



FCC and IC Test Report

FCC Part 15.247 and RSS-210, Issue 7 for DTS systems

for the

Sensor node

Model Number: SN21140CA

FCC ID: SHU007SN21140

IC-ID: 6746A-SN21140

TEST REPORT #:EMC_CROSS_002_07002_15.247_Sensor
DATE: August 13, 2007



FCC listed#
A2LA Certified

IC recognized #
3462B

CETECOM Inc.

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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May



Test Report Cover Sheet/Performance Test Data

TEST REPORT NUMBER: EMC_CROSS_002_07002_15.247_Sensor

EQUIPMENT MODEL NUMBER: SN21140CA

CERTIFICATION NO: 6746A-SN21140

MANUFACTURER: 6746A

RADIO STANDARD SPECIFICATION NO. : RSS 210, Issue 7

OPEN AREA TEST SITE INDUSTRY CANADA NUMBER: 3462B-1

FREQUENCY RANGE (or fixed frequency): 2405MHz to 2480MHz

R.F. POWER IN WATTS: 0.00193 conducted

OCCUPIED BANDWIDTH (99% BW): 2.93MHz

TYPE OF MODULATION: DSSS (QPSK)

EMISSION DESIGNATOR (TRC-43): **2M93G7D**

ANTENNA INFORMATION: External (0dBi)

TRANSMITTER SPURIOUS (worst case): 41.57uV/m @ 930.02 MHz

RECEIVER SPURIOUS (worst case): 41.24uV/m @ 17.25 GHz

ATTESTATION:

DECLARATION OF COMPLIANCE: I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Signature:

Juan Martinez

Project Engineer

CETECOM Inc.

411 Dixon Landing Road

Milpitas, CA 95035

Date: 2007-08-13



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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations and IC RSS-210, Issue 7 Standards.

Company	Description	Model #
Crossbow, Inc.	Sensor	SN21140CA

Technical responsibility for area of testing:

August 13, 2007 EMC & Radio Lothar Schmidt
(Test Lab Manager)

Date	Section	Name	Signature
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Responsible for test report and project leader:

August 13, 2007 EMC & Radio Juan Martinez
(Project Engineer)

Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.



2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the Radio Assessment Report

Company Name:	CETECOM Inc.
Department:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Project Leader:	Juan Martinez
Responsible Test Lab Manager:	Lothar Schmidt

2.2 Identification of the Client

Applicant's Name:	Crossbow, Inc.
Address:	4145 N. First Street San Jose, CA 95134, USA
Contact Person:	Afshin Afzali
Phone No.	408 965 3346
Fax:	408 324-4840
e-mail:	Aafzali@xbow.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Crossbow, Inc.
Manufacturer's Address:	4145 N. First Street, San USA

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type	Sensor
Marketing Name:	Sensor node
Model No:	SN21140CA
FCC-ID:	SHU007SN21140
IC-ID :	6746A-SN21140
Frequency Range:	2405MHz – 2480MHz
Number of Channels	16
Type(s) of Modulation:	DSSS (QPSK)
Antenna Type:	External (0dBi)
Output Power:	2.85 dBm (0.0019W) Conducted

3.2 Identification of Accessory and Remote (Host) equipment

AE #	TYPE	MANF.	MODEL	SERIAL #
None				

Subject Of Investigation

All testing was performed on the product referred to in Section 3 as EUT.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and to Industry Canada RSS-210, Issue 7. The maximization of portable equipment is conducted in accordance with ANSI C63.4.



4 **Measurements**

5 **ANTENNA PORT EMISSIONS**

5.1 **MAXIMUM PEAK OUTPUT POWER § 15.247 (b) (3) & RSS-210 (A8.4)(4)** **(CONDUCTED)**

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2405	2441	2480
$T_{nom}(23)^{\circ}C$	V_{nom}	1.98	2.28	2.85
Measurement uncertainty		$\pm 0.5dBm$		

LIMIT

SUBCLAUSE § 15.247 (b) (3) & RSS-210 (A8.4)(4)

Frequency range	RF power output
2400-2483.5 MHz	30dBm on Conducted

Notes:

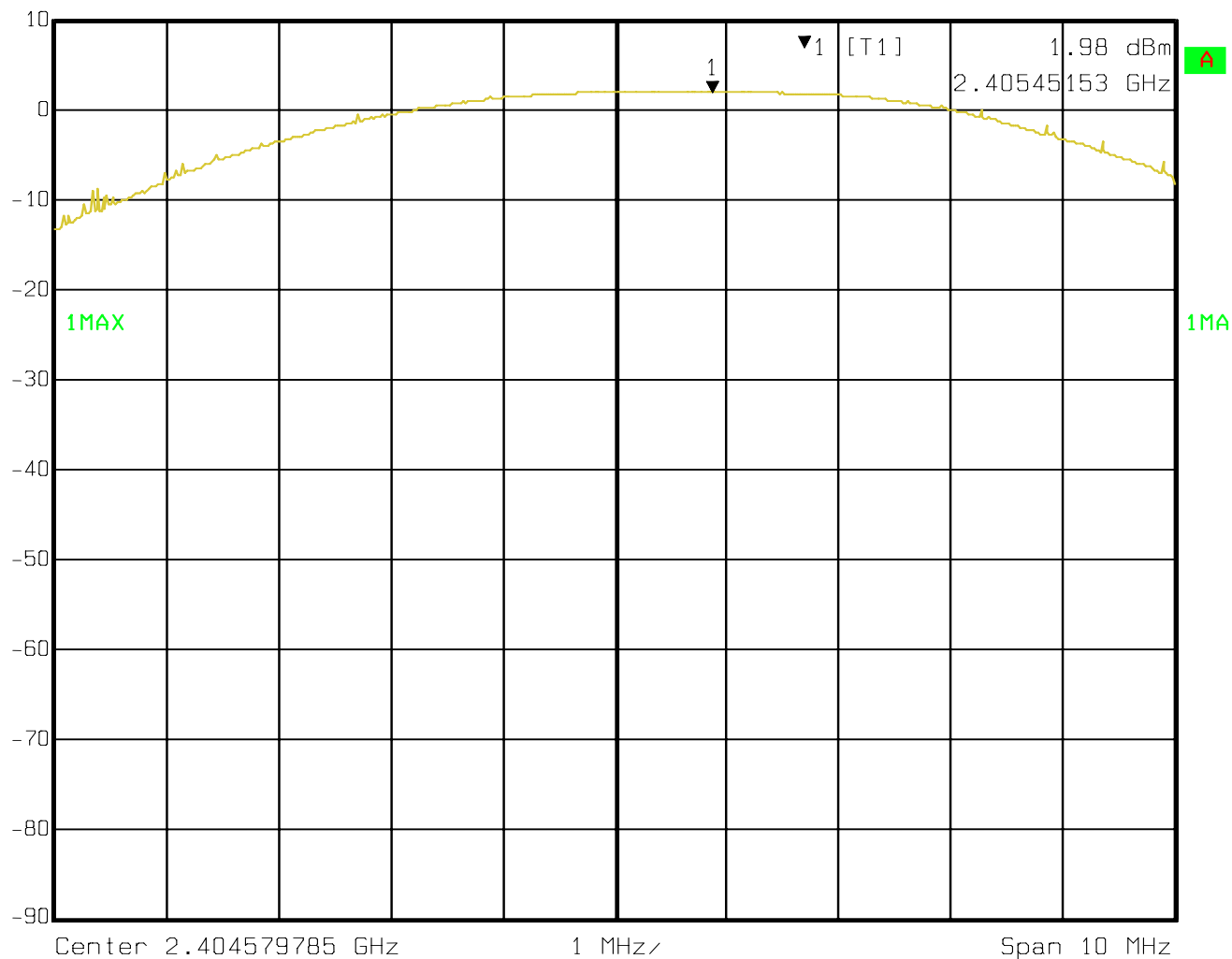


2405 MHz

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA



Ref Lvl 10 dBm
 Marker 1 [T1] 1.98 dBm
 2.40545153 GHz
 RBW 5 MHz RF Att 20 dB
 VBW 5 MHz
 SWT 5 ms Unit dBm



Date: 08.AUG.2007 14:27:13

**2445 MHz****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**Ref Lvl
10 dBm

Marker 1 [T1]

2.28 dBm

RBW

5 MHz

RF Att

40 dB

VBW

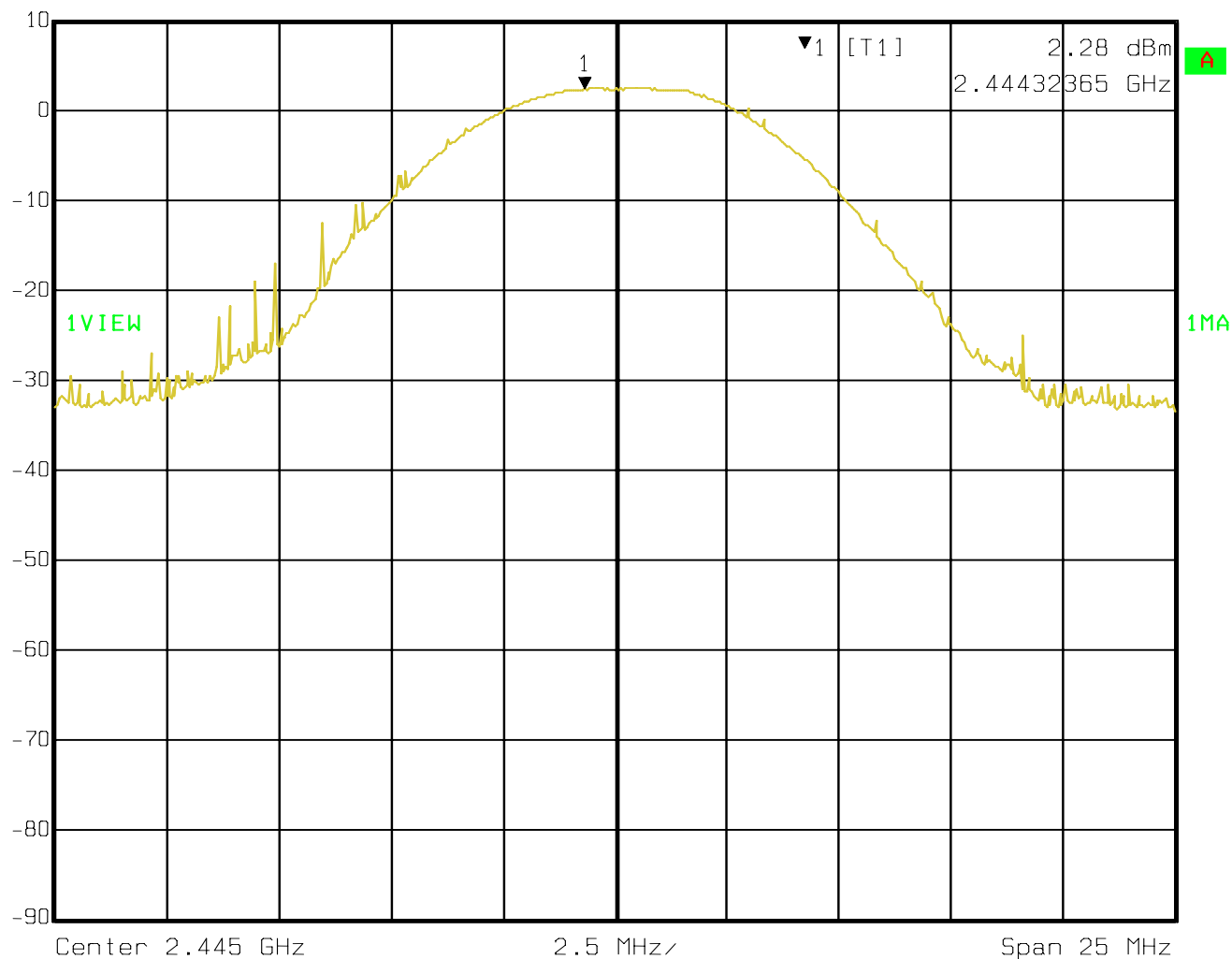
5 MHz

SWT

5 ms

Unit

dBm



Date: 08.AUG.2007 10:26:41

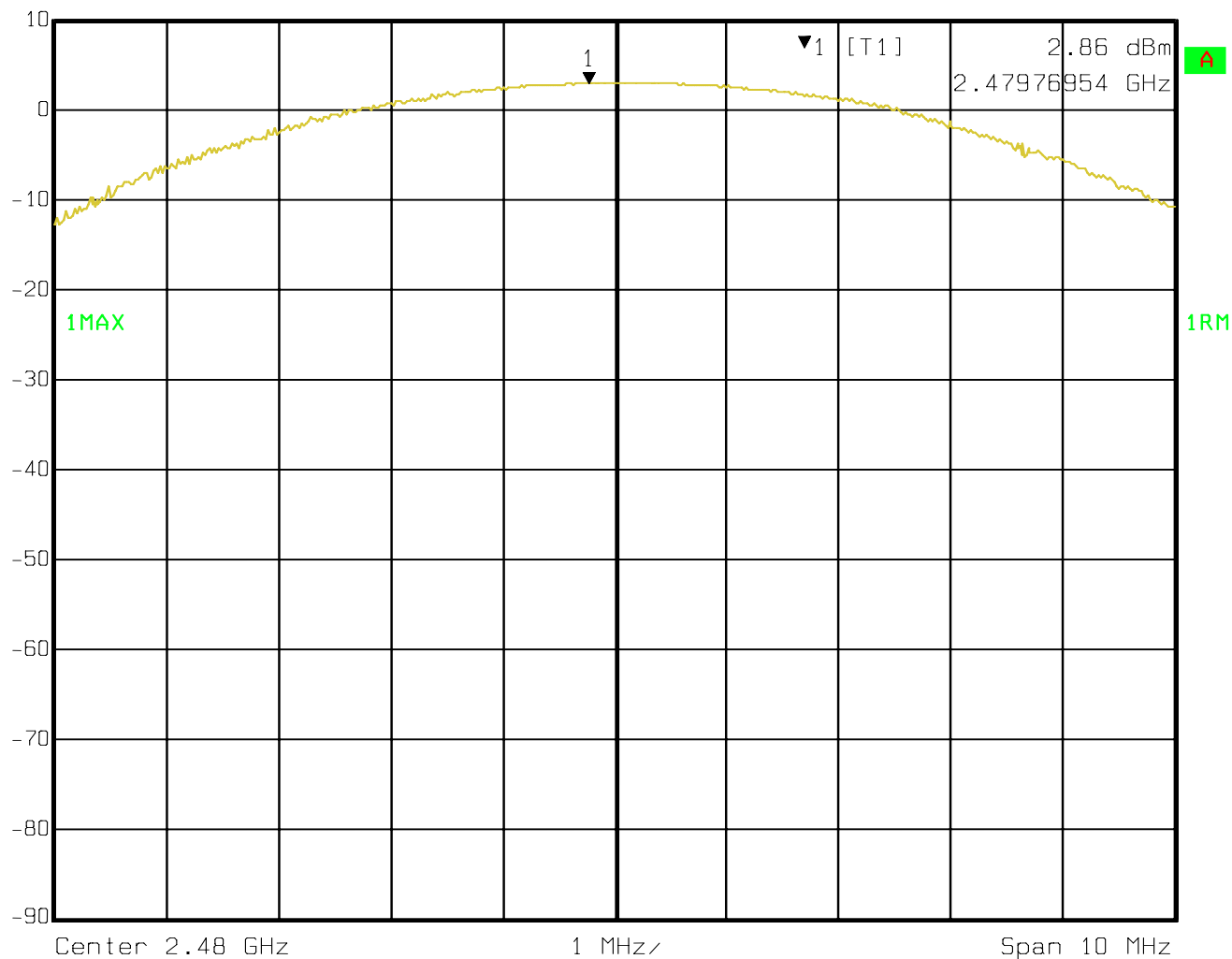


2480 MHz

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA



Ref Lvl 10 dBm
 Marker 1 [T1] 2.86 dBm
 2.47976954 GHz
 RBW 5 MHz RF Att 20 dB
 VBW 5 MHz
 SWT 5 ms Unit dBm



