



**MOTOROLA**

*Mobile Devices business  
iDEN Mobile Devices Operations*

# RF Test Report

FCC Rule Parts: 15C (Bluetooth)  
Industry Canada: RSS-Gen, RSS-210

**Product Name: i1**  
**FCC ID: IHDP56KV1**  
**IC ID: 1090-KV1**

Date: February 4, 2010

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## Test Report Details

Tests Performed by: TIMCO Engineering  
Laboratory details in report  
FCC Registration Number: **95517**  
Industry Canada Number: **2056A**

Signaling Capabilities: Bluetooth Transceiver (2.4 GHz ISM)

FCC ID: IHDP56KV1

IC ID: 1090-KV1

## Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the United States Code of Federal Regulations, Title 47 Part 2, Sub-part J, as well as the following parts:

- X   Part 15 Subpart C – Radio Frequency Devices.
- X   RSS-210 – Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment.

Applicable Standards: TIA/EIA-603-A, TIA/EIA-603-B, ANSI C63.4-2003, and ANSI C63.10.

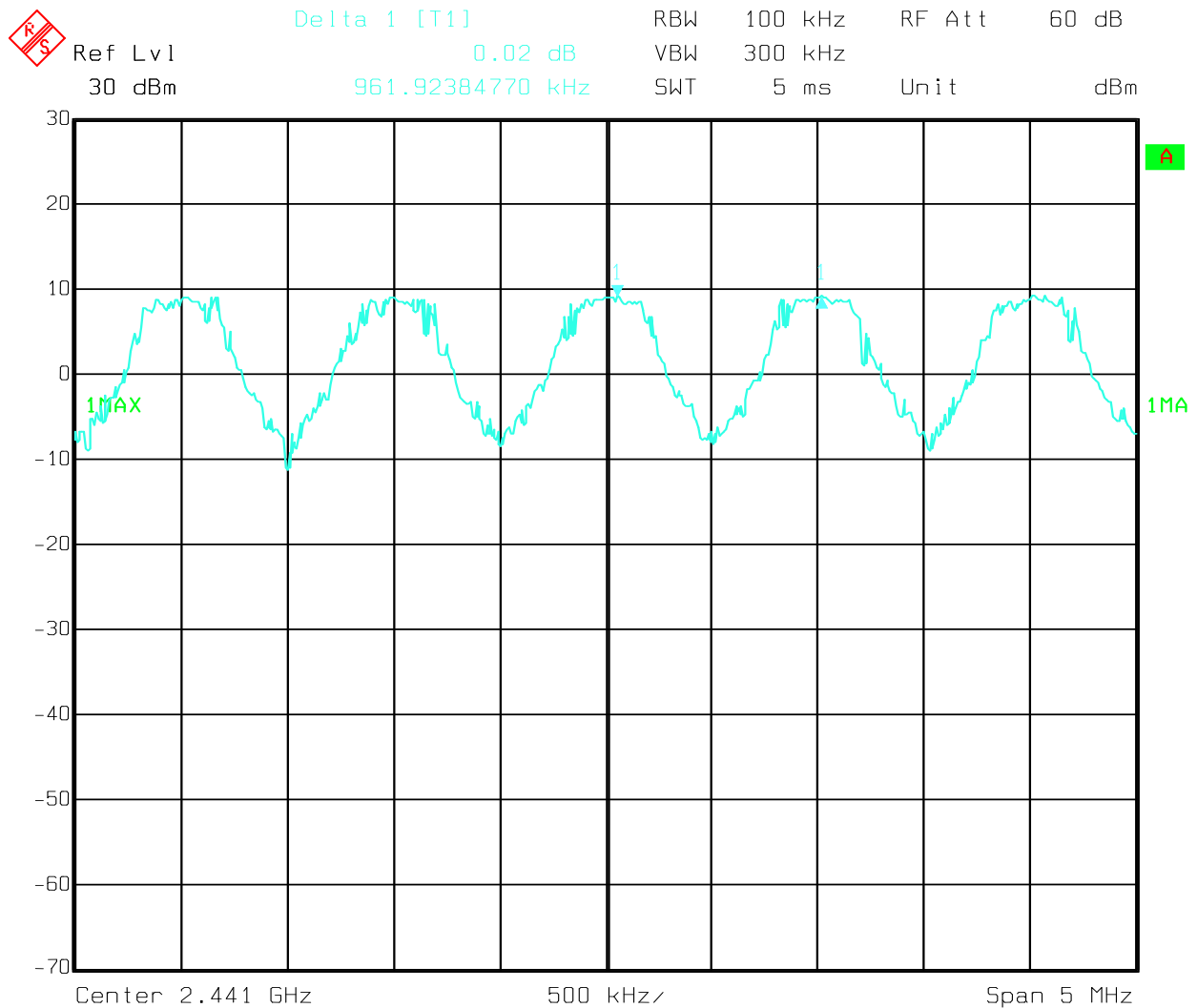
### Exhibit 6c: Bluetooth Measured Data– Pursuant 47 CFR 2.1041; RSS-Gen Section 3.

Bluetooth conducted measurement setup and procedure was provided in Exhibit 7.

#### 6c.1. Bluetooth Carrier Frequency Separation – Pursuant 47 CFR 15.247(a)(1); RSS-210 Section A8.1.

Criterion: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

The measurement shows a carrier frequency separation of 961.9 kHz, which is greater than the measured 20 dB bandwidth of 958 kHz.

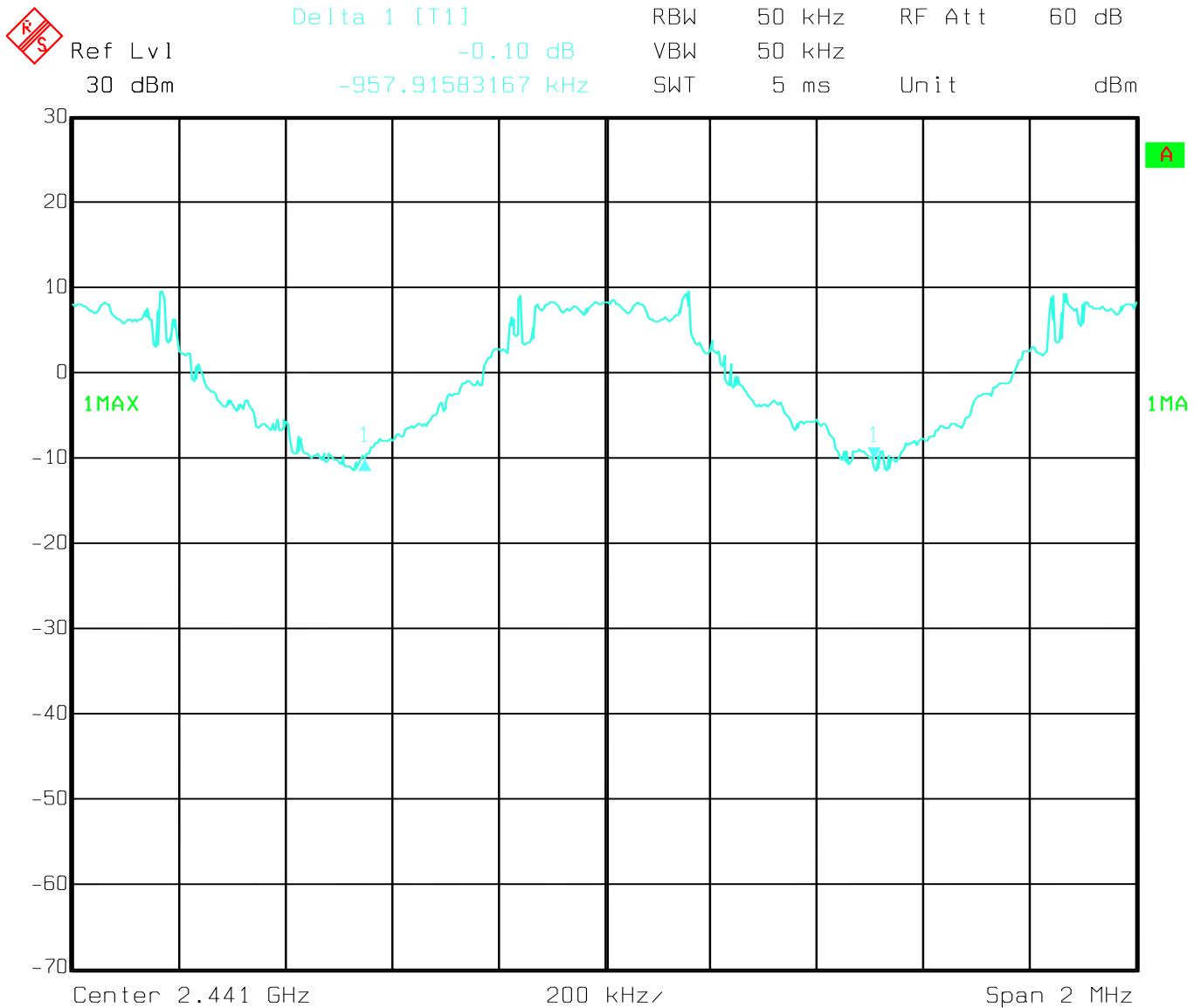


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**Figure 6c.1-1: Plot of Bluetooth carrier frequency separation**

**6c.2. 20 dB Bandwidth – Pursuant 47 CFR 15.247(a)(1); RSS-210 Section A8.1.**

The 20 dB bandwidth of the emission is 958 kHz (GFSK) and 1.37 MHz (8-DPSK).

