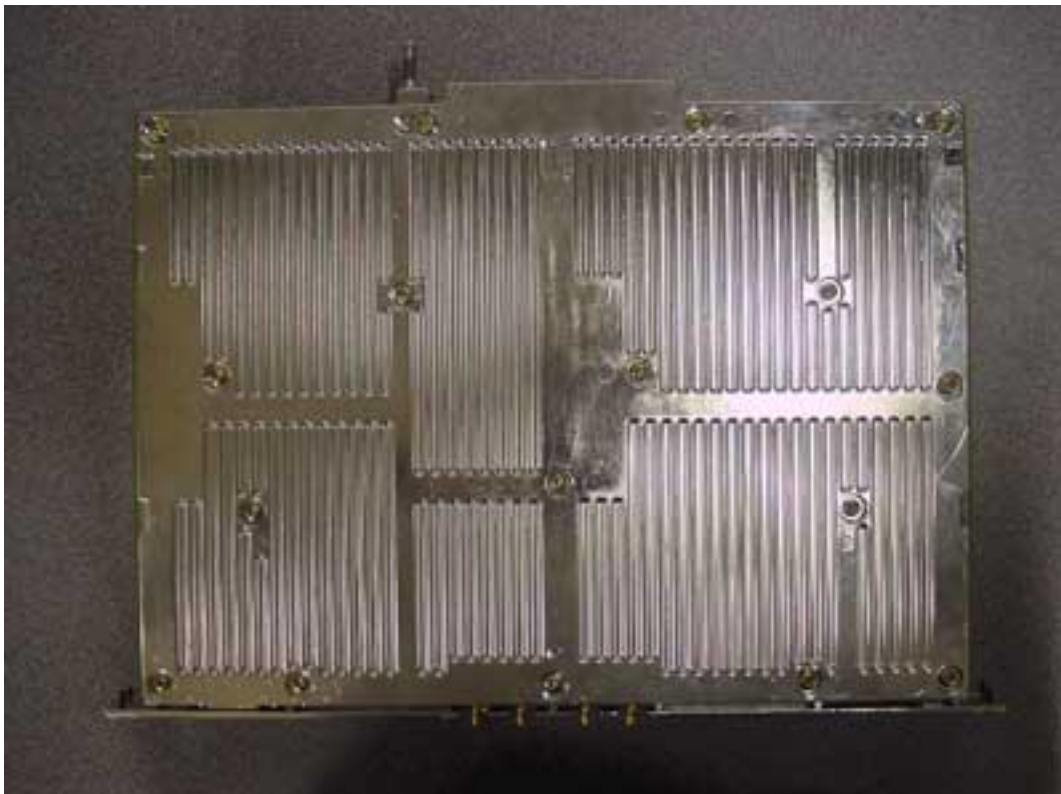
Front side



Rear side



Bottom side



REPORT

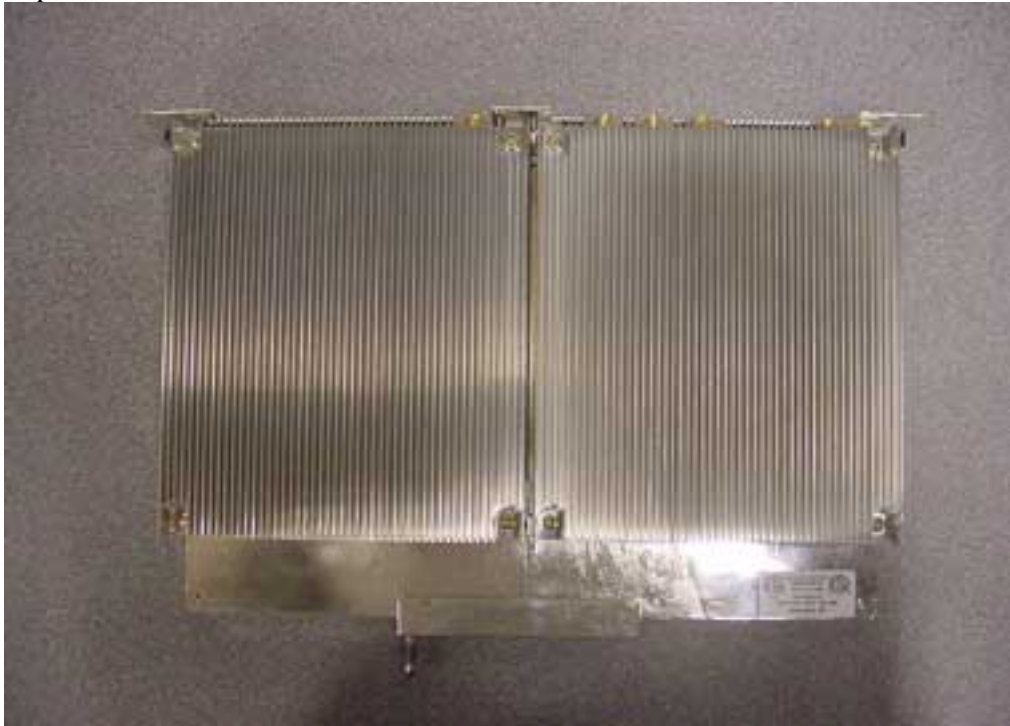
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FCC ID: B5KAKRC1311004-1

Top



ID Label



Sign:.....