Date: 08.AUG.2007 12:56:43

5.2 6-dB and 99% BANDWIDTH §15.247(a)(2) & § RSS-210 (A8.2)(a)
(CONDUCTED)**Limit: min. 6dB BW shall be at least 500kHz §15.247(a)(2)****ANALYZER SETTINGS: RBW: 100kHz, VBW: 100kHz SPAN: 5 MHz**

Channel No.	Frequency (MHz)	6dB BW (MHz)
11	2405	1.56
19	2445	1.57
26	2480	1.83

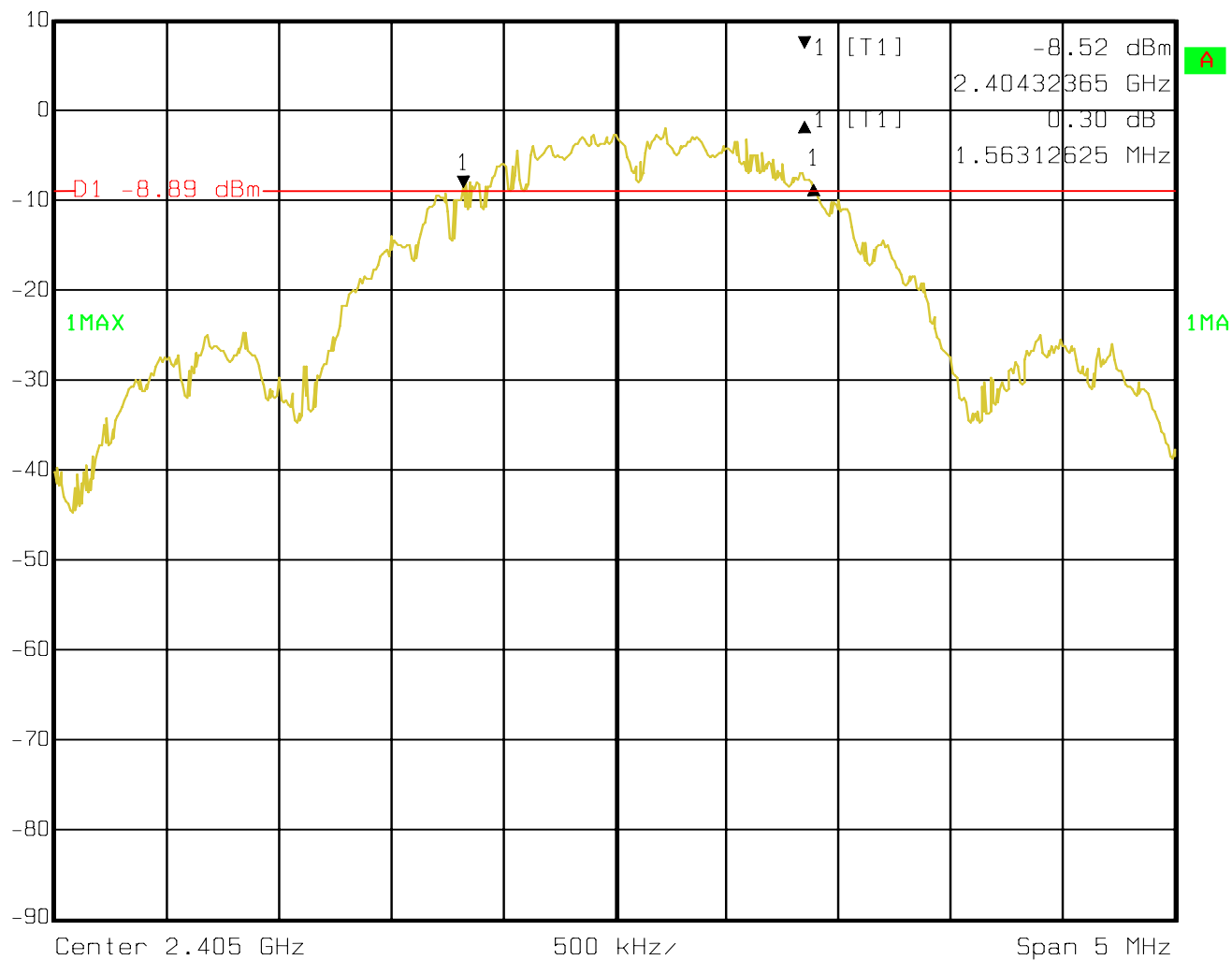
Conducted Measurement

Limit: min. 99% BW shall be at least 500kHz § RSS-210 (A8.2)(a)**RSS GEN (4.6) = 99% analyzer settings: Resolution Bandwidth: 1% of the emission bandwidth, Video Bandwidth: 3 times RBW. Trace set to max hold then view.**

Channel No.	Frequency (MHz)	99dB BW (MHz)
11	2405	2.61
19	2445	2.75
26	2480	2.93

2405 MHz – 6dB BW

Delta 1 [T1] RBW 100 kHz RF Att 20 dB
Ref Lvl 0.30 dB VBW 100 kHz
10 dBm 1.56312625 MHz SWT 5 ms Unit dBm



Date: 08.AUG.2007 14:03:50

2405 MHz – 99% BWRef Lvl
10 dBm

Marker 1 [T1]

1.52 dBm

2.40462425 GHz

RBW 300 kHz

VBW 1 MHz

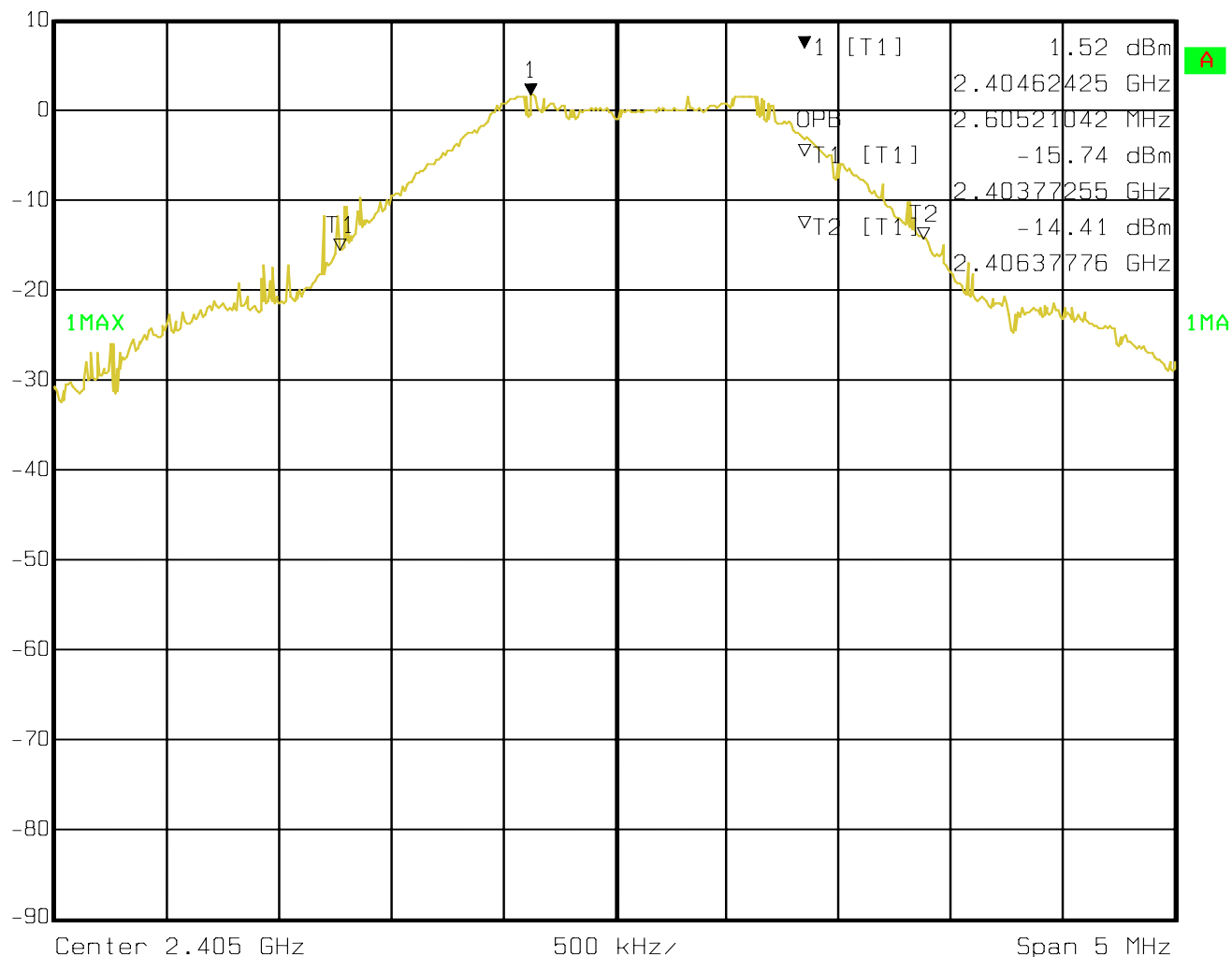
SWT 5 ms

RF Att

20 dB

Unit

dBm



Center 2.405 GHz

500 kHz

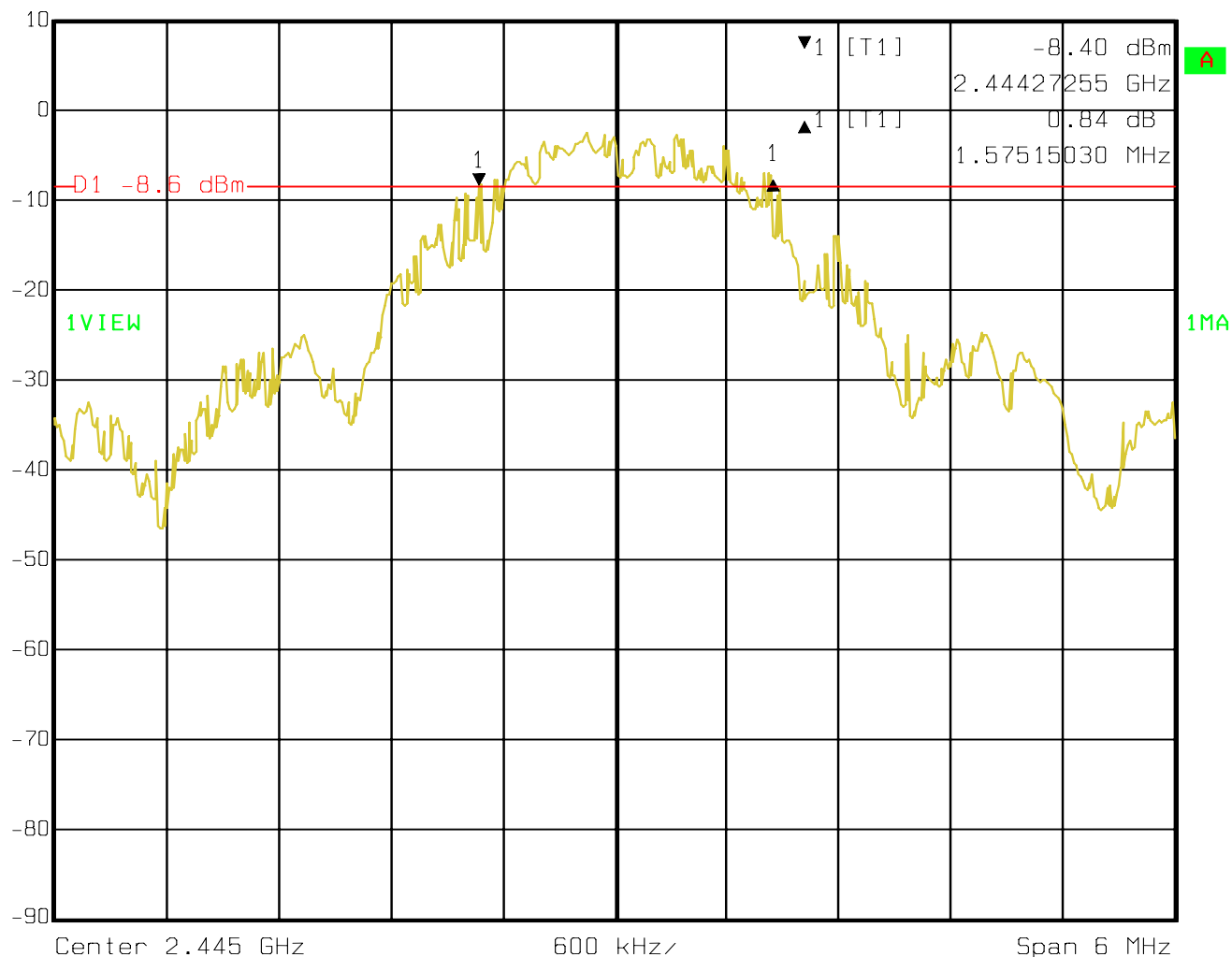
Span 5 MHz

Date: 08.AUG.2007 14:06:17

2445 MHz – 6dB BW



Delta 1 [T1] RBW 100 kHz RF Att 40 dB
 Ref Lvl 0.84 dB VBW 100 kHz
 10 dBm 1.57515030 MHz SWT 5 ms Unit dBm