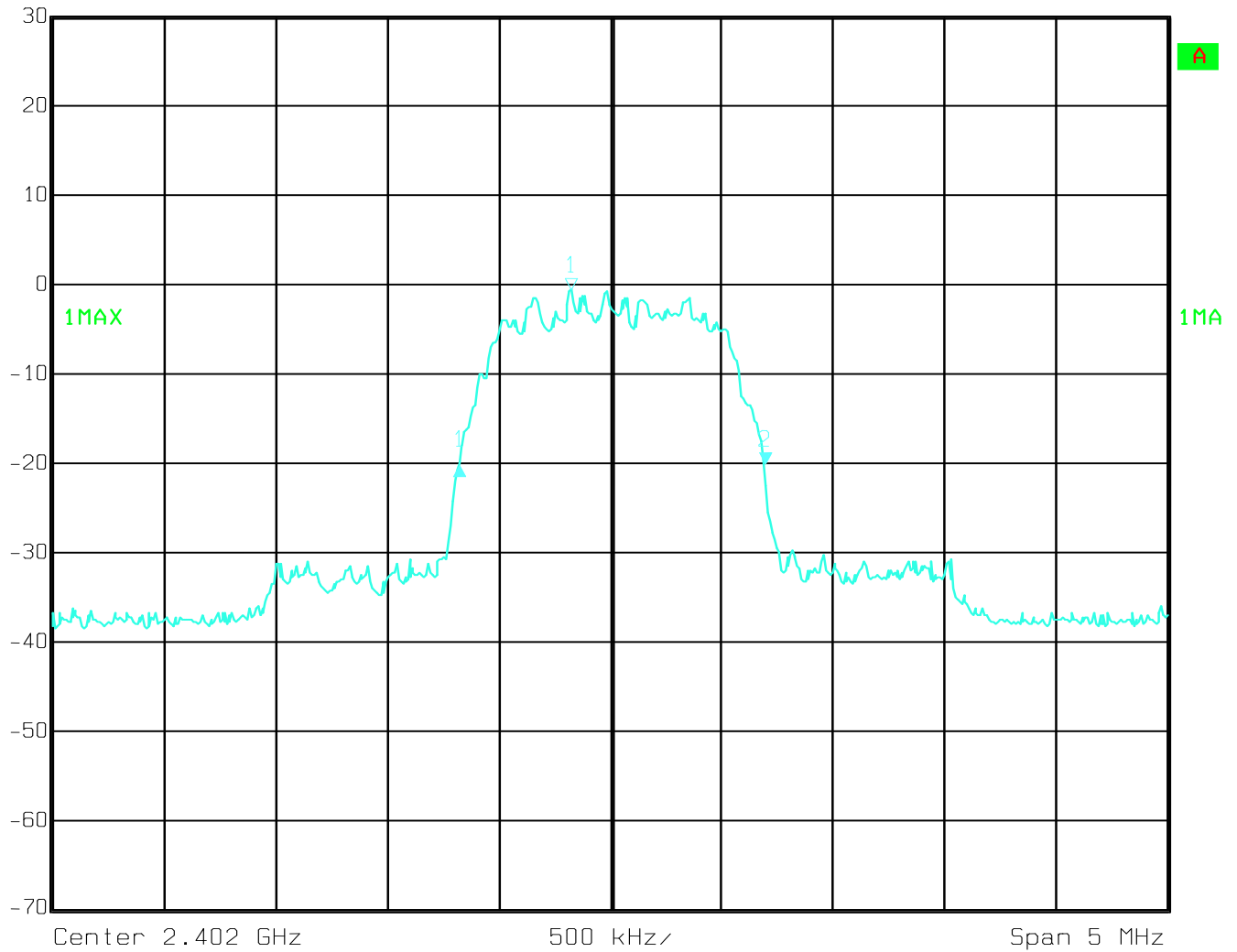


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**Figure 6c.2-1: Plot of 20 dB bandwidth (GFSK Modulation)**



Delta 1 [T1] RBW 30 kHz RF Att 60 dB  
Ref Lvl -0.01 dB VBW 30 kHz  
30 dBm -1.36773547 MHz SWT 14 ms Unit dBm



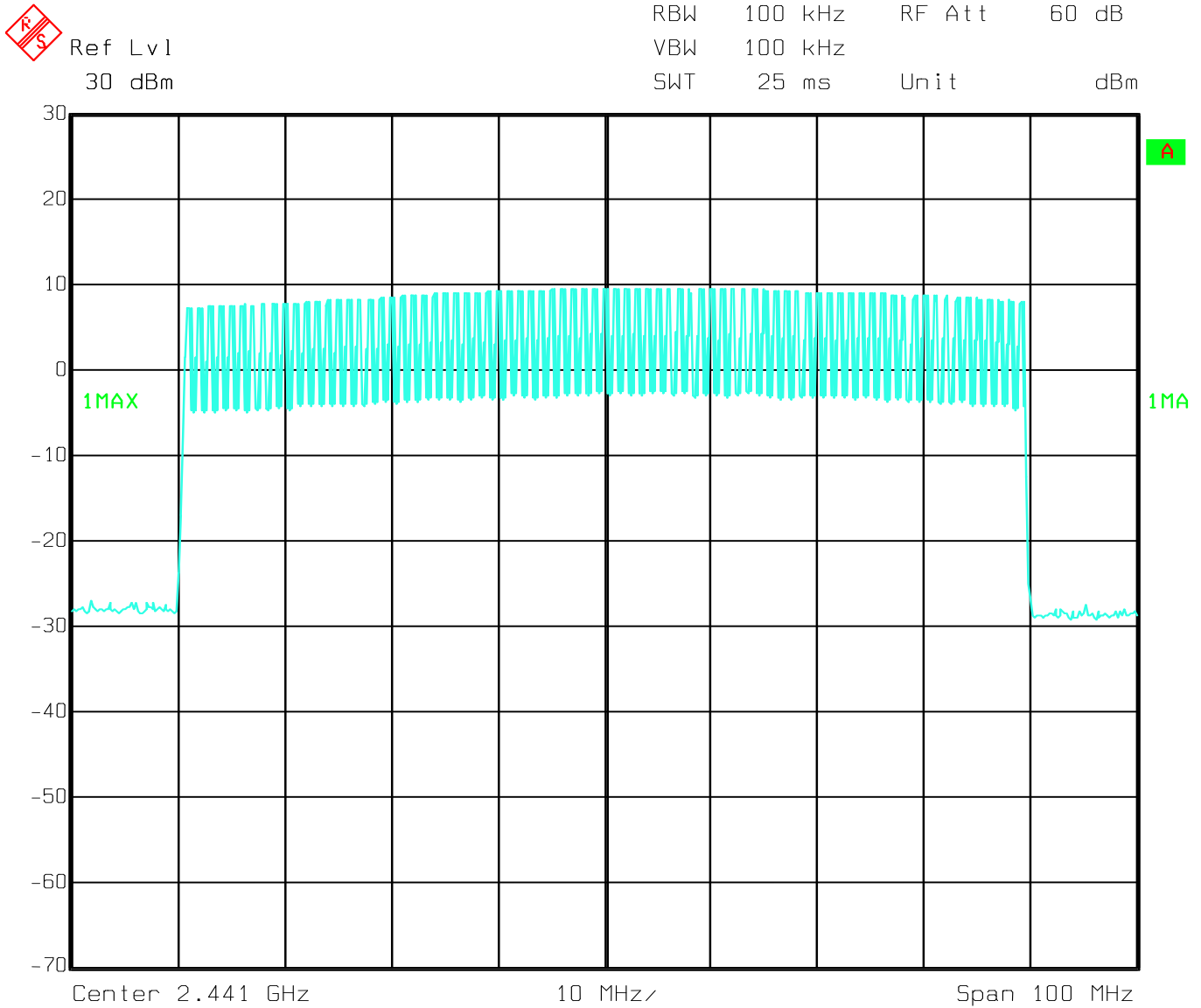
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**Figure 6c.2-2: Plot of 20 dB bandwidth (8-DPSK Modulation)**

**6c.3. Bluetooth number of hopping frequencies – Pursuant 47 CFR 15.247(a)(1)(iii); RSS-210 Section A8.1.**

Criterion: Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

The measurement shows 79 non-overlapping channels over a span of 79 MHz.



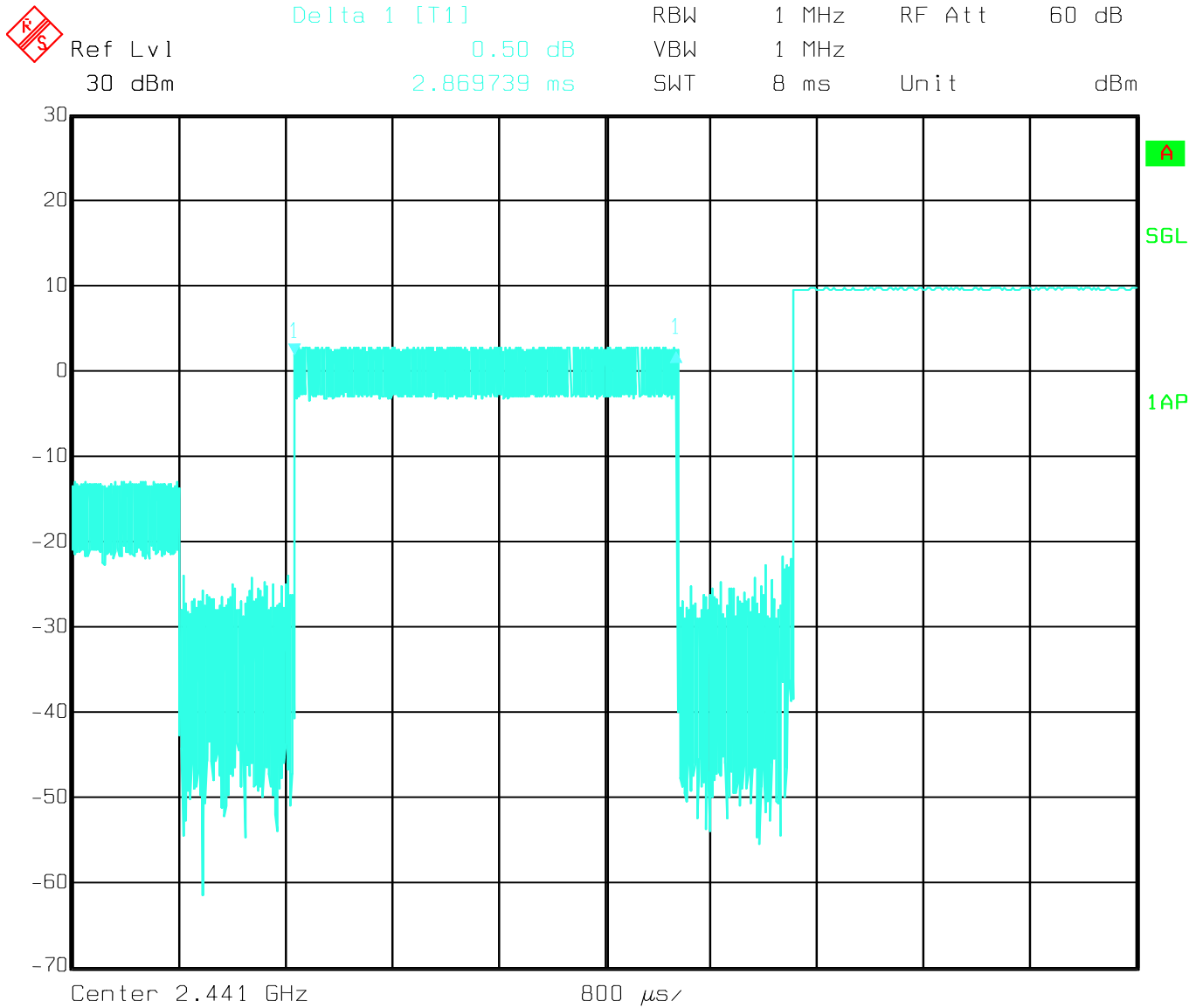
Date: 01.FEB.2010 11:40:06

**Figure 6c.3-1: Plot of number of Bluetooth hopping frequencies**

**6c.4. Time of Occupancy (Dwell Time) – Pursuant 47 CFR 15.247(a)(1)(iii); RSS-210 Section A8.1.**

Criterion: The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

The measurement shows the total dwell time for the longest Bluetooth packet, DH-5, in a 31.6 second period is 0.311 seconds.