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F119272

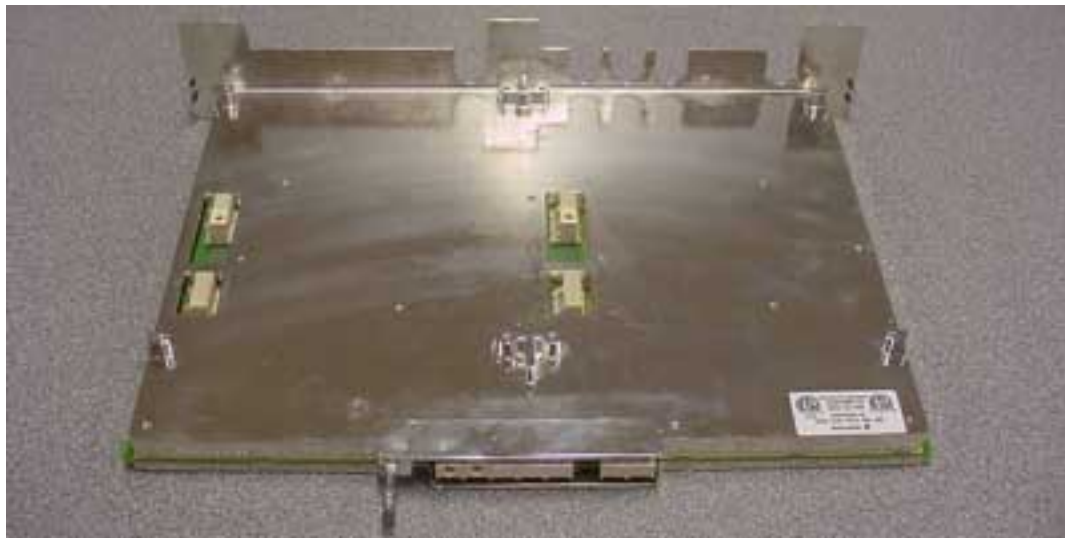
Sida/Page
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FCC ID: B5KAKRC1311004-1