Center 2.445 GHz

600 kHz

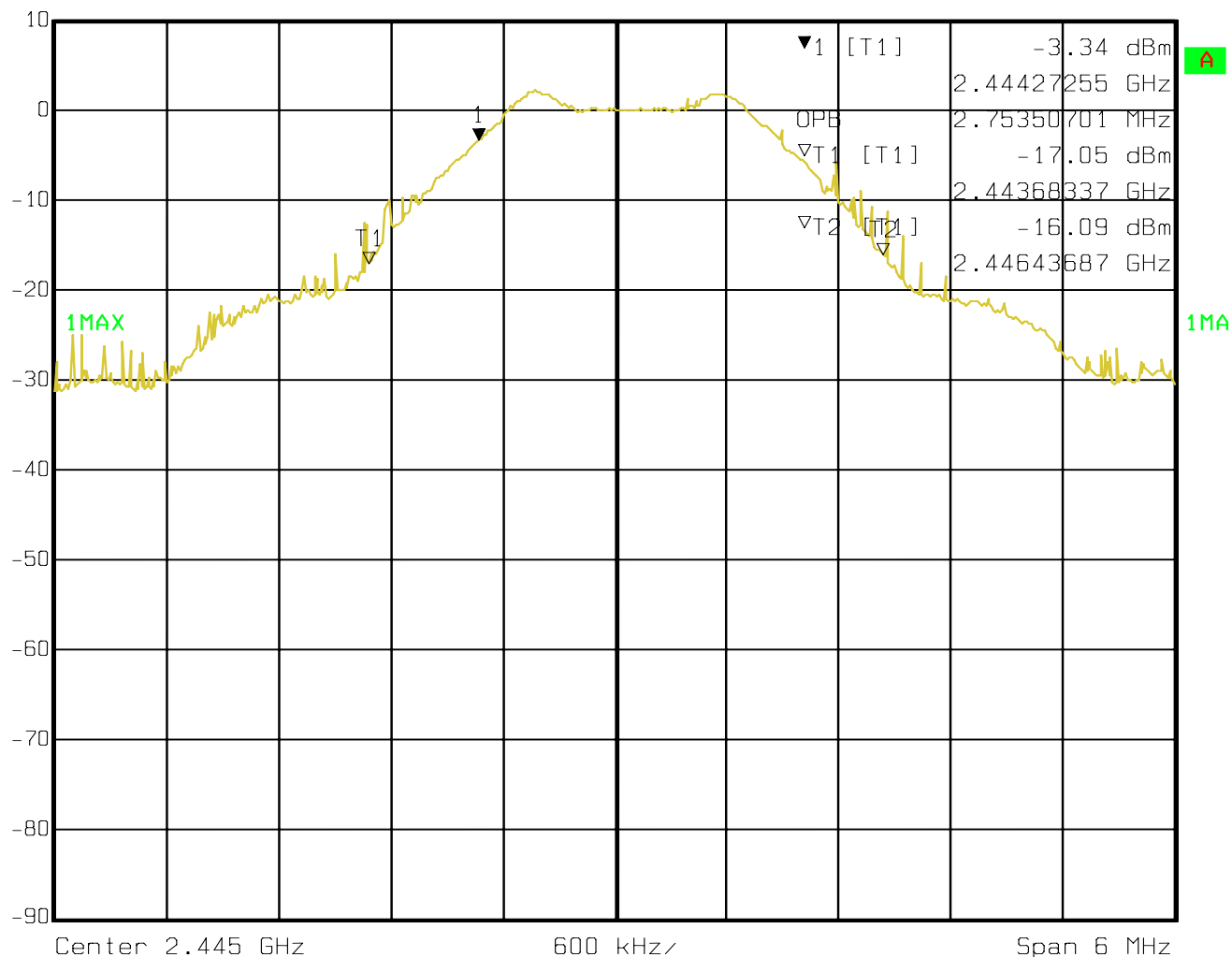
Span 6 MHz

Date: 08.AUG.2007 10:30:58

2445 MHz – 99% BW



Ref Lvl 10 dBm
 Marker 1 [T1] -3.34 dBm
 2.44427255 GHz
 RBW 300 kHz
 VBW 1 MHz
 SWT 5 ms
 RF Att 40 dB
 Unit dBm



Center 2.445 GHz

600 kHz

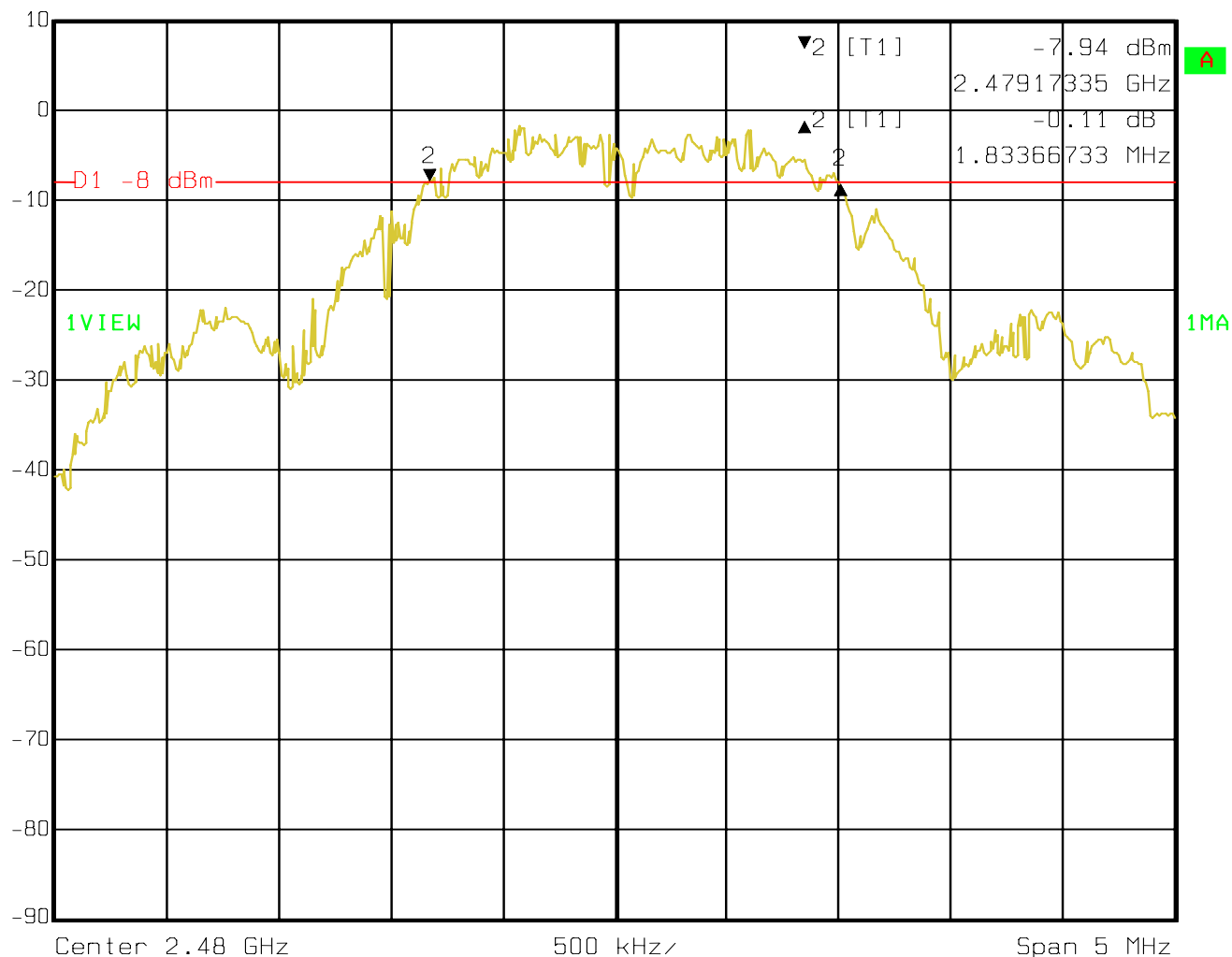
Span 6 MHz

Date: 08.AUG.2007 10:38:41

2480 MHz – 6dB BW



Ref Lvl 10 dBm Delta 2 [T1] -0.11 dB RBW 100 kHz RF Att 20 dB
 1.83366733 MHz VBW 100 kHz Unit dBm
 SWT 5 ms



Center 2.48 GHz

500 kHz

Span 5 MHz

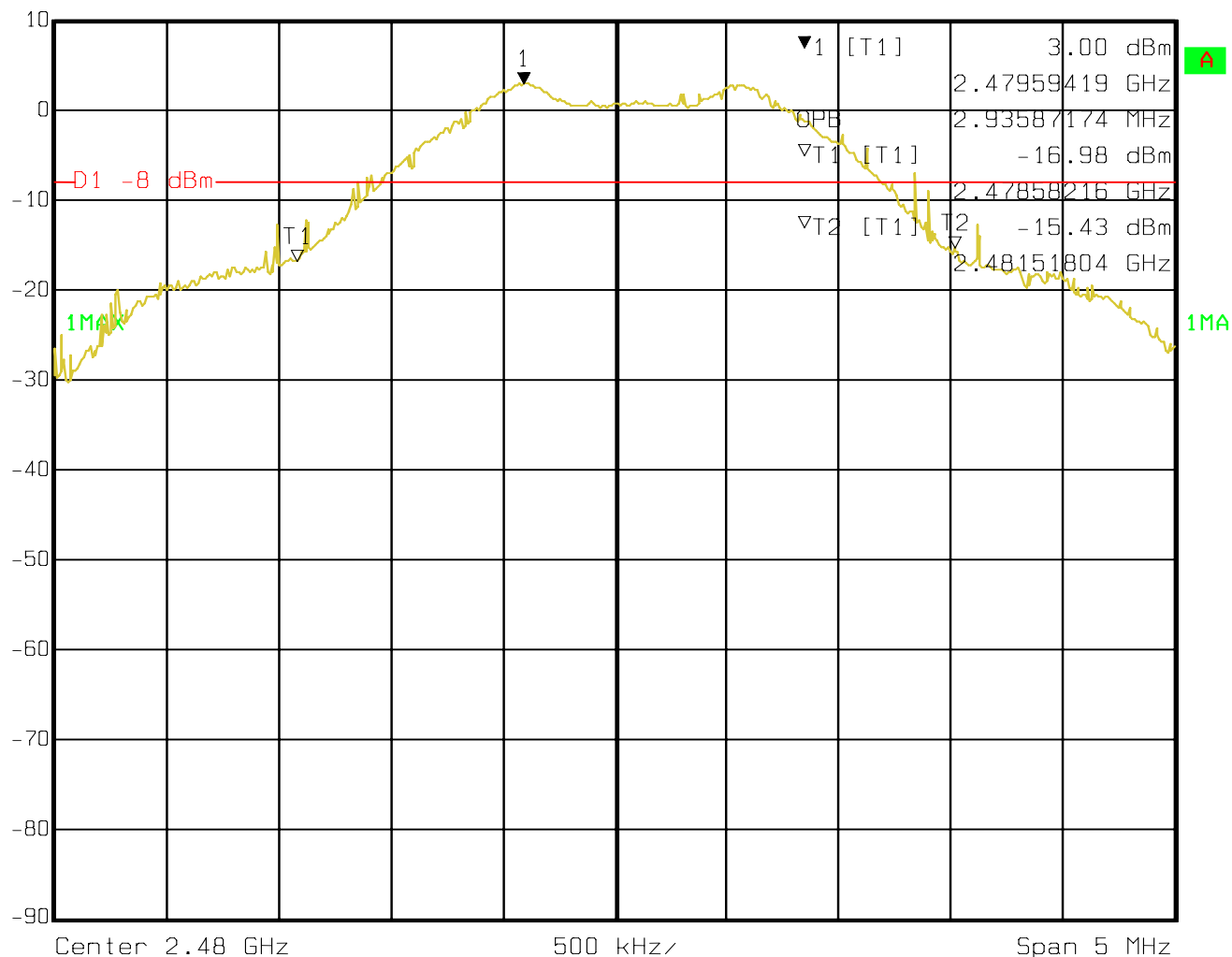
Date: 08.AUG.2007 13:13:23



2480 MHz – 99% BW



Ref Lvl 10 dBm
 Marker 1 [T1] 3.00 dBm
 2.47959419 GHz
 RBW 300 kHz
 VBW 1 MHz
 SWT 5 ms
 RF Att 20 dB
 Unit dBm



Center 2.48 GHz

500 kHz

Span 5 MHz

Date: 08.AUG.2007 13:16:11

5.3 POWER SPECTRAL DENSITY §15.247(e) & RSS-210 (A8.2)(b)
(CONDUCTED)**Limit: $\leq 8\text{dBm}$ (in 3kHz BW)****§15.247(e) & RSS-210 (A8.2)(b)****ANALYZER SETTINGS:****RBW= 3kHz, VBW: 10kHz****SPAN: 300kHz**

Channel No.	Frequency (MHz)	PSD (dBm)
11	2405	-11.38
19	2445	-11.96
26	2480	-10.48

2405 MHzRef Lvl
10 dBm

Marker 1 [T1]

-11.38 dBm

2.40467027 GHz

RBW

3 kHz

RF Att

20 dB

VBW

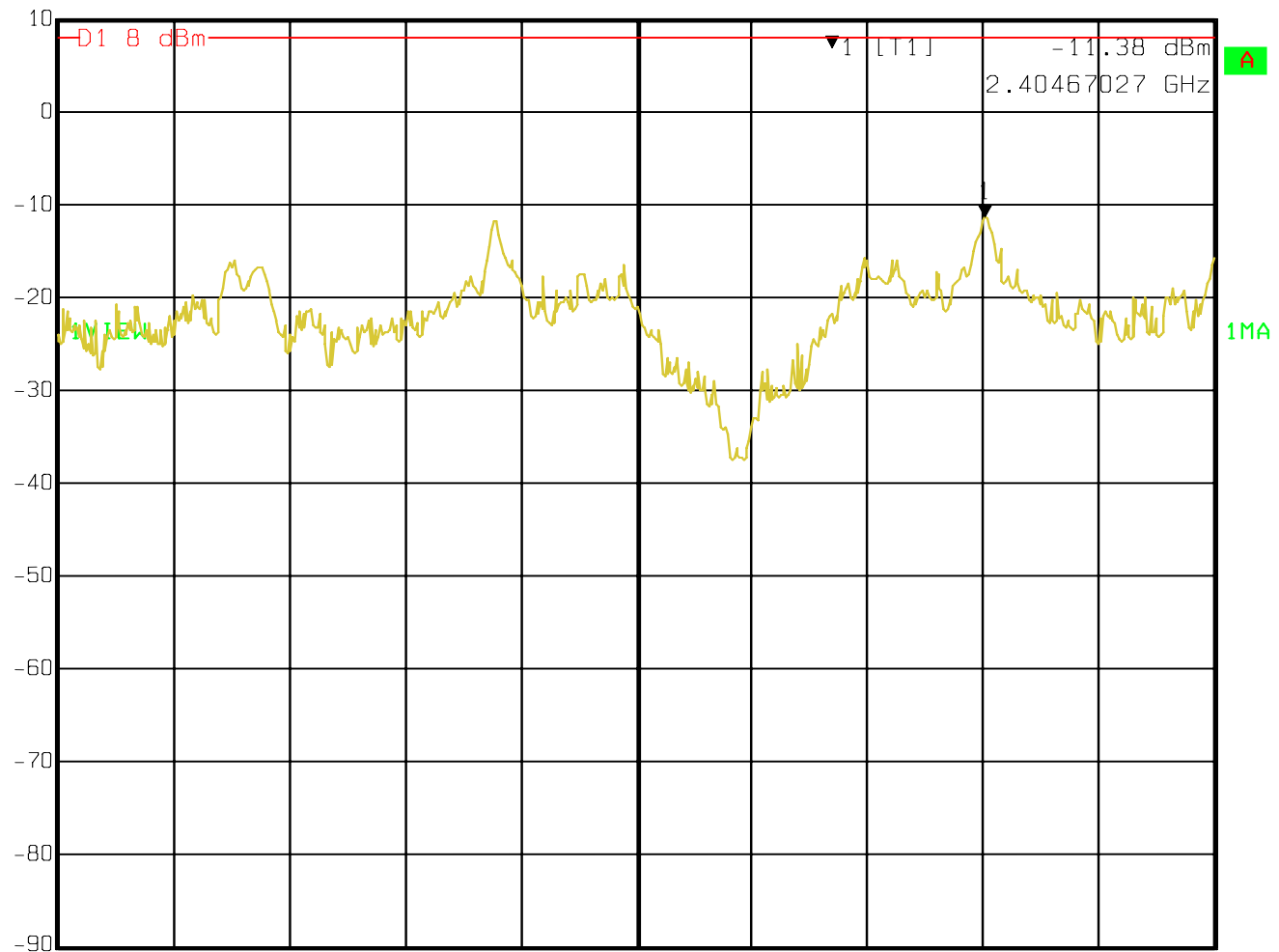
10 kHz

SWT

100 s

Unit

dBm



Center 2.404579785 GHz

30 kHz

Span 300 kHz

Date: 08.AUG.2007 14:25:22



2445 MHz



Ref Lvl
10 dBm

Marker 1 [T1]