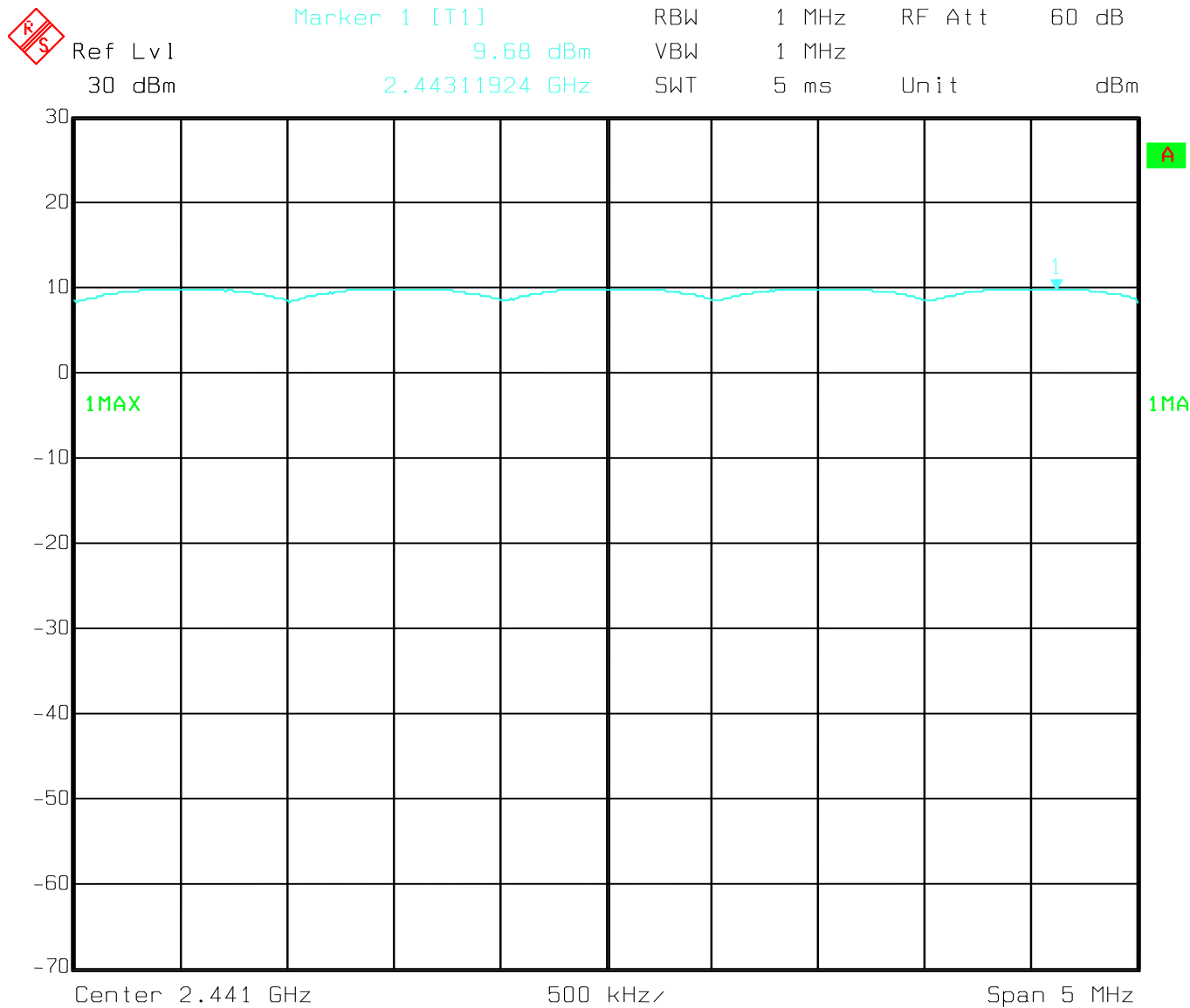
Date: 01.FEB.2010 11:54:50

**Figure 6c.4-1: Plot of dwell time over 8 m-sec period**

**6c.5. Peak Bluetooth Output Power – Pursuant 47 CFR 15.247(b)(1); RSS-210 Section A8.4.**

Criterion: For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt.

The peak output power is +9.68 dBm, which is equivalent to 9.29 mW (see Exhibit 12).



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**Figure 6c.5-1: Plot of peak output power**

**6c.6. De Facto EIRP Limit – Pursuant 47 CFR 15.247(b)(4); RSS-210 Section A8.4.**

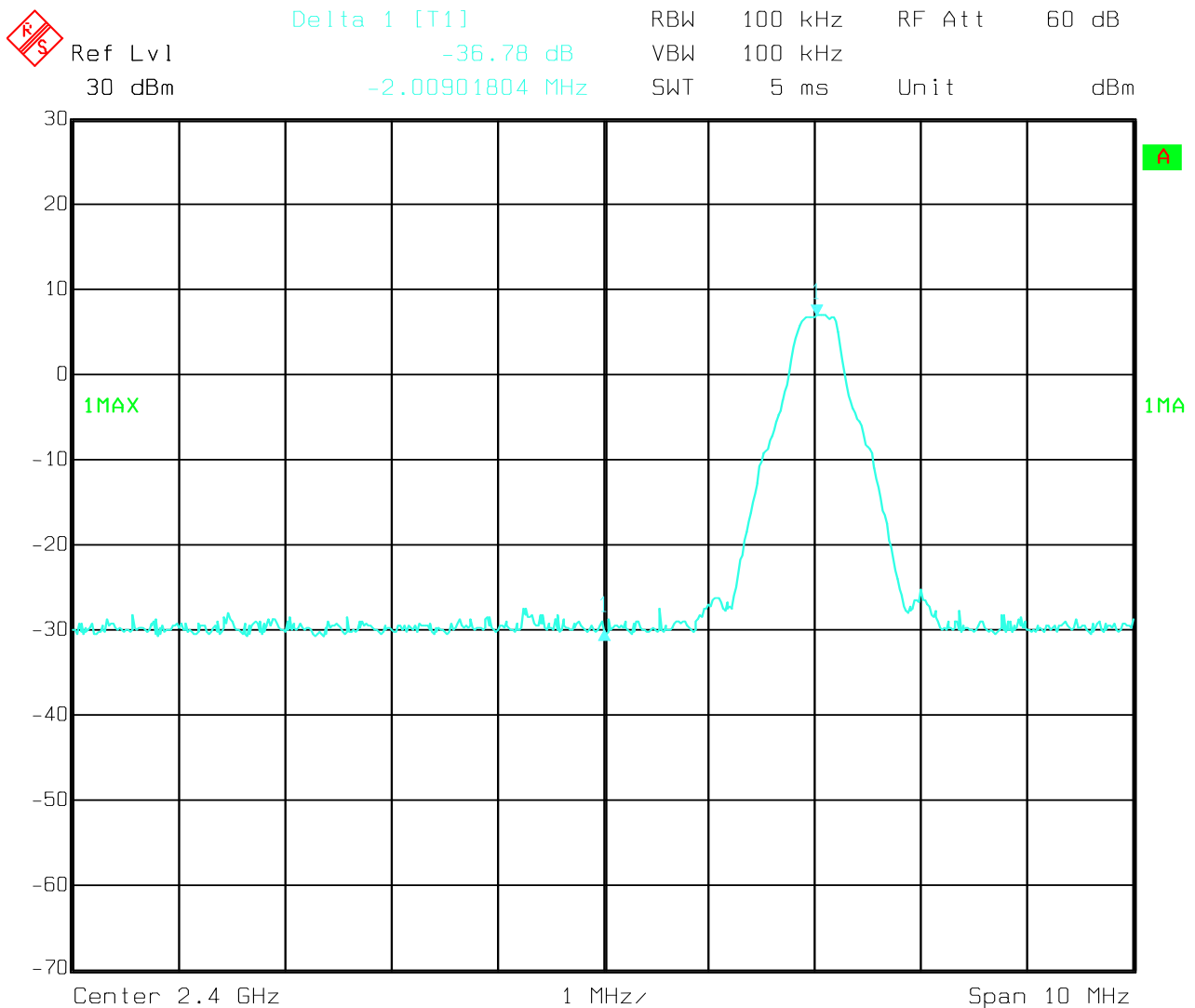
Criterion: The conducted output power limit of 1-watt is based on the use of antennas with directional gains that do not exceed 6 dB<sub>i</sub>. If transmitting antennas of directional gain greater than 6 dB<sub>i</sub> are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB<sub>i</sub>.

The antenna employed by this transmitter is intended to be omni-directional, and thus will not exhibit directional gain in excess of 6 dB<sub>i</sub>. The conducted power is less than the limits set forth (see elsewhere in this report for details).