FCC label



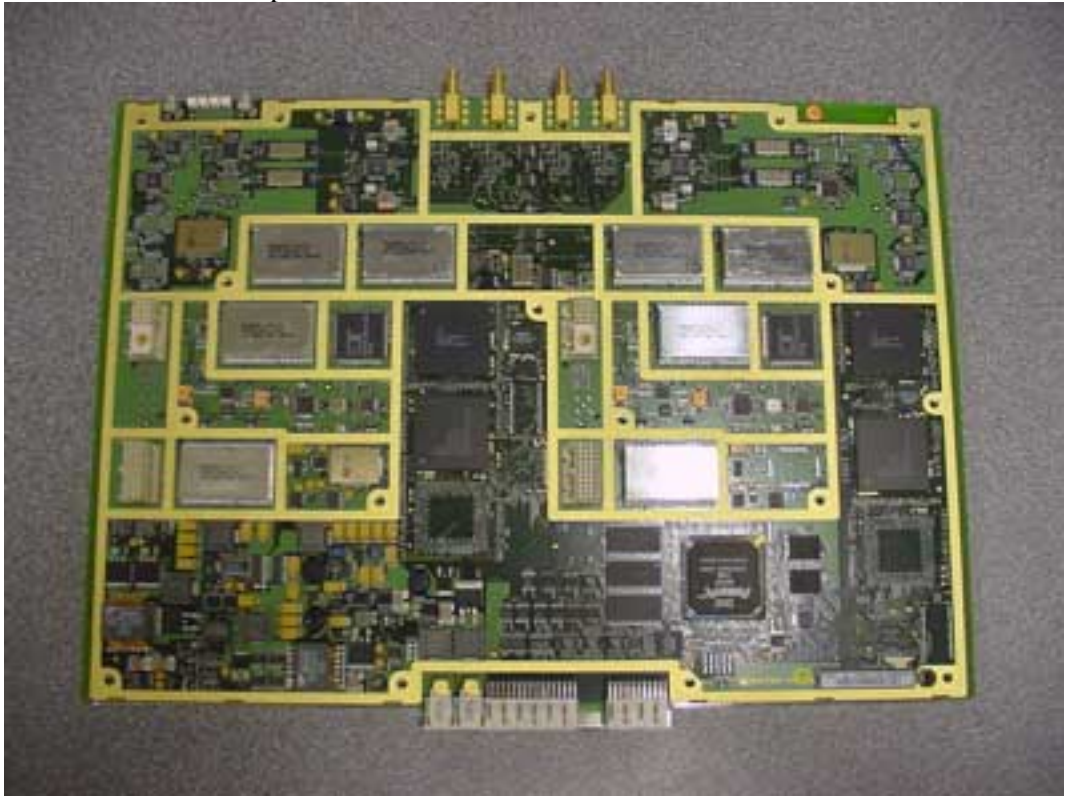
Mainboard



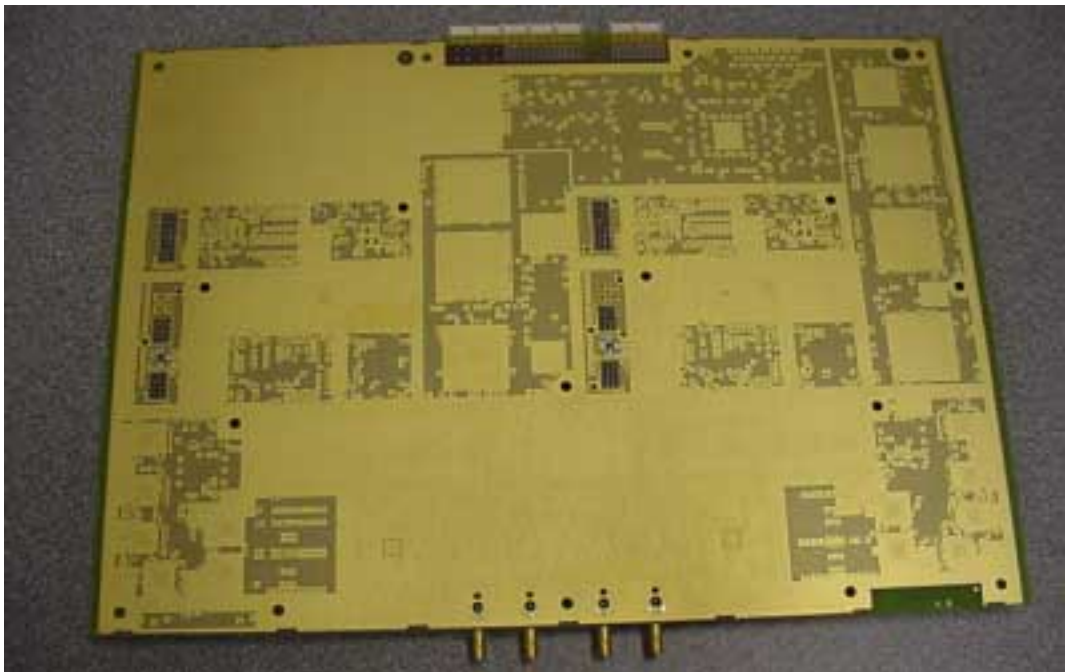
Sign:.....

FCC ID: B5KAKRC1311004-1

Main board- PCB component side



Main board- PCB bottom side

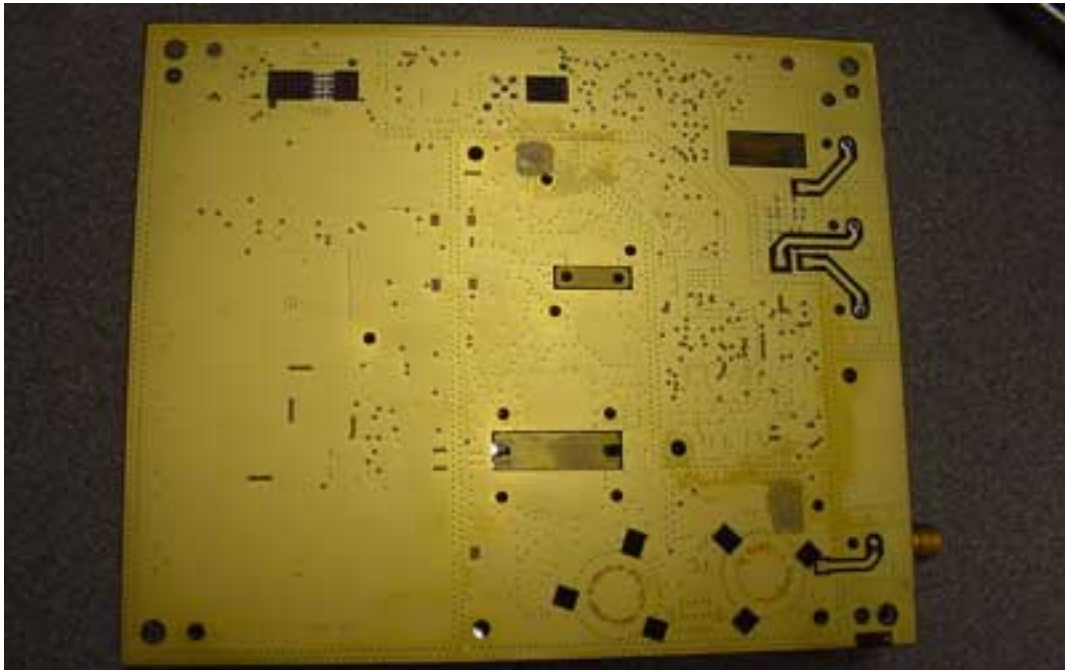


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PA1 PCB component side



PA1 PCB rear side



FCC ID: B5KAKRC1311004-1

PA2- PCB components side



PA2- PCB rear side