-11.96 dBm

2.44464709 GHz

RBW

3 kHz

RF Att

40 dB

VBW

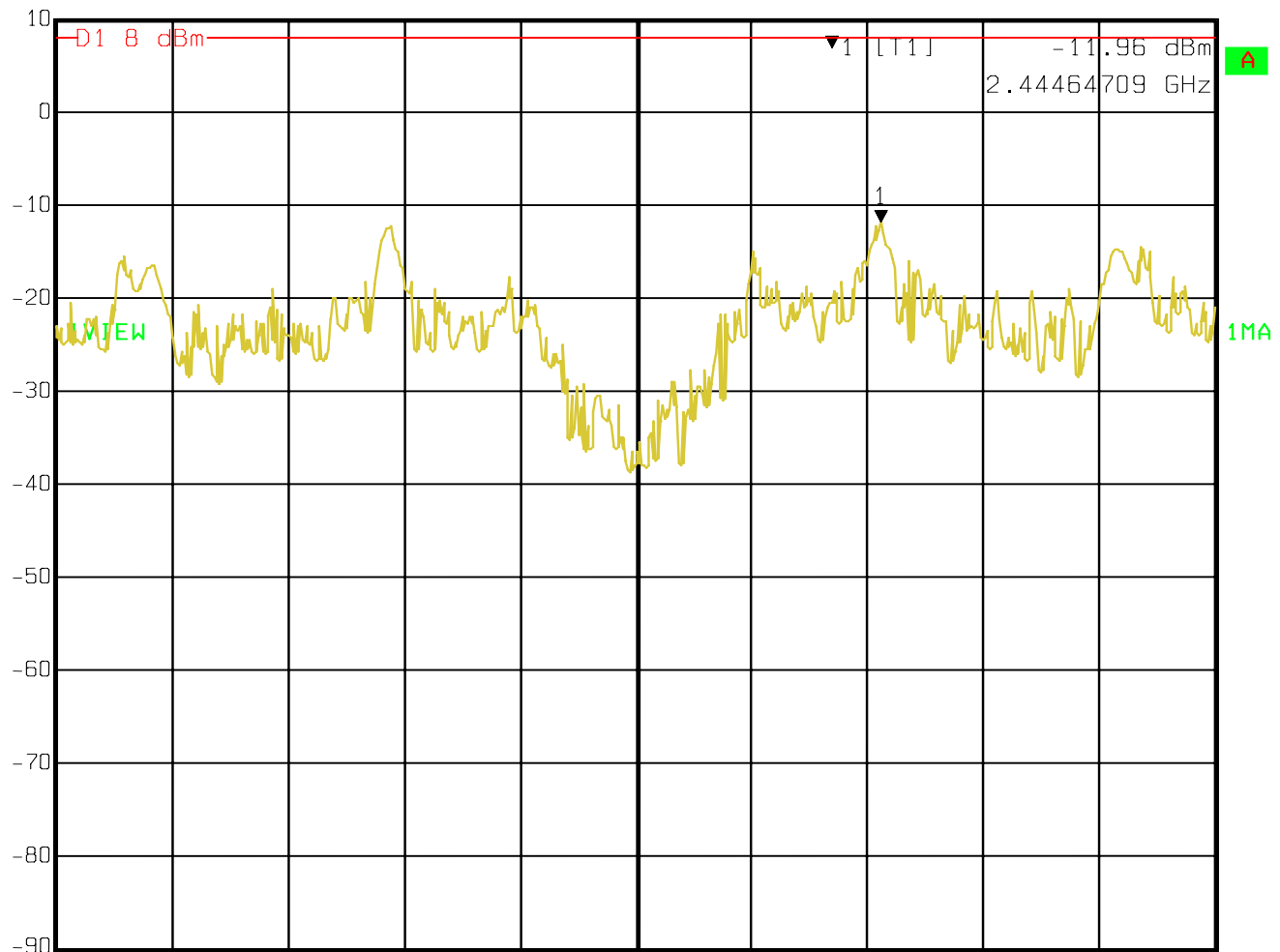
10 kHz

SWT

100 s

Unit

dBm



Center 2.444583667 GHz

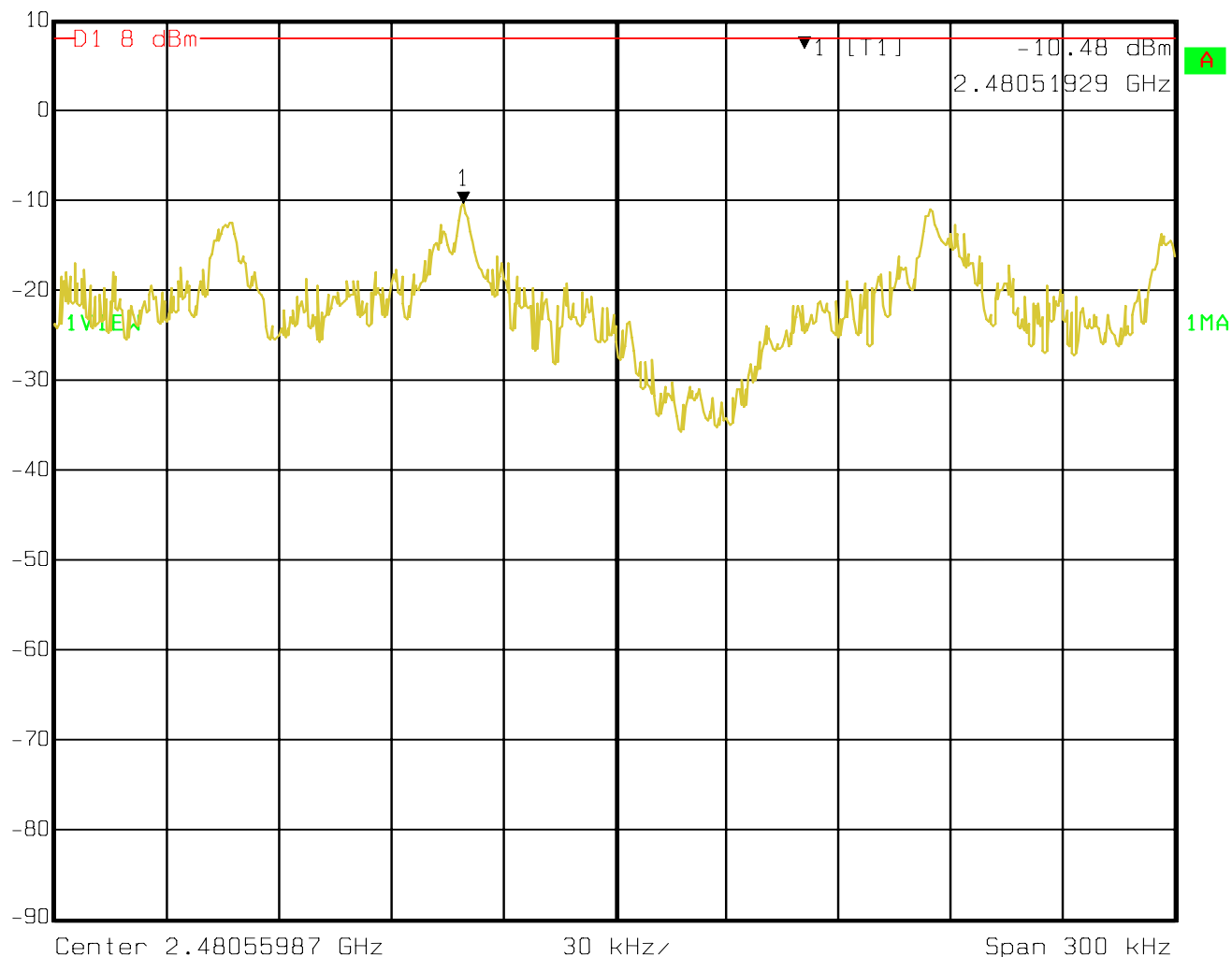
30 kHz

Span 300 kHz

Date: 08.AUG.2007 10:45:45

2480 MHz

Marker 1 [T1] RBW 3 kHz RF Att 20 dB
Ref Lvl -10.48 dBm VBW 10 kHz
10 dBm 2.48051929 GHz SWT 100 s Unit dBm



Date: 08.AUG.2007 13:23:45

**5.4 ANTENNA PORT EMISSIONS §15.247(d) & RSS-210 (A8.5)
(CONDUCTED)****Limit: -20dBc used, §15.247(d) & RSS-210 (A8.5):****NOTE: ANALYZER SETTINGS: RBW=VBW: 100 kHz (Note: Due to the fact that the radio was set to transmit every 1ms and off for 2ms, a RBW=VBW= 500 kHz was used to increase the sweep time and capture the emissions correctly.)****Measurements were performed on the low, middle, and high channel.**

Transmit at Lowest channel Frequency 2405MHz	
Frequency (MHz)	Level (dBm)
	Peak
4799.59	-48.25
7189.37	-48.25
Transmit at Middle channel Frequency 2445MHz	
Frequency (MHz)	Level (dBm)
	Peak
7336.67	-46.06
Transmit at Highest channel Frequency 2480MHz	
Frequency (MHz)	Level (dBm)
	Peak
4934.86	-49.60
7414.86	-49.83

2405 MHz**EMISSION SCAN FROM 30 – 2.5 GHz**

Ref Lvl

10 dBm

Marker 1 [T1]