**6c.7. Band-Edge Compliance of RF Conducted Emissions – Pursuant 47 CFR 15.247(d); RSS-210 Section A8.1.**

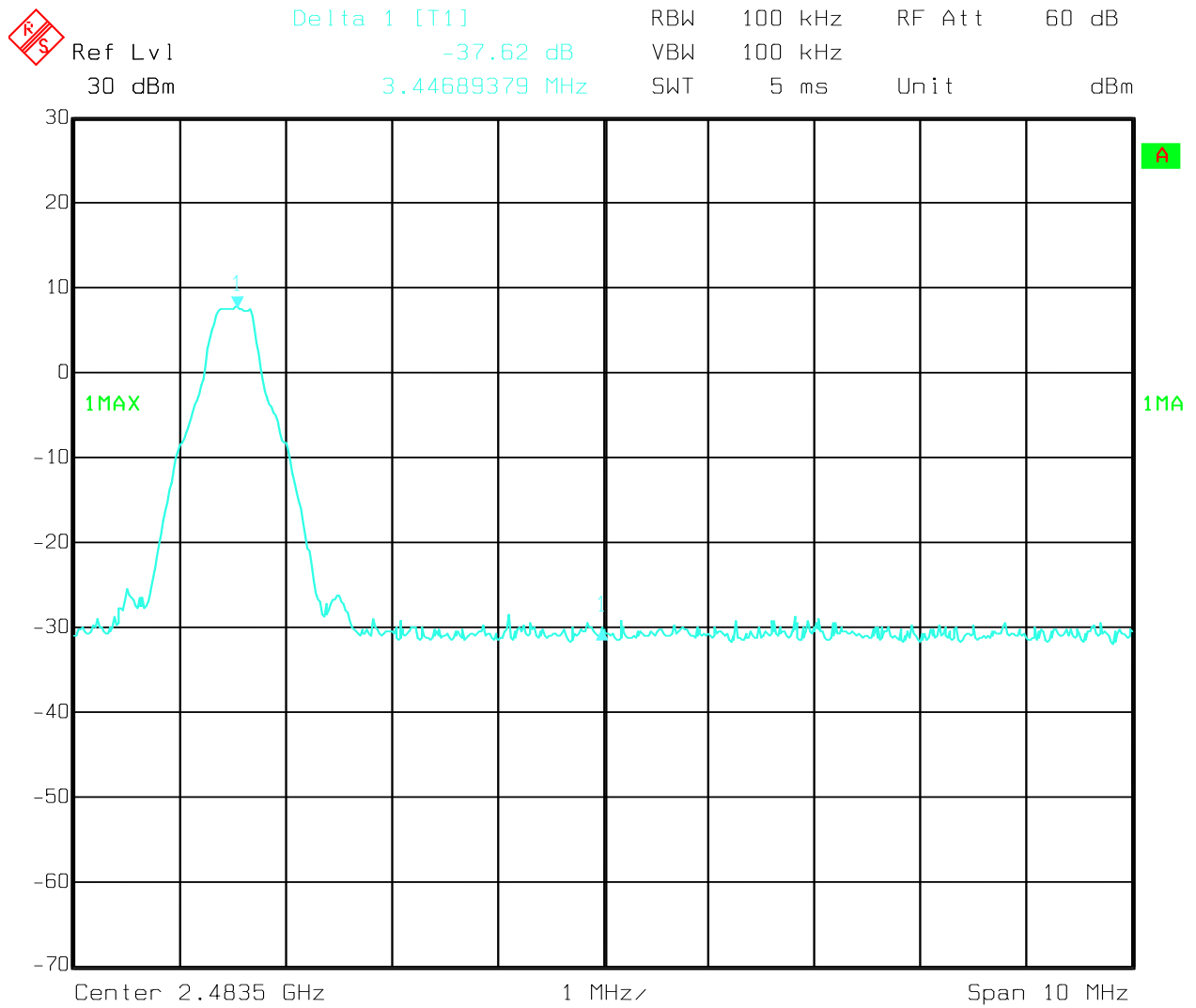
Criterion: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

The measurement shows 36.78 dB at the lower band edge and 37.62 dB at the upper band edge with the hopping function disabled. The measurement shows 35.92 dB at the lower band edge and 38.56 dB at the upper band edge with the hopping function enabled.



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**Figure 6c.6-1: Plot of lower band-edge conducted emissions with hopping disabled (GFSK Modulation).**

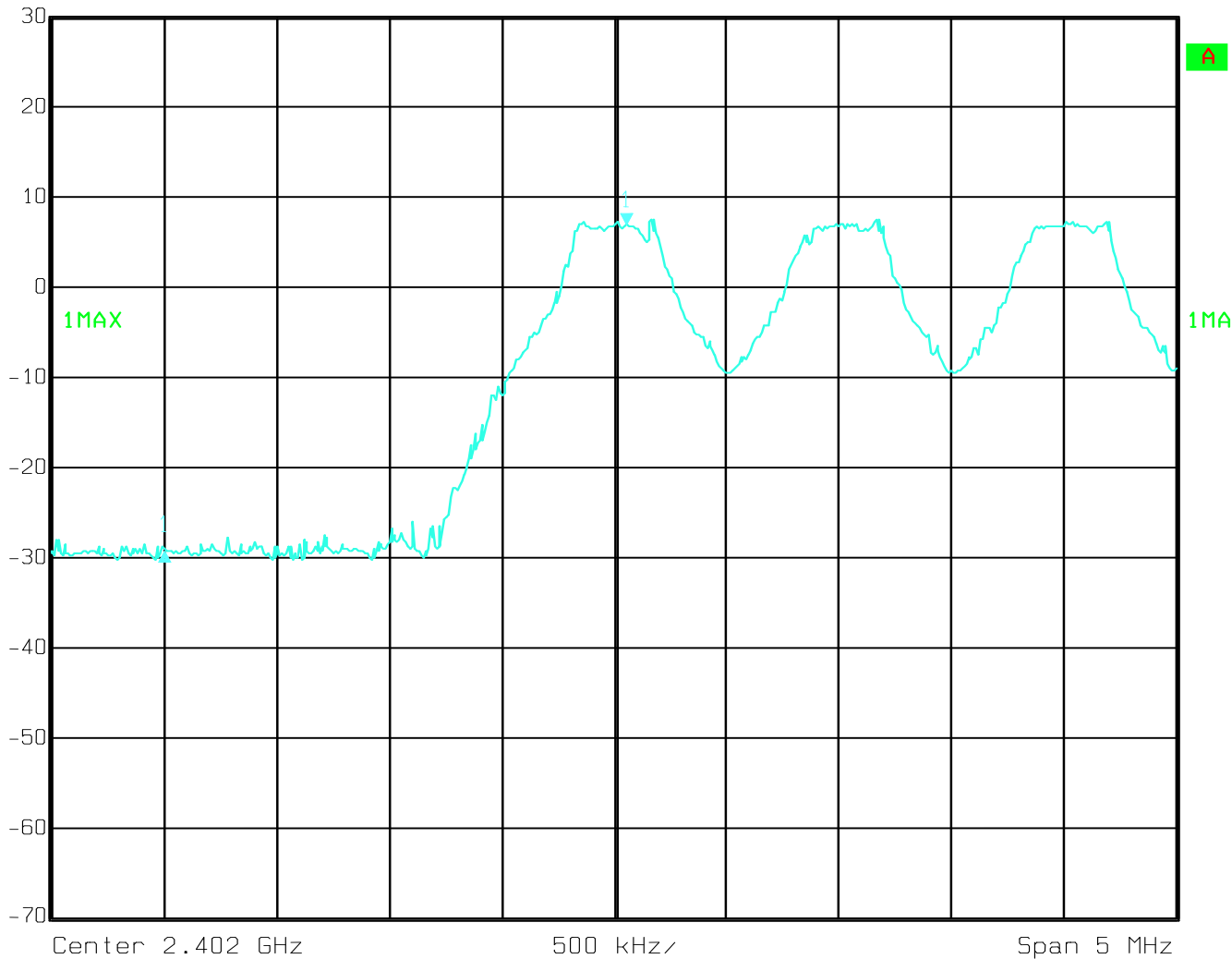


Date: 01.FEB.2010 12:30:04

**Figure 6c.6-2: Plot of upper band-edge conducted emissions with hopping disabled (GFSK Modulation).**



Delta 1 [T1] RBW 100 kHz RF Att 60 dB  
Ref Lvl -35.92 dB VBW 100 kHz  
30 dBm -2.05410822 MHz SWT 5 ms Unit dBm

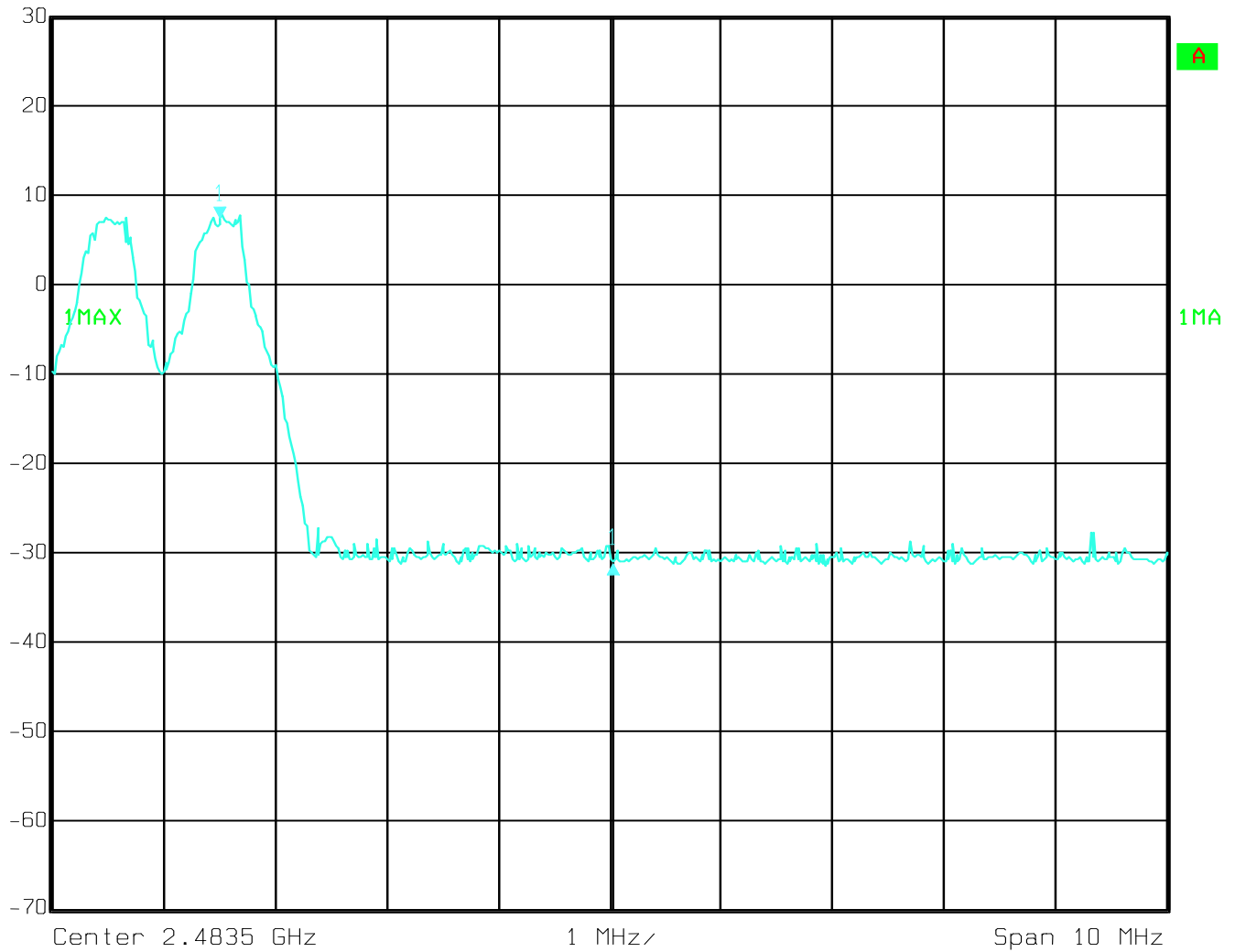


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**Figure 6c.6-3: Plot of lower band-edge conducted emissions with hopping enabled (GFSK Modulation).**



Delta 1 [T1] RBW 100 kHz RF Att 60 dB  
Ref Lvl -38.56 dB VBW 100 kHz  
30 dBm 3.52705411 MHz SWT 5 ms Unit dBm

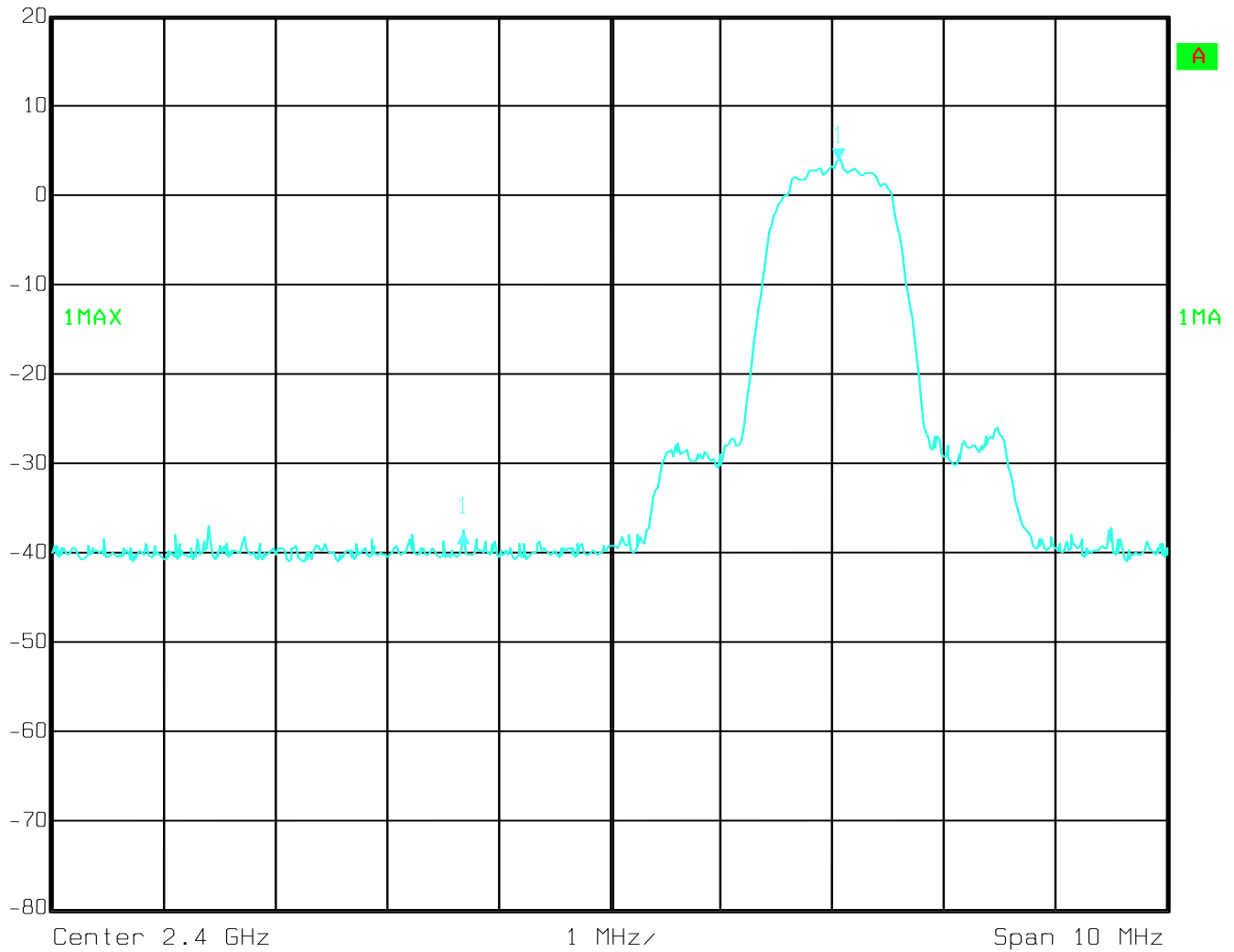


Date: 01.FEB.2010 12:09:20

**Figure 6c.6-4: Plot of upper band-edge conducted emissions with hopping enabled (GFSK Modulation).**

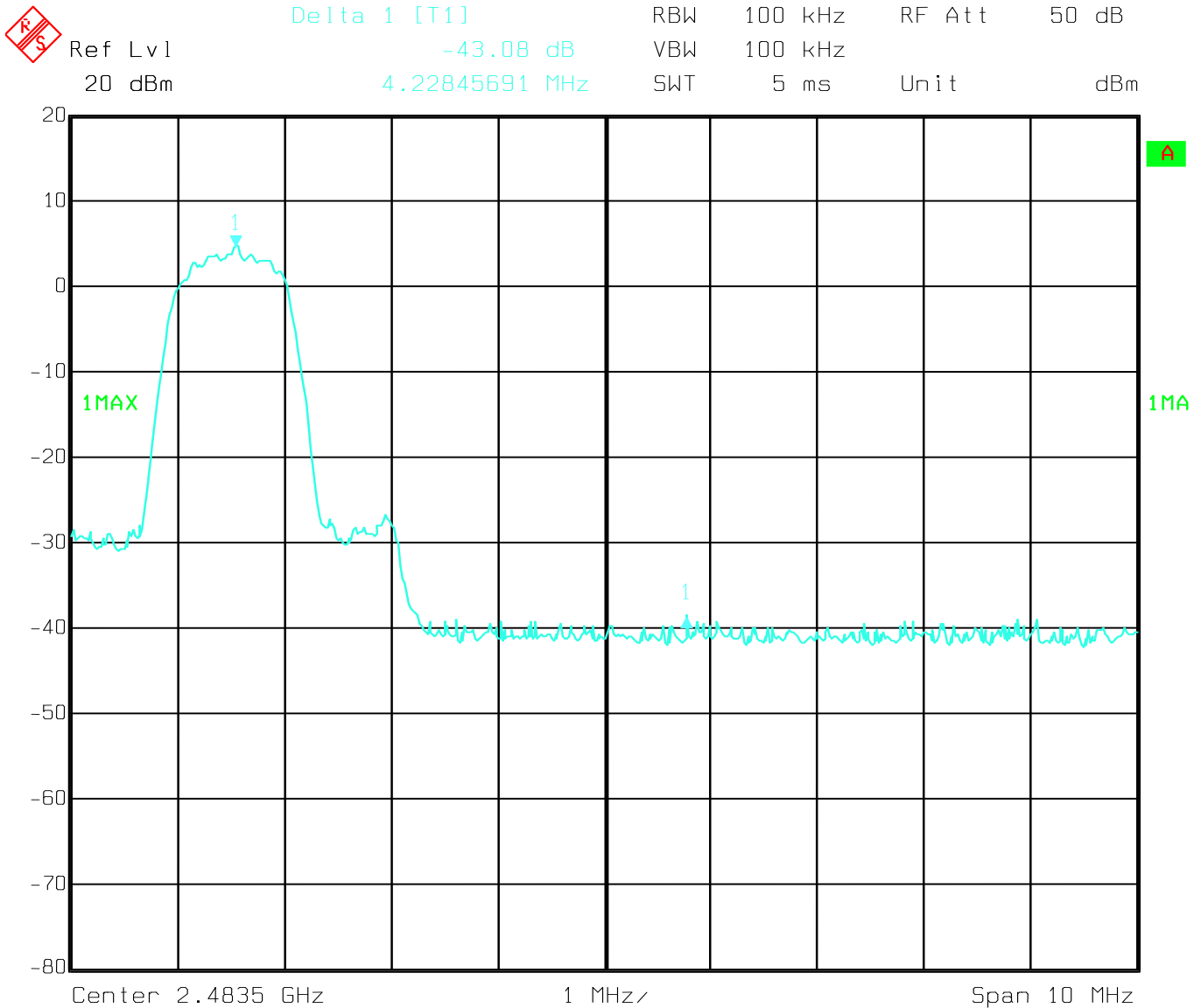


Delta 1 [T1] RBW 100 kHz RF Att 50 dB  
Ref Lvl -41.64 dB VBW 100 kHz  
20 dBm -3.38673347 MHz SWT 5 ms Unit dBm