1.71 dBm

2.40669439 GHz

RBW 500 kHz

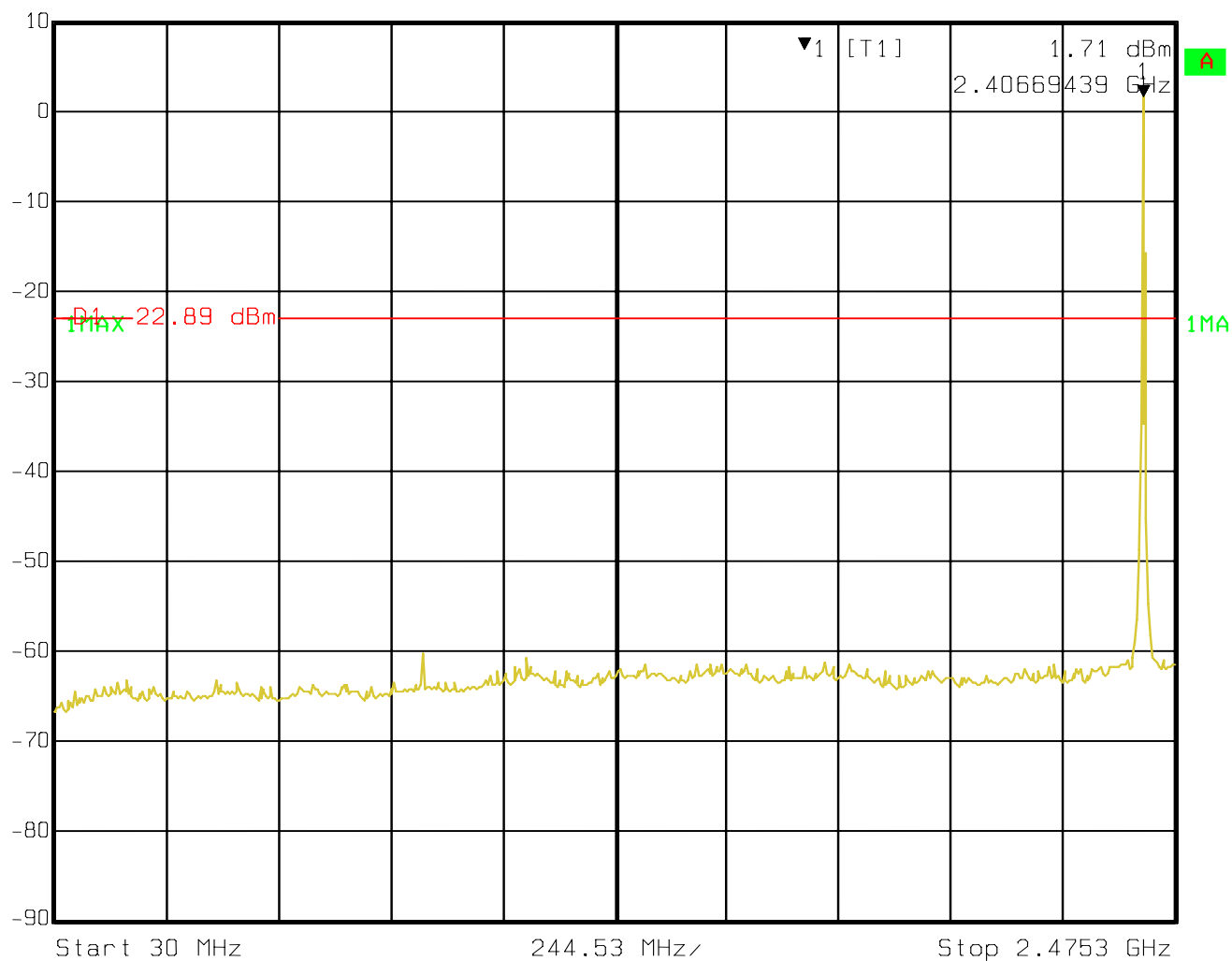
VBW 500 kHz

SWT 24.5 ms

RF Att 20 dB

Unit

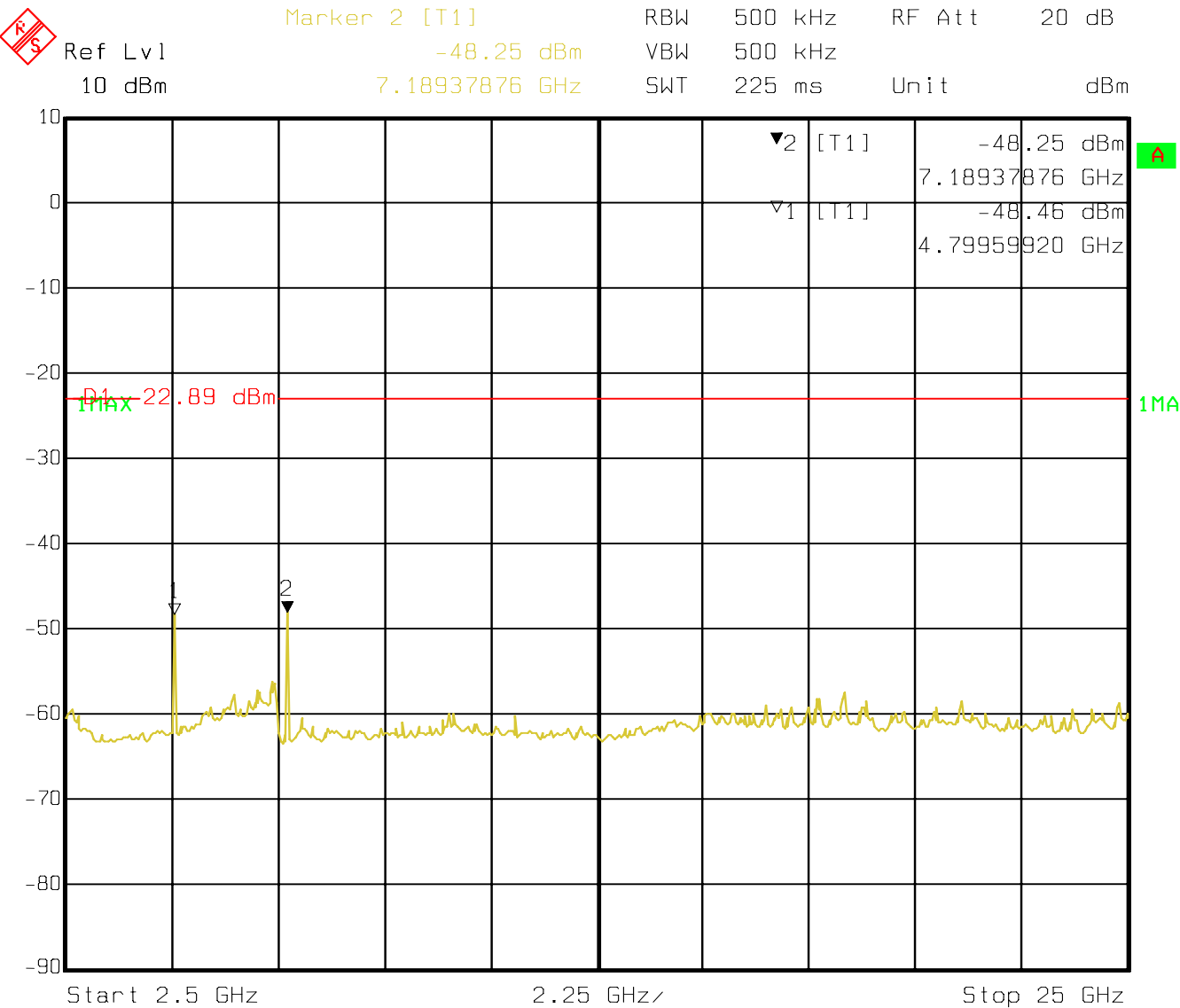
dBm



Date: 08.AUG.2007 14:33:13



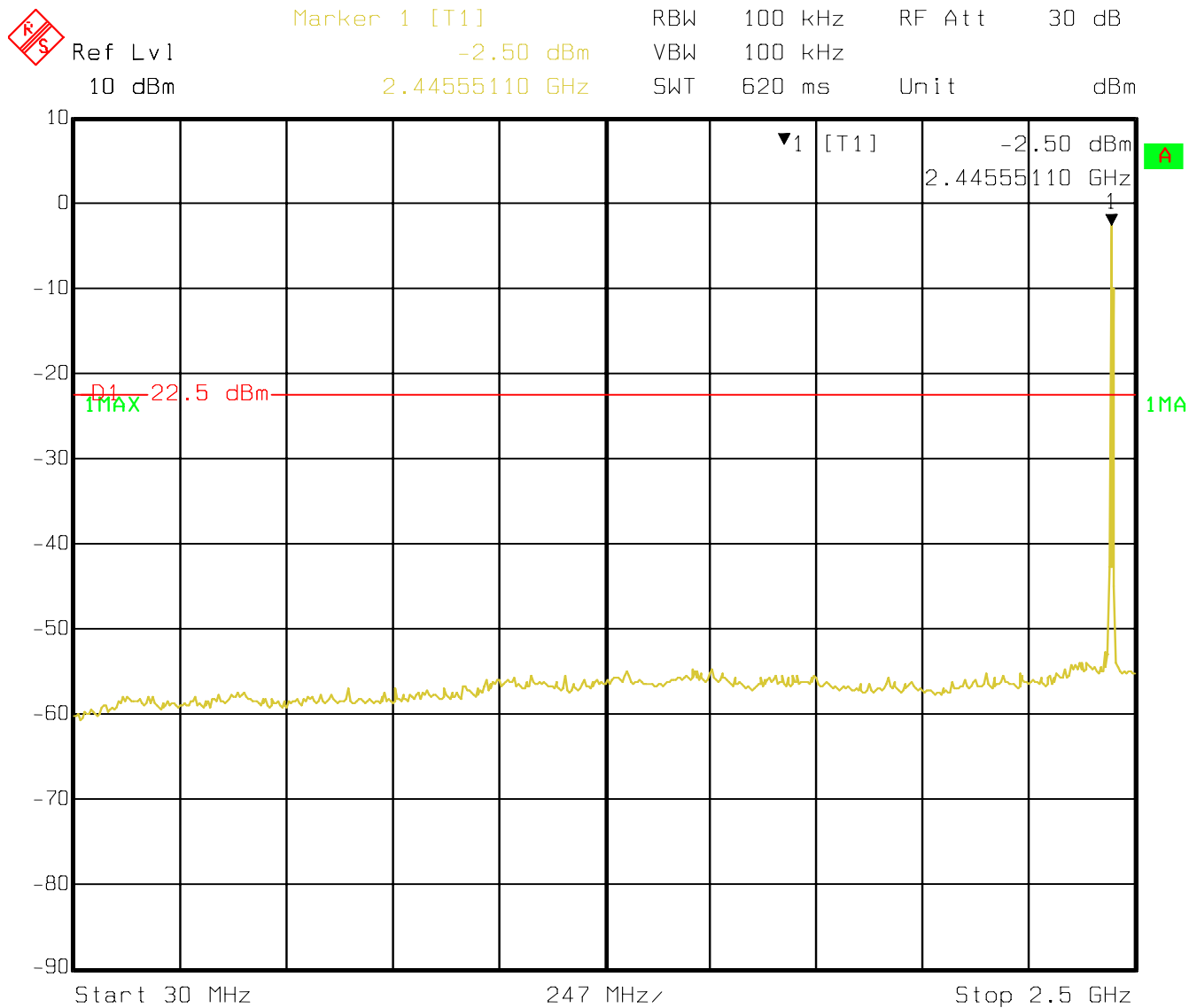
EMISSION SCAN FROM 2.5 – 25 GHz



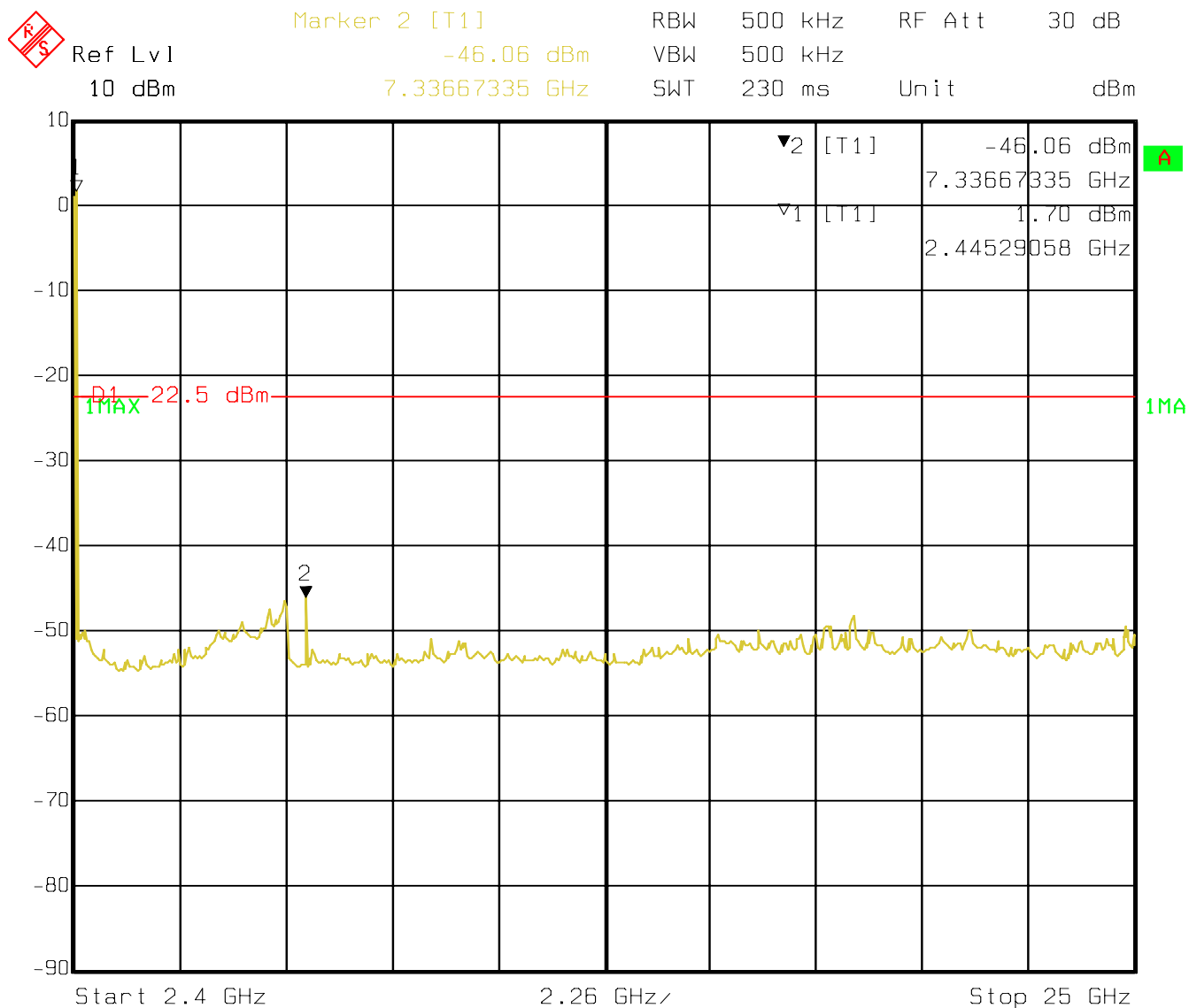
Date: 08.AUG.2007 14:41:42

2445 MHz

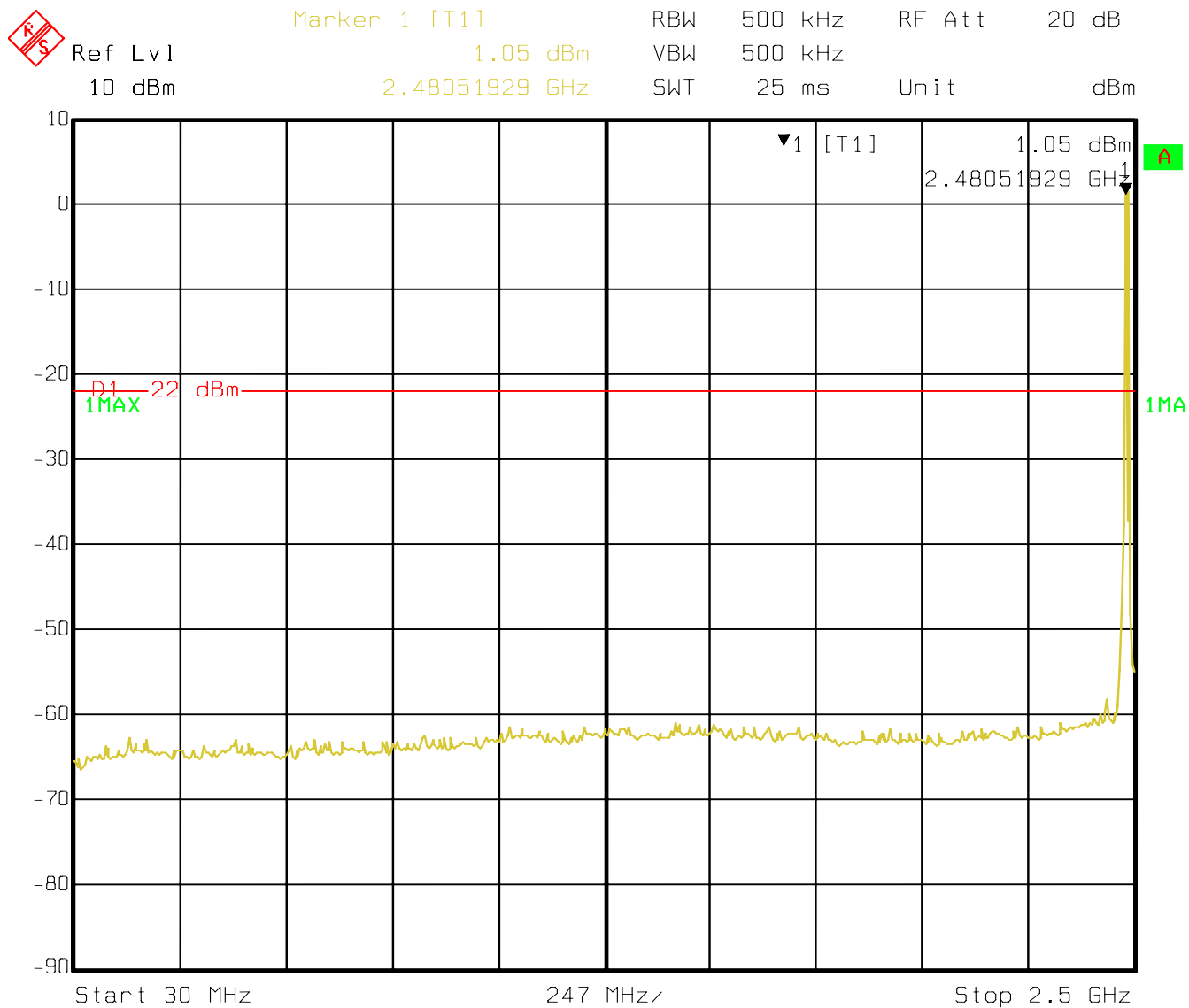
EMISSION SCAN FROM 30 – 2.5 GHz



Date: 08.AUG.2007 10:56:46

EMISSION SCAN FROM 2.4 – 25 GHz

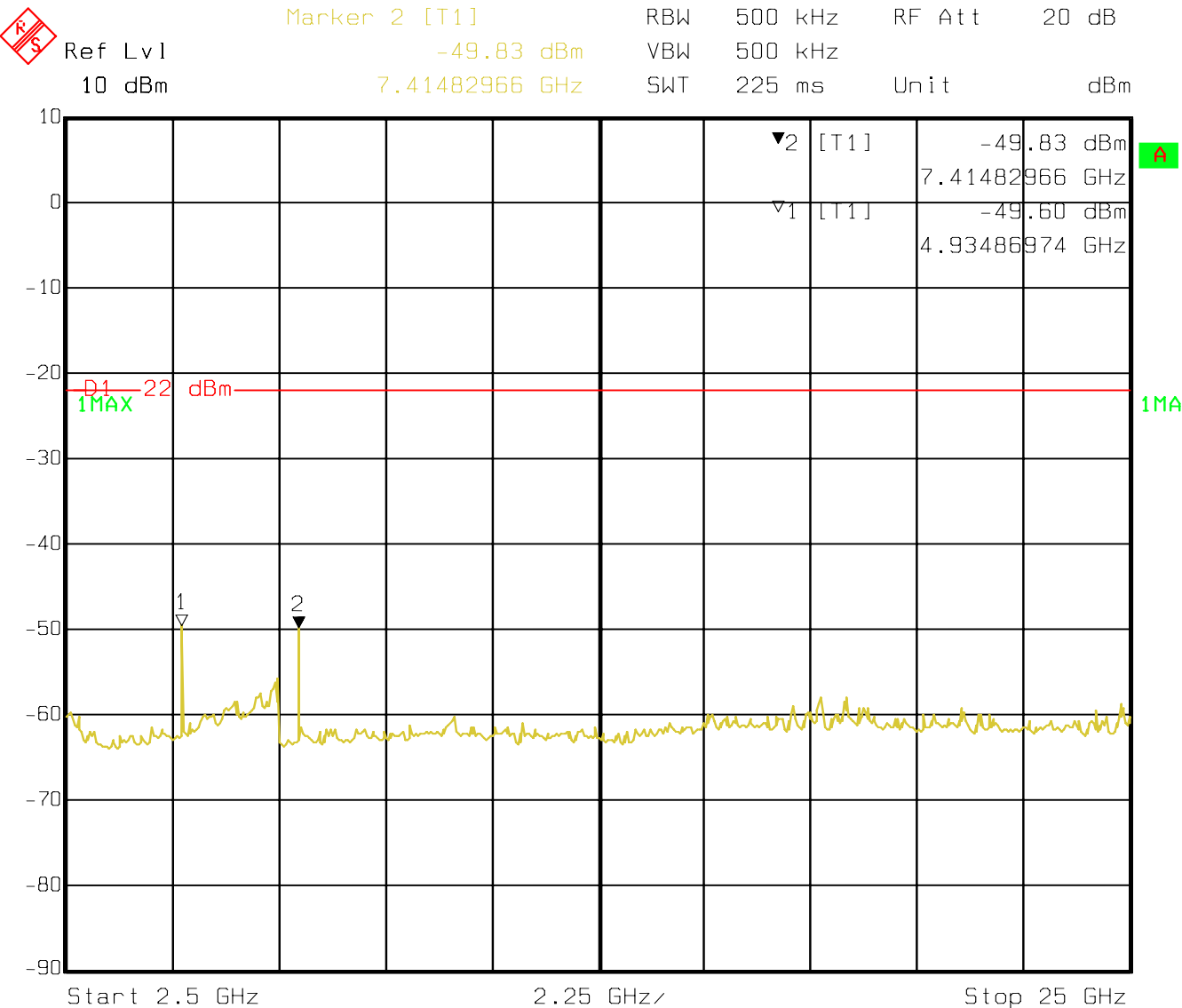
Date: 08.AUG.2007 11:08:06

2480 MHz**EMISSION SCAN FROM 30 – 2.5 GHz**

Date: 08.AUG.2007 13:25:51



EMISSION SCAN FROM 2.5 – 25 GHz



Date: 08.AUG.2007 13:36:41

6 RADIATED EMISSIONS MEASUREMENTS

6.1 BAND EDGE COMPLIANCE

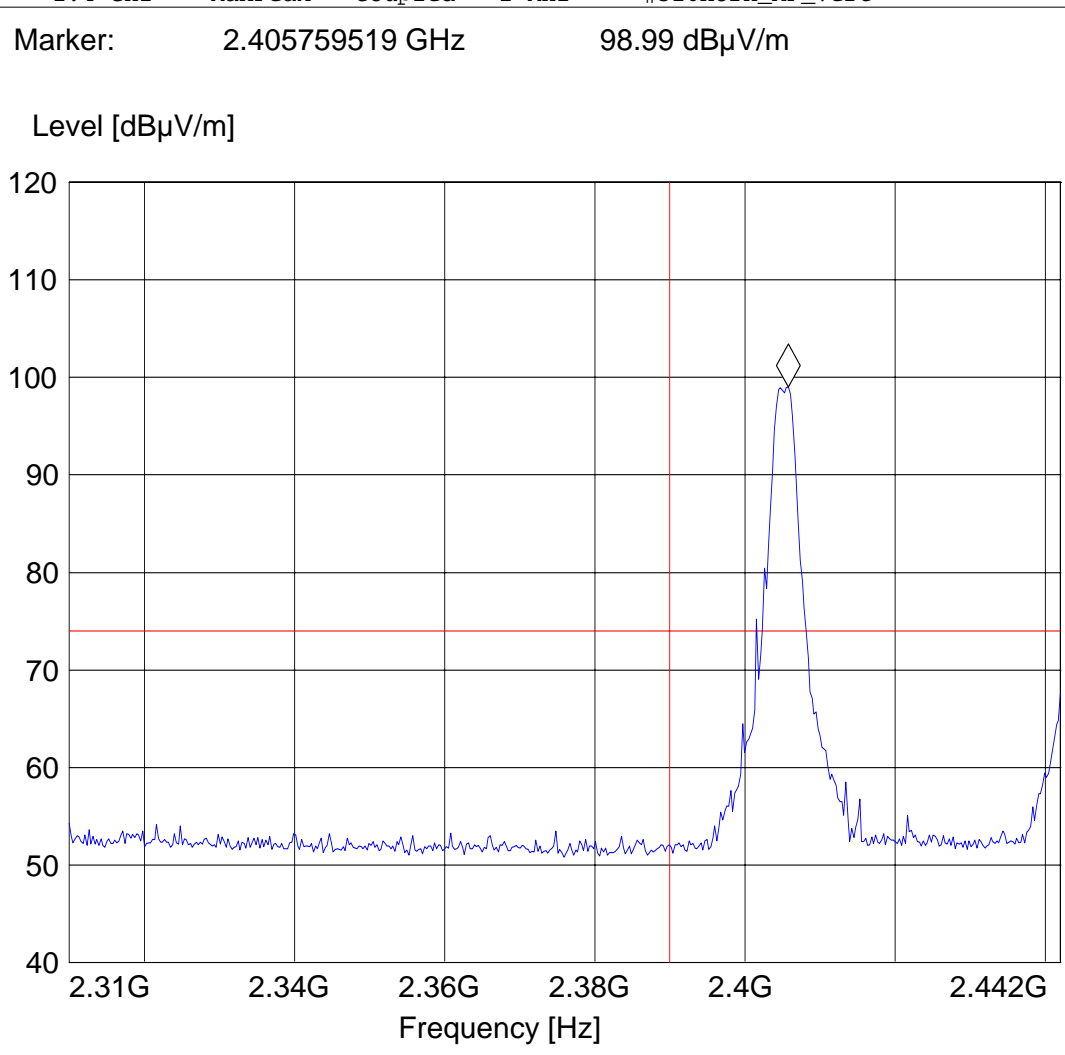
§15.247 (d) & RSS-210(A8.5)

Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: Base and Sensor
Customer: Crossbow
Test Mode: Low channel (Tx mode)
ANT Orientation: V (Worst Case polarization)
EUT Orientation: H (Antenna Vertical)
Test Engineer: Juan M.
Power Supply: Battery
Comments:

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

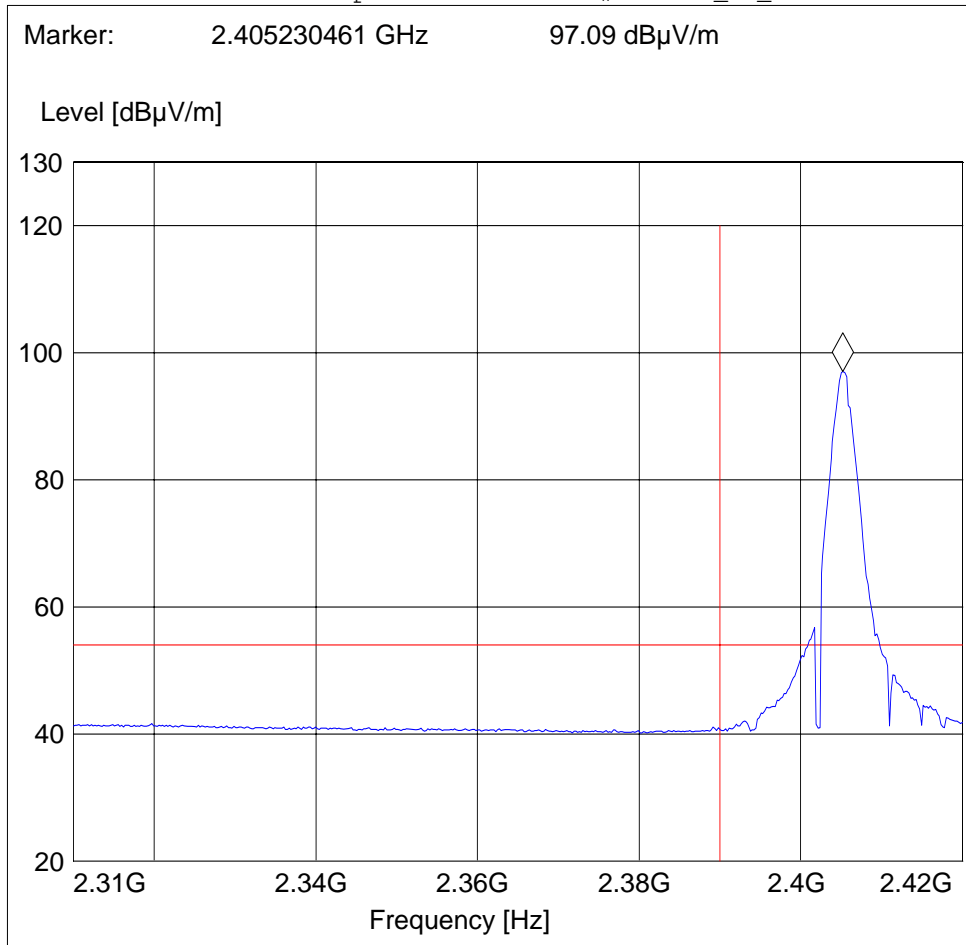


**BAND EDGE COMPLIANCE****§15.247 (d) & RSS-210(A8.5)****Low frequency section (spurious in the restricted band 2310 – 2390 MHz)****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Base and Sensor
Customer: Crossbow
Test Mode: Low Channel (Tx mode)
ANT Orientation: V (Worst Case polarization)
EUT Orientation: H (Antenna Vertical)
Test Engineer: Juan M.
Power Supply: Battery
Comments: Average measurement was performed with RBW=1MHz, VBW=3kHz. A VBW=3kHz was used due to the fact that the emission is pulse and a VBW=10Hz will artificially drop the amplitude of the signal due to its low duty cycle. 3kHz was determine to be the appropriate setting so to prevent Desensitization on the signal.

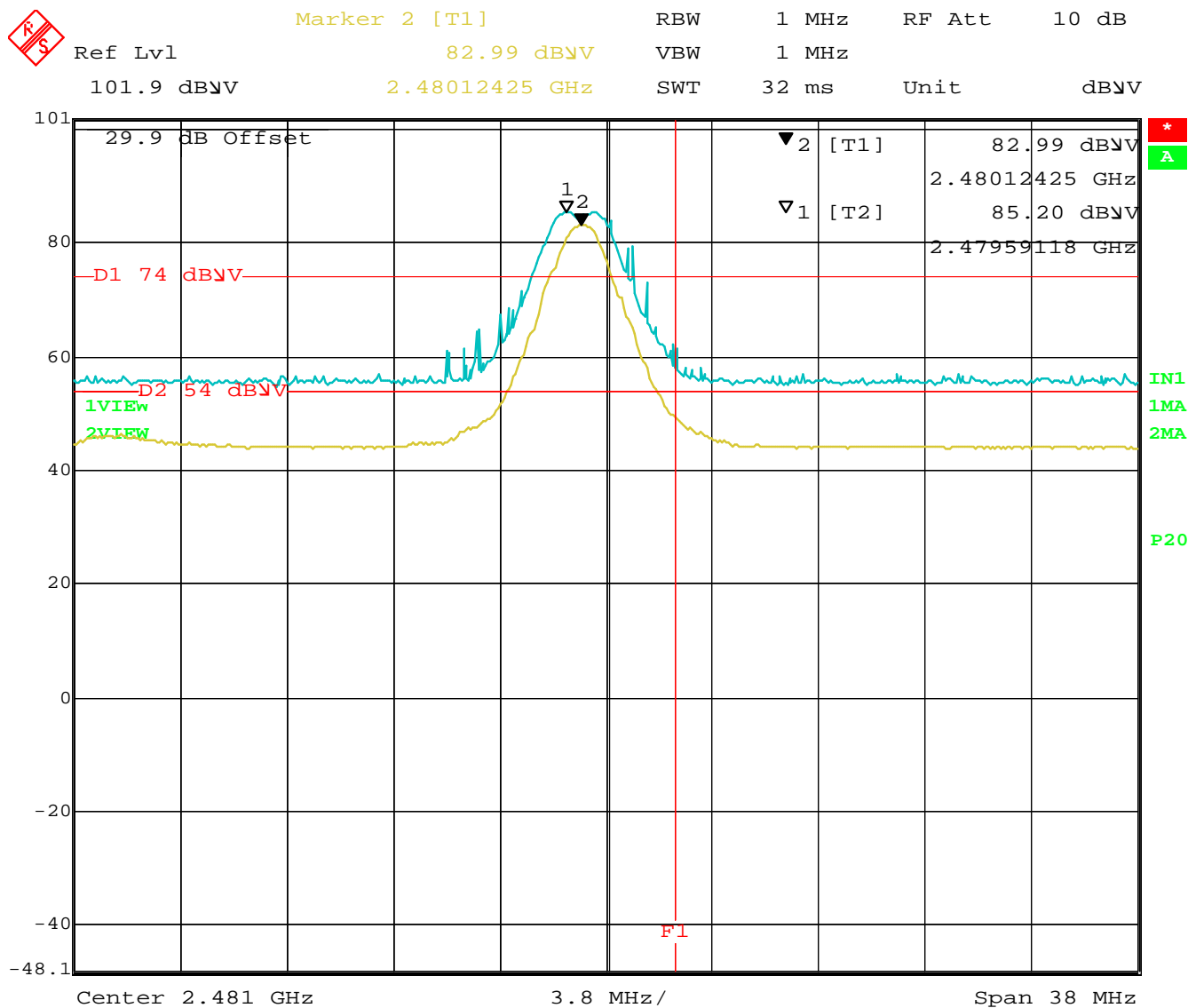
SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



BAND EDGE COMPLIANCE**§15.247 (d) & RSS-210(A8.5)****High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Base and Sensor
Customer: Crossbow
Test Mode: High Channel (Tx mode)
ANT Orientation: V (Worst Case polarization)
EUT Orientation: H (Antenna Vertical)
Test Engineer: Juan M.
Power Supply: Battery
Comments: Plot below is with transducer factors included. Blue Trace is Peak
RBW=VBW=1MHz and Yellow Trace is Average with RBW=1MHz, VBW=3kHz.



Date: 18.AUG.2007 17:22:52

6.2 EMISSION LIMITATIONS – Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)**LIMITS**

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions, which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

NOTES:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 26.5 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode unless specified with the plots.
3. Three devices were all place in the chamber. One device was transmitting on the low, the second on the middle, and the third on the high channel.