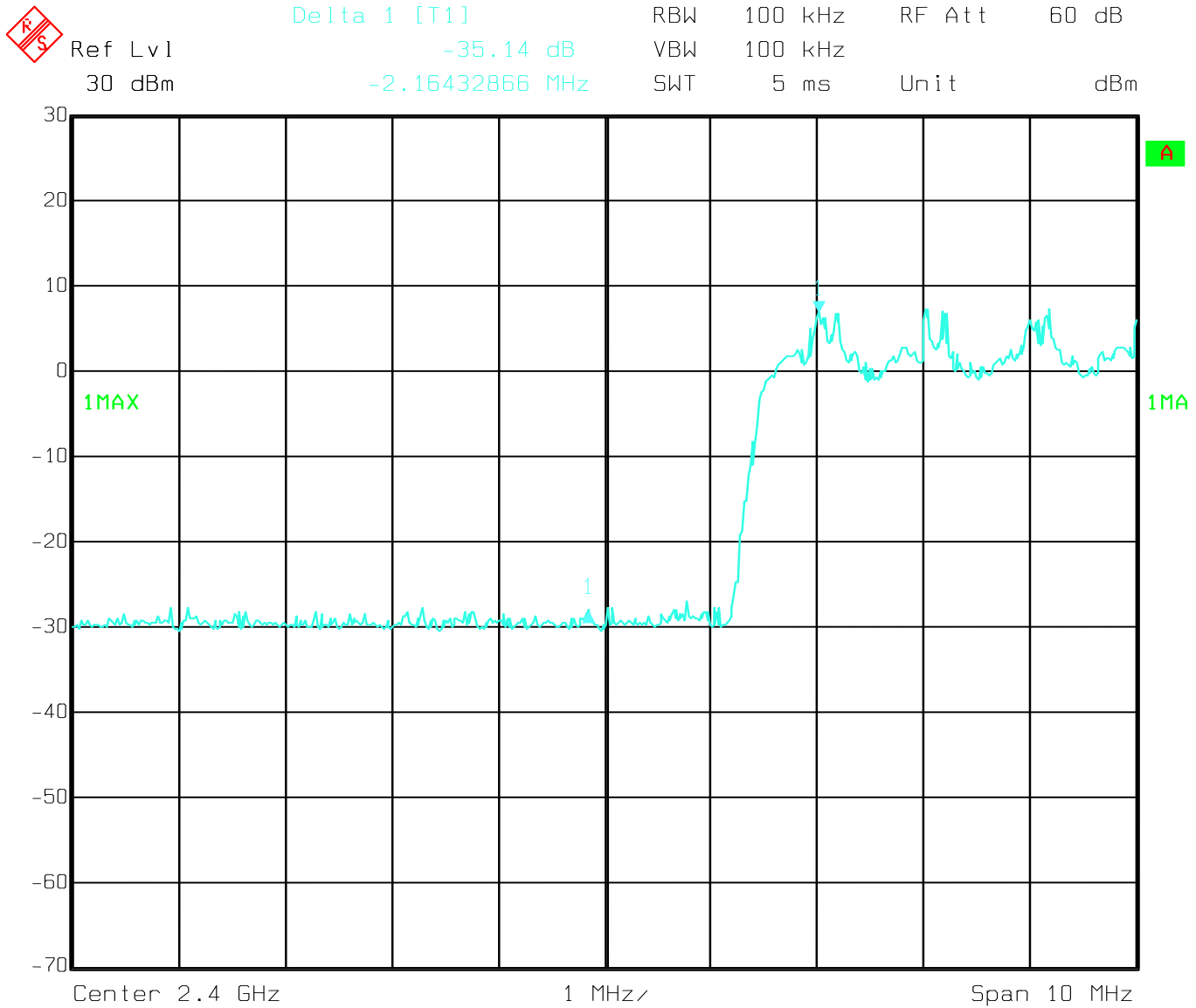
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**Figure 6c.6-5: Plot of lower band-edge conducted emissions with hopping disabled (P/4 DPSK Modulation).**



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**Figure 6c.6-6: Plot of upper band-edge conducted emissions with hopping disabled (P/4 DPSK Modulation).**

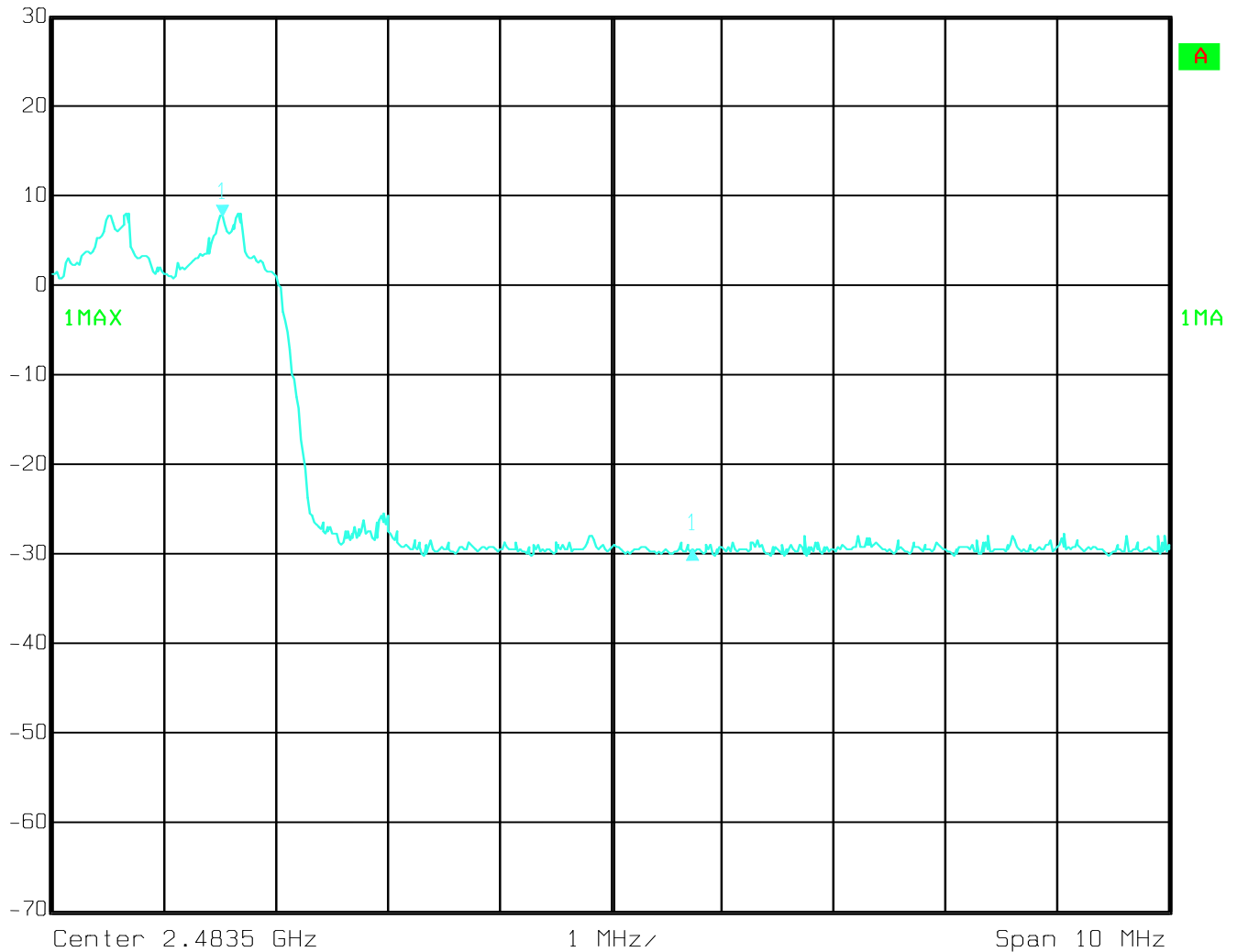


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**Figure 6c.6-7: Plot of lower band-edge conducted emissions with hopping enabled (P/4 DPSK Modulation).**

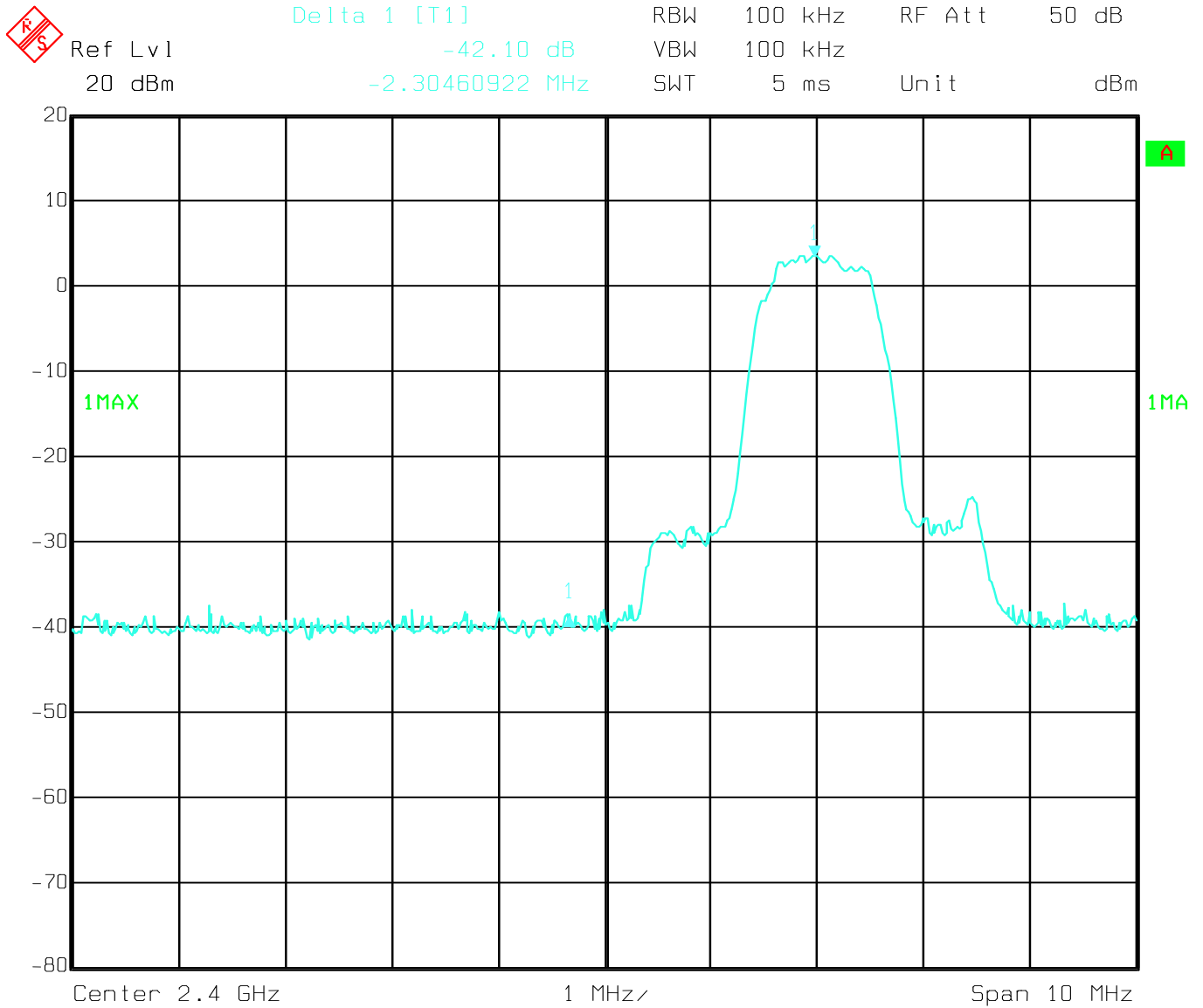


Delta 1 [T1] RBW 100 kHz RF Att 60 dB  
Ref Lvl -37.11 dB VBW 100 kHz  
30 dBm 4.20841683 MHz SWT 5 ms Unit dBm