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found 20-dB of the limit	This is valid for all the tested channels

EMISSION LIMITATIONS - Radiated (Transmitter)

§15.247 (d) & RSS-210(A8.5):

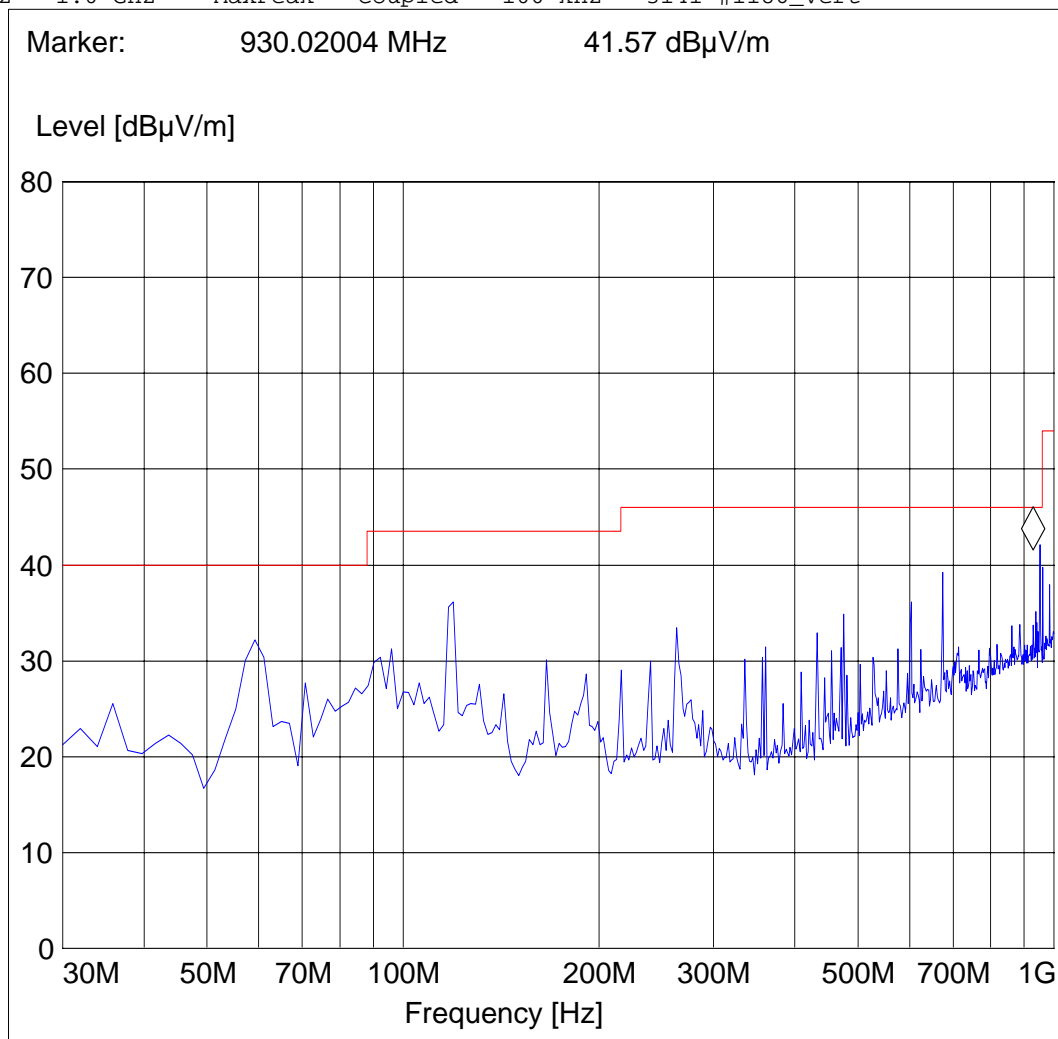
Transmit at Lowest channel Frequency 2405MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
SEE PLOTS			
Transmit at Middle channel Frequency 2441MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
SEE PLOTS			
Transmit at Highest channel Frequency 2480MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
SEE PLOTS			

**EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)**
Lowest Channel (2405MHz): 30MHz – 1GHz**Note: This plot is valid for low, mid, high channels****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Base and Sensor
Customer: Crossbow
Test Mode: Low, Middle, and High channels (Tx mode)
ANT Orientation: V
EUT Orientation: H (Antenna Vertical)
Test Engineer: Juan M.
Power Supply: Battery
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

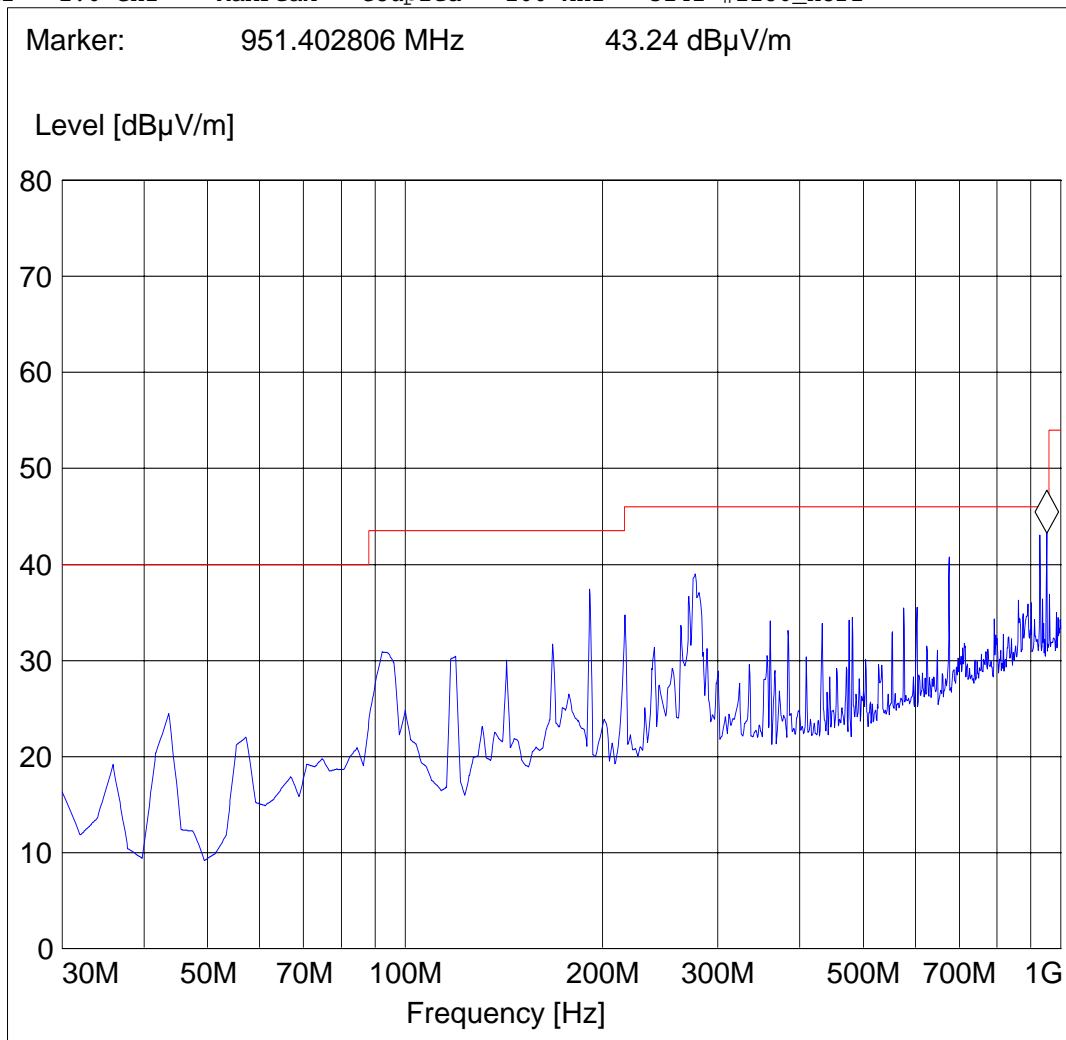


**EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)****Lowest Channel (2405MHz): 30MHz – 1GHz****Antenna: Horizontal****Note: This plot is valid for low, mid, high channels****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Base and Sensor
Customer: Crossbow
Test Mode: Low, Middle, and High channels (Tx mode)
ANT Orientation: H
EUT Orientation: H (Antenna Vertical)
Test Engineer: Juan M.
Power Supply: Battery
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



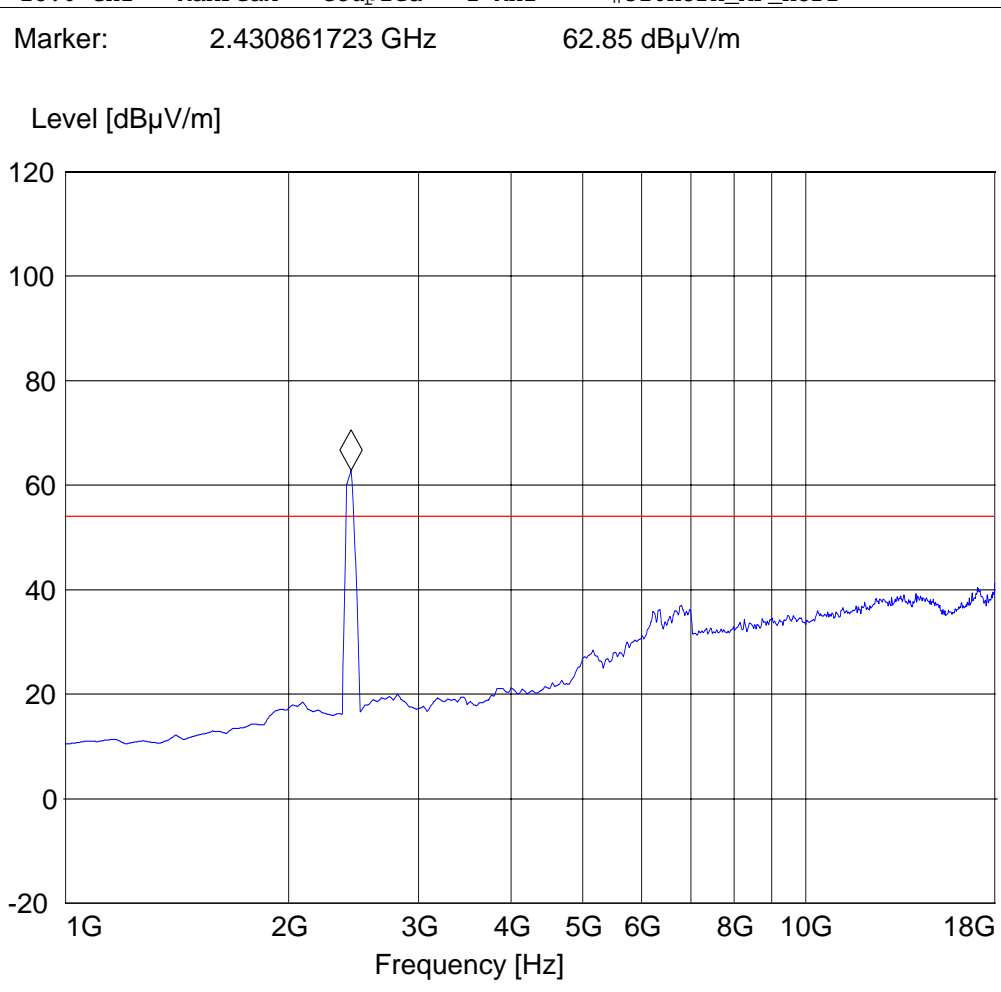


EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)
Radios transmitting on 2405, 2445, and 2480 MHz at the same time: 1GHz – 18GHz
Note: Peak above the limit line is the carrier freq.
CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

EUT / Description: Base and Sensor
Manufacturer: Crossbow
Test mode: Low, Middle, and High channels (Tx mode)
ANT Orientation: : V
EUT Orientation:: H
Test Engineer: Juan M.
Voltage: Battery
Comments:

SWEEP TABLE: "FCC15.247_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

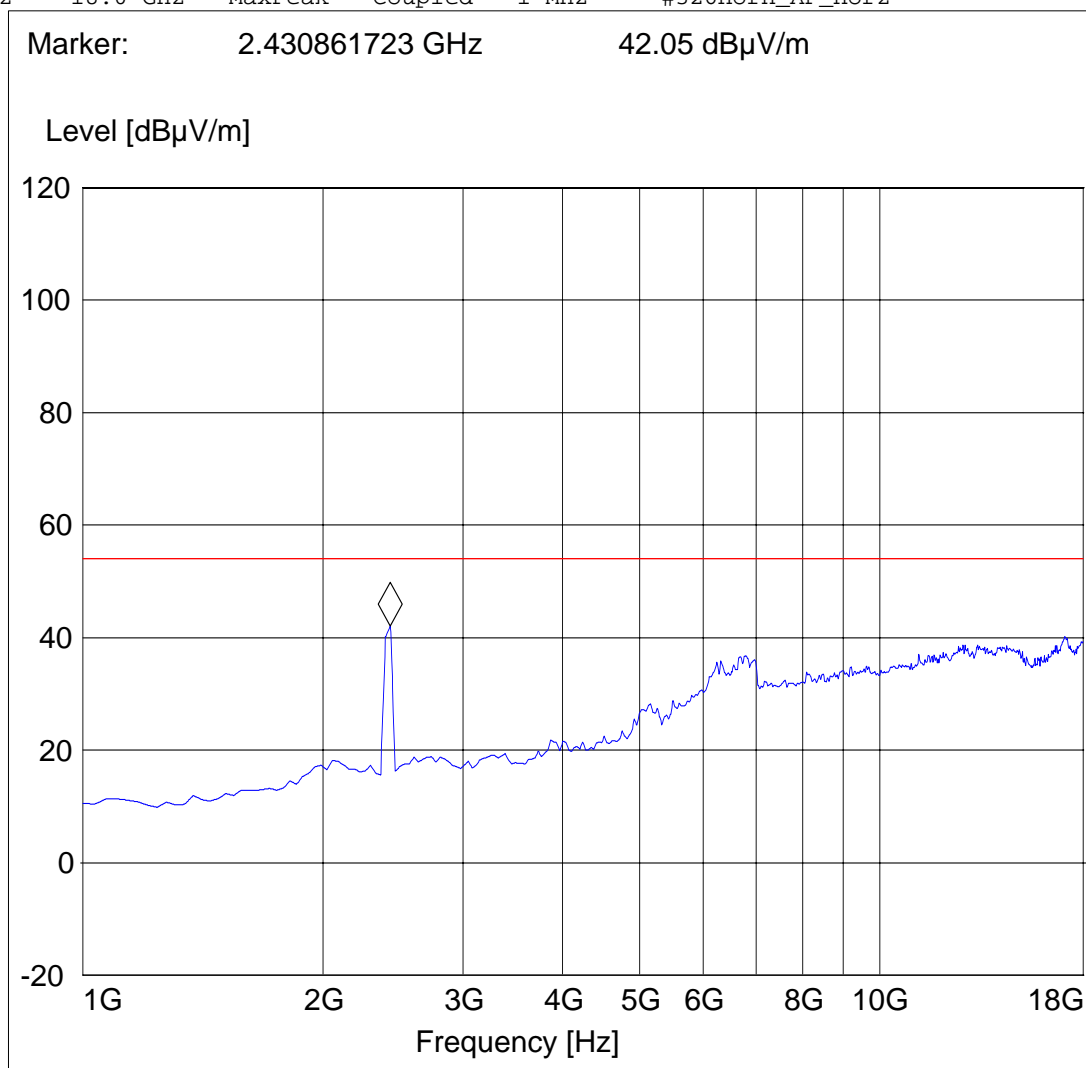


**EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)**
Radios transmitting on 2405, 2445, and 2480 MHz at the same time: 1GHz – 18GHz**Note: Peak above the limit line is the carrier freq.****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Base and Sensor
Manufacturer: Crossbow
Test mode: Low, Middle, and High channels (Tx mode)
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: Juan M.
Voltage: Battery
Comments:

SWEEP TABLE: "FCC15.247_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

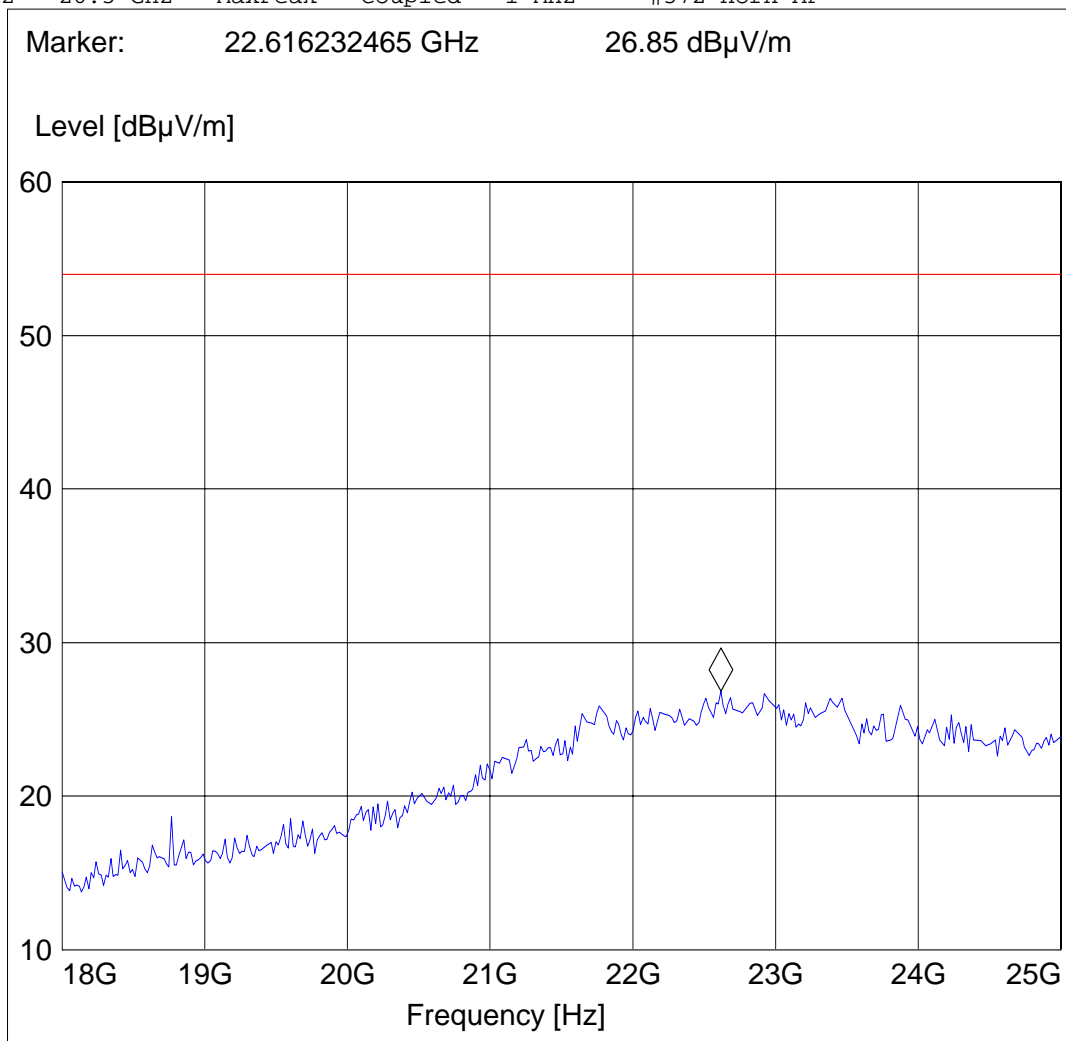


**EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)
18GHz – 26.5GHz for low, middle, and high channels****Note: This plot is valid for low, mid, high channels (worst-case plot)****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Base and Sensor
Manufacturer: Crossbow
Test mode: Low, Middle, and High channels (Tx mode)
ANT Orientation: : V
EUT Orientation:: H
Test Engineer: Juan M.
Voltage: Battery
Comments:

SWEEP TABLE: "FCC15.247_18-26.5G"

Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#572 horn AF



6.3 EMISSION LIMITATIONS – Radiated (Receiver)**RSS-GEN (4.10) & (6):****Limits RSS-GEN (4.10) & (6):**

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)
0.009 - 0.490	2400/F(kHz)	
0.490 - 1.705	24000/F(kHz)	
1.705 - 30.0	30	29.54
30 - 88	100	40.00
88 - 216	150	43.52
216 - 960	200	46.02
above 960	500	53.97

Table 1. Limits are based on a 3 meter distance

RSS-GEN (4.10) peak measurements above 1GHz are taken with a RBW=VBW= 1MHz and average measurements above 1GHz with a RBW=1MHz, VBW=10Hz or an average detector. Set the radio to receive at the middle of the operating band.

EUT in Rx/Standby mode, test setup as per ANSI C63.4 (page 32)

Frequency Range	Sweep used	Result
1GHz – 18GHz	CANADA_1-18G	PASS

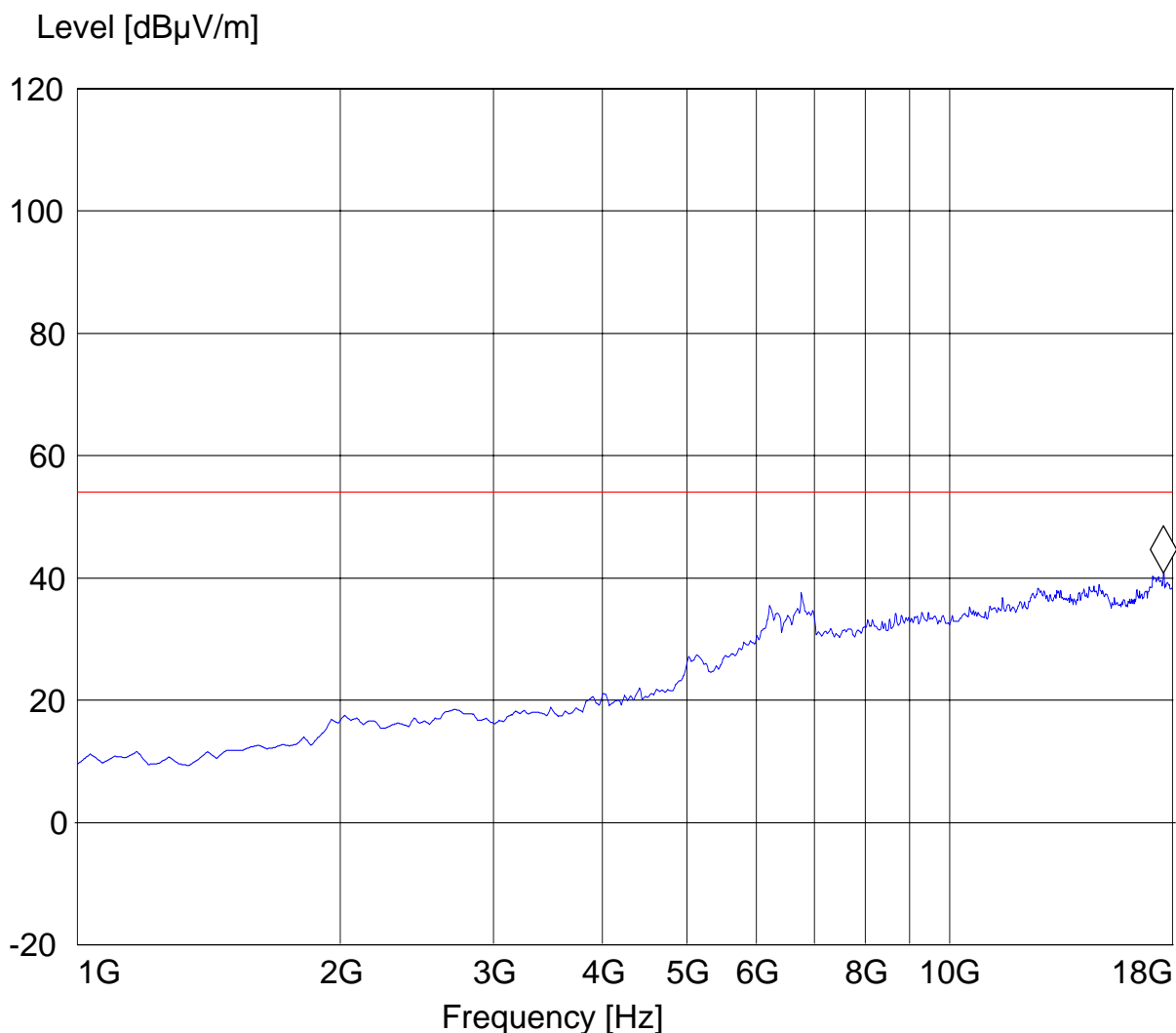
**2445 MHz Receive**

EUT / Description: Base and Sensor
Manufacturer: Crossbow
Test mode: Middle channel (Rx mode)
ANT Orientation: V
EUT Orientation: H
Test Engineer: Juan M.
Voltage: Battery
Comments:

SWEEP TABLE: "CANADA RE_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.591182365 GHz 40.73 dB μ V/m



2445 MHz Receive

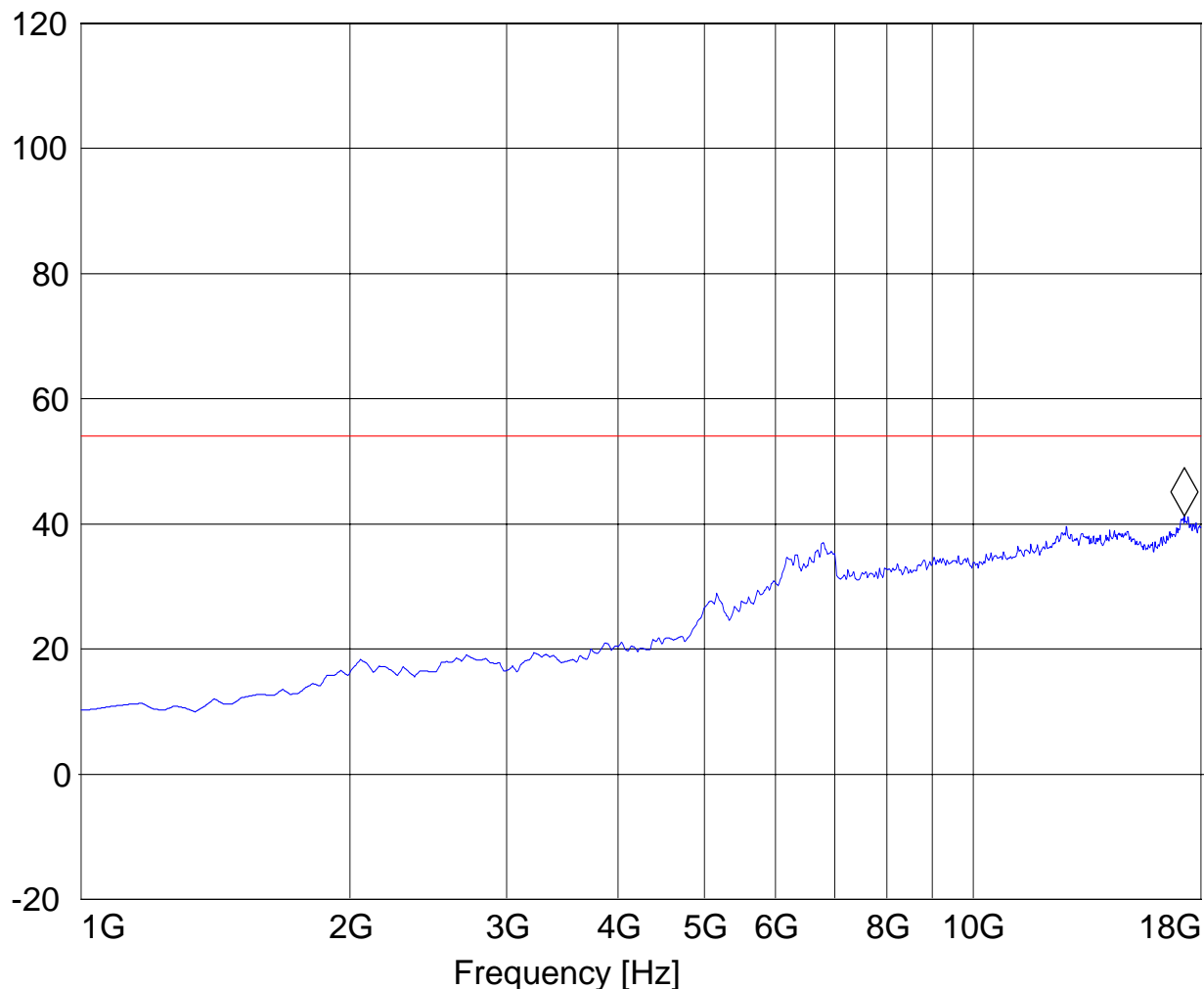
EUT / Description: Base and Sensor
Manufacturer: Crossbow
Test mode: Middle channel (Rx mode)
ANT Orientation: H
EUT Orientation: H
Test Engineer: Juan M.
Voltage: Battery
Comments:

SWEEP TABLE: "CANADA RE_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.250501002 GHz 41.24 dB μ V/m

Level [dB μ V/m]



7 AC POWER LINE CONDUCTED EMISSIONS § 15.207 & RSS-GEN (7.2.2)**LIMITS****Technical specification: 15.207 (Revised as of August 20, 2002)**

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with logarithm of the frequency

ANALYZER SETTINGS: RBW = 9KHz**VBW = 10KHz****OPERATING MODE:**

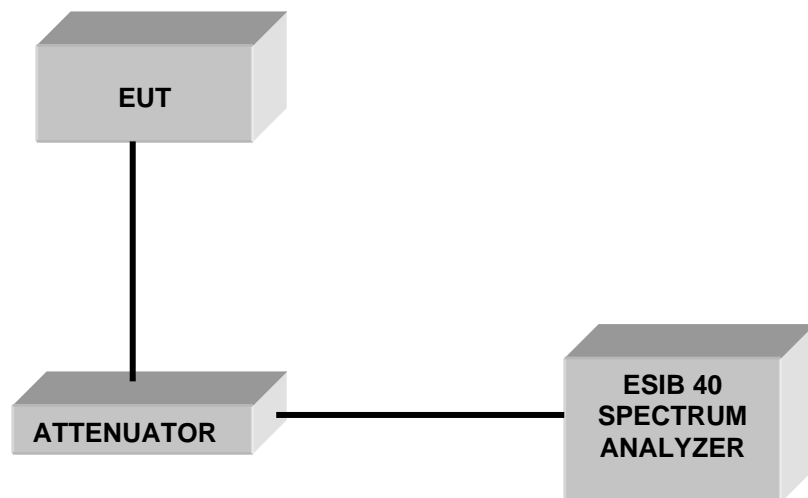
NOTE EUT IS BATTERY OPERATED AND WILL NOT CONNECT TO THE AC MAINS DIRECTLY OR INDIRECTLY. CONDUCTED EMISSION ON POWER LINES WAS NOT PERFORMED.

**8 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2008	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2008	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2008	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2008	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2008	1 year

9 BLOCK DIAGRAMS

9.1 Conducted Testing



10 BLOCK DIAGRAMS

10.1 Radiated Testing

ANECHOIC CHAMBER