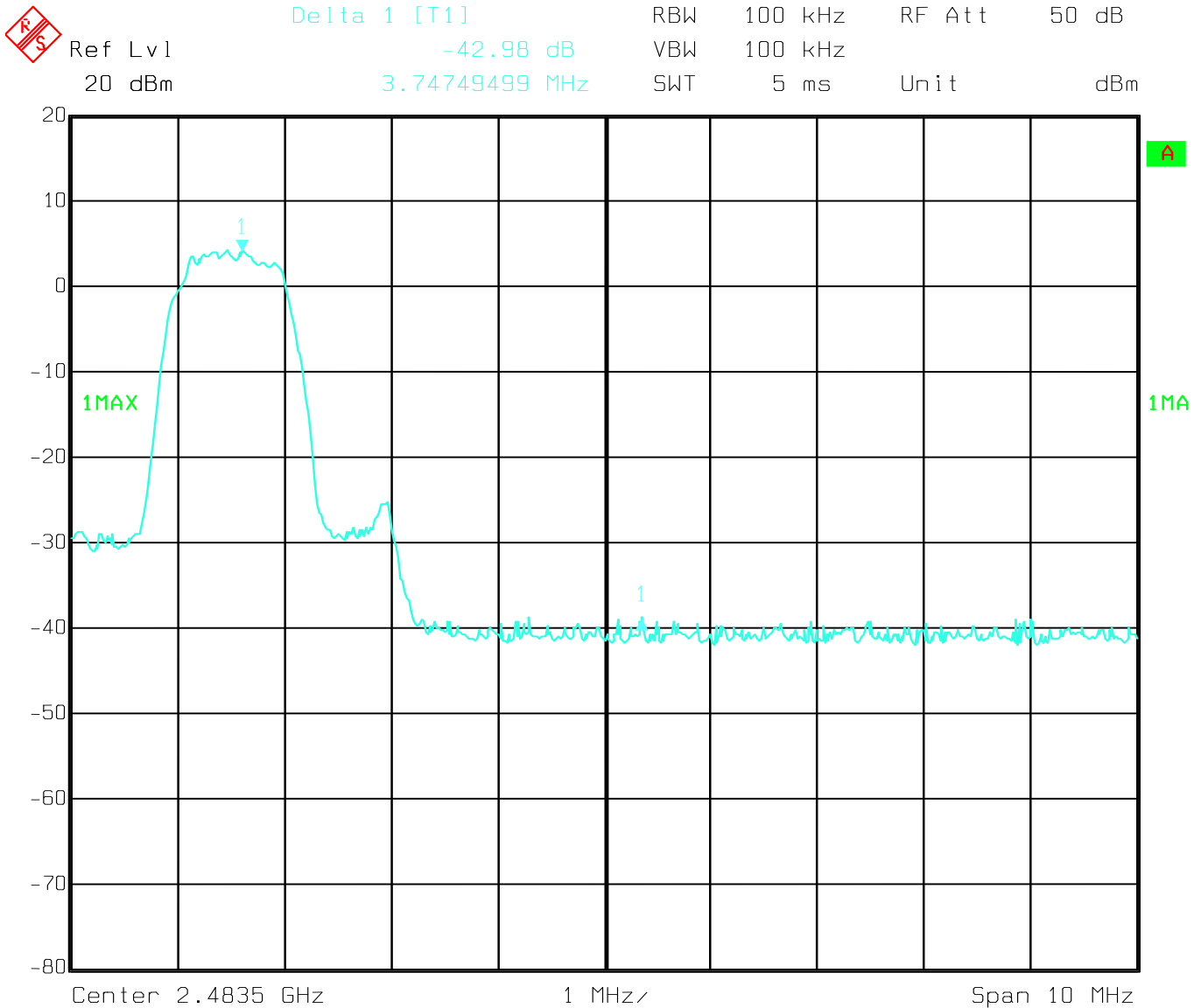
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**Figure 6c.6-8: Plot of upper band-edge conducted emissions with hopping enabled (P/4 DPSK Modulation).**



Date: 03.FEB.2010 09:50:24

**Figure 6c.6-9: Plot of lower band-edge conducted emissions with hopping disabled (8 DPSK Modulation).**

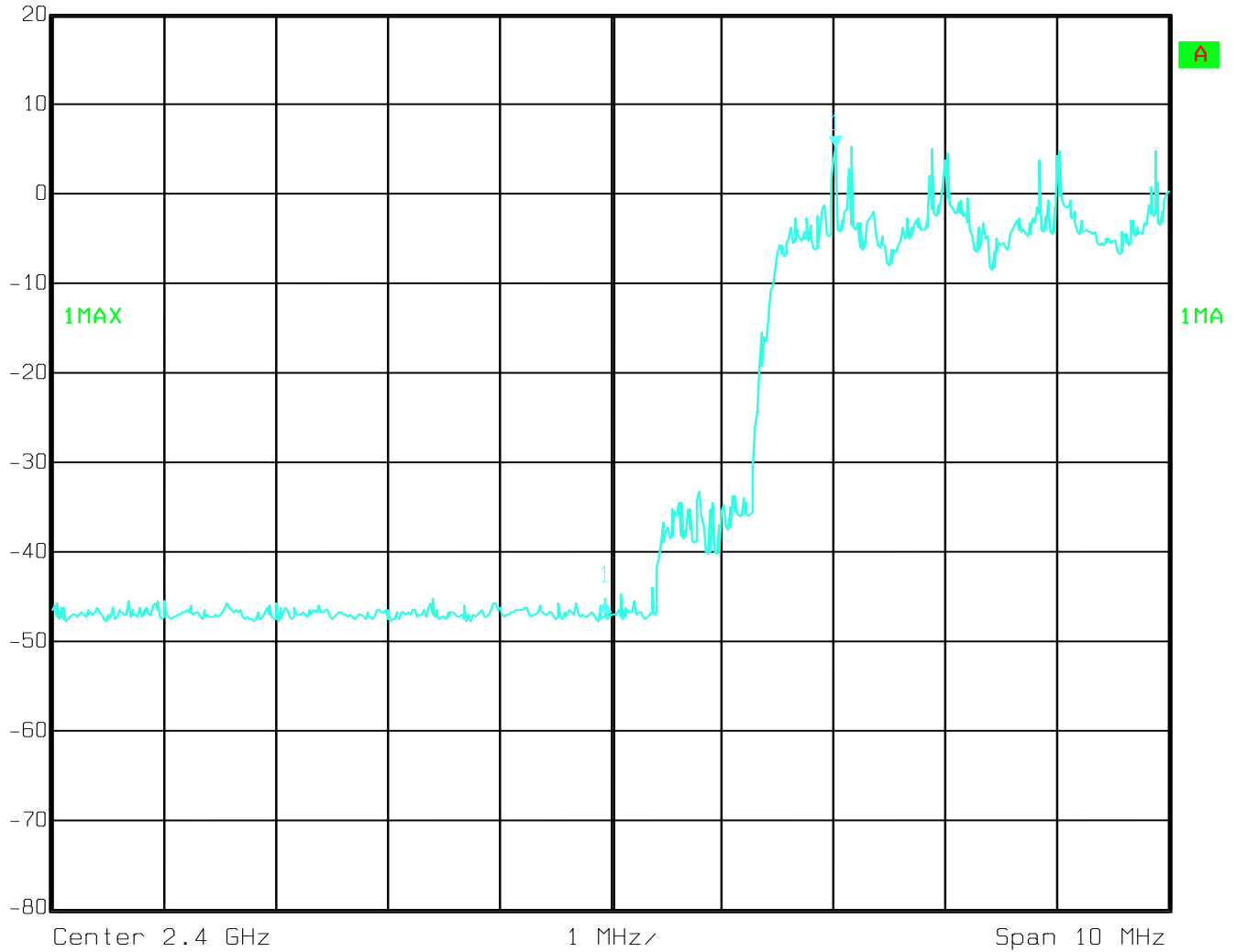


Date: 03.FEB.2010 09:48:30

**Figure 6c.6-10: Plot of upper band-edge conducted emissions with hopping disabled (8 DPSK Modulation).**

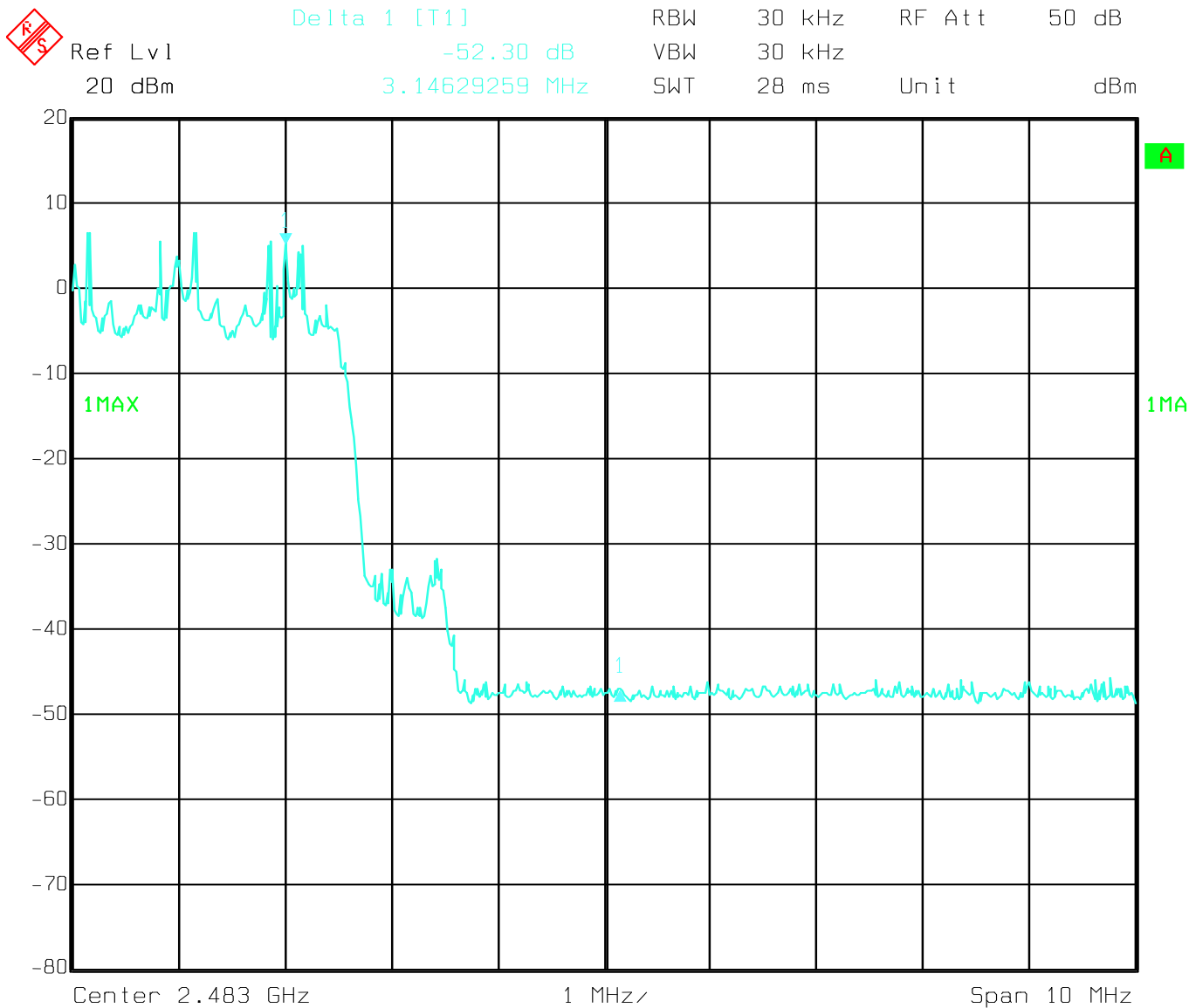


Delta 1 [T1] RBW 30 kHz RF Att 50 dB  
Ref Lvl -50.37 dB VBW 30 kHz  
20 dBm -2.05811623 MHz SWT 28 ms Unit dBm



Date: 03.FEB.2010 10:17:00

**Figure 6c.6-11: Plot of lower band-edge conducted emissions with hopping enabled (8 DPSK Modulation).**



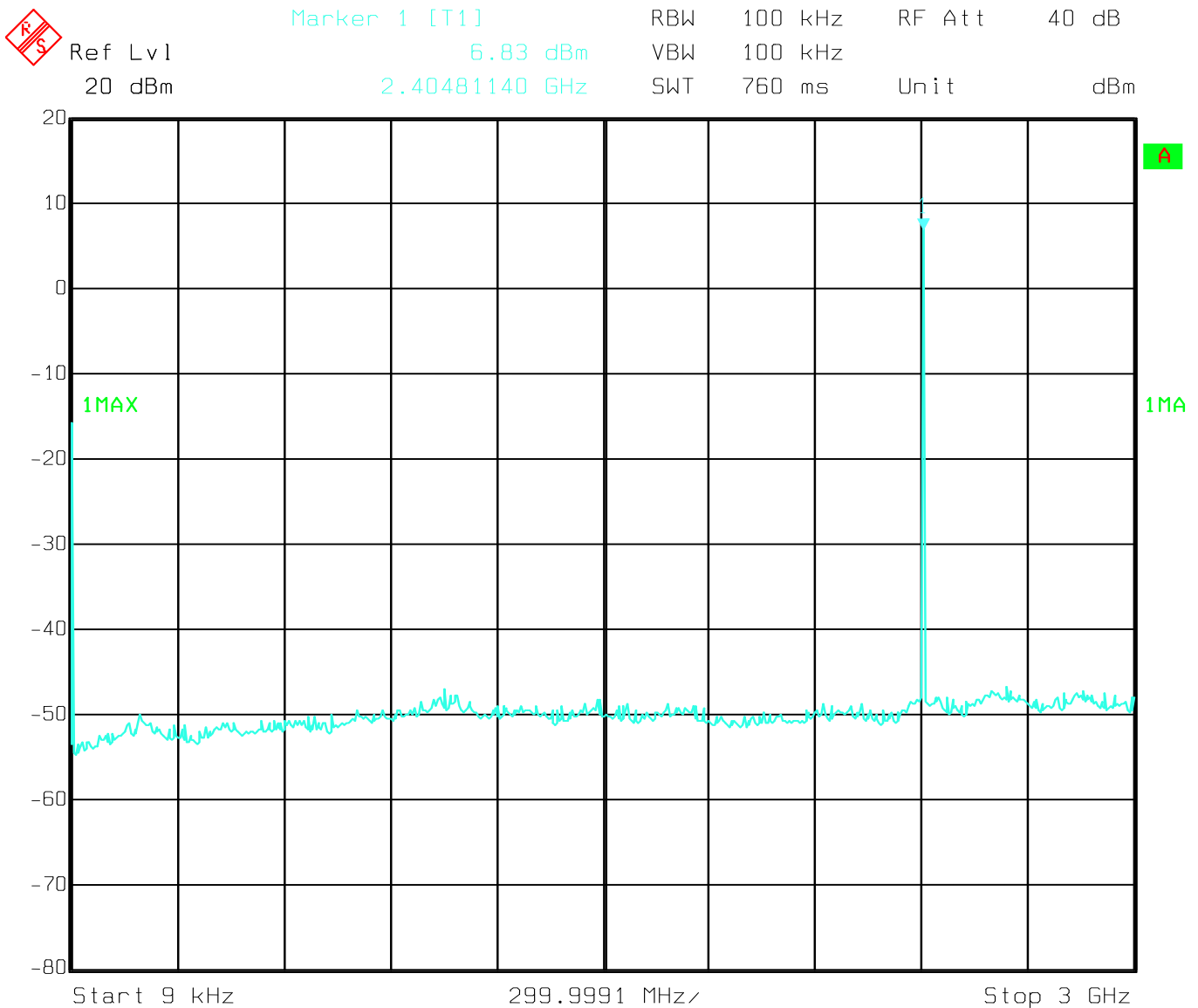
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**Figure 6c.6-12: Plot of upper band-edge conducted emissions with hopping enabled (8 DPSK Modulation).**

**6c.8. Spurious RF Conducted Emissions – Pursuant 47 CFR 15.247(d); RSS-210 A8.5.**

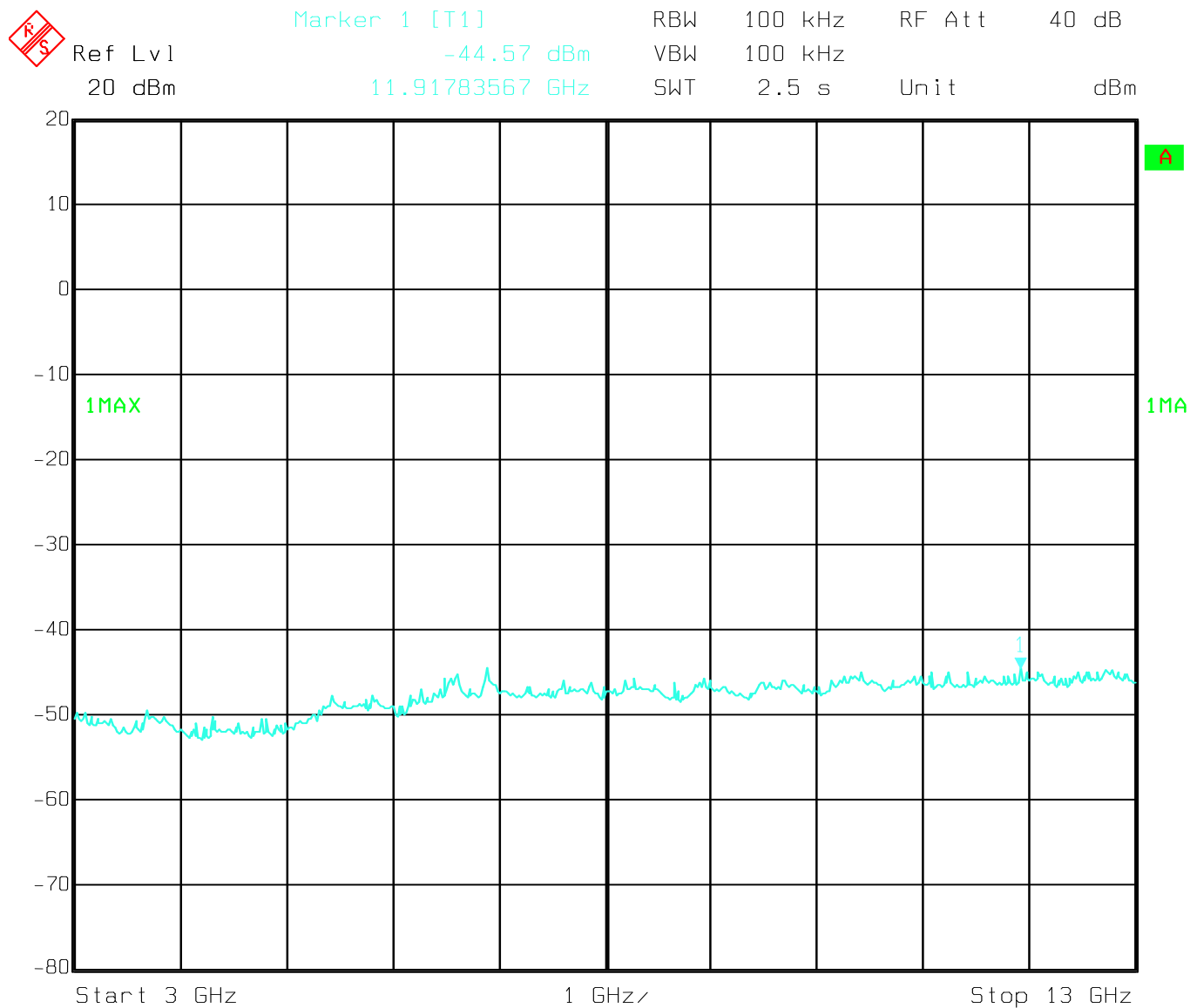
Criterion: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

The emissions are below 30 dBc at the second harmonic of the transmit frequency and far lower at all other frequencies.



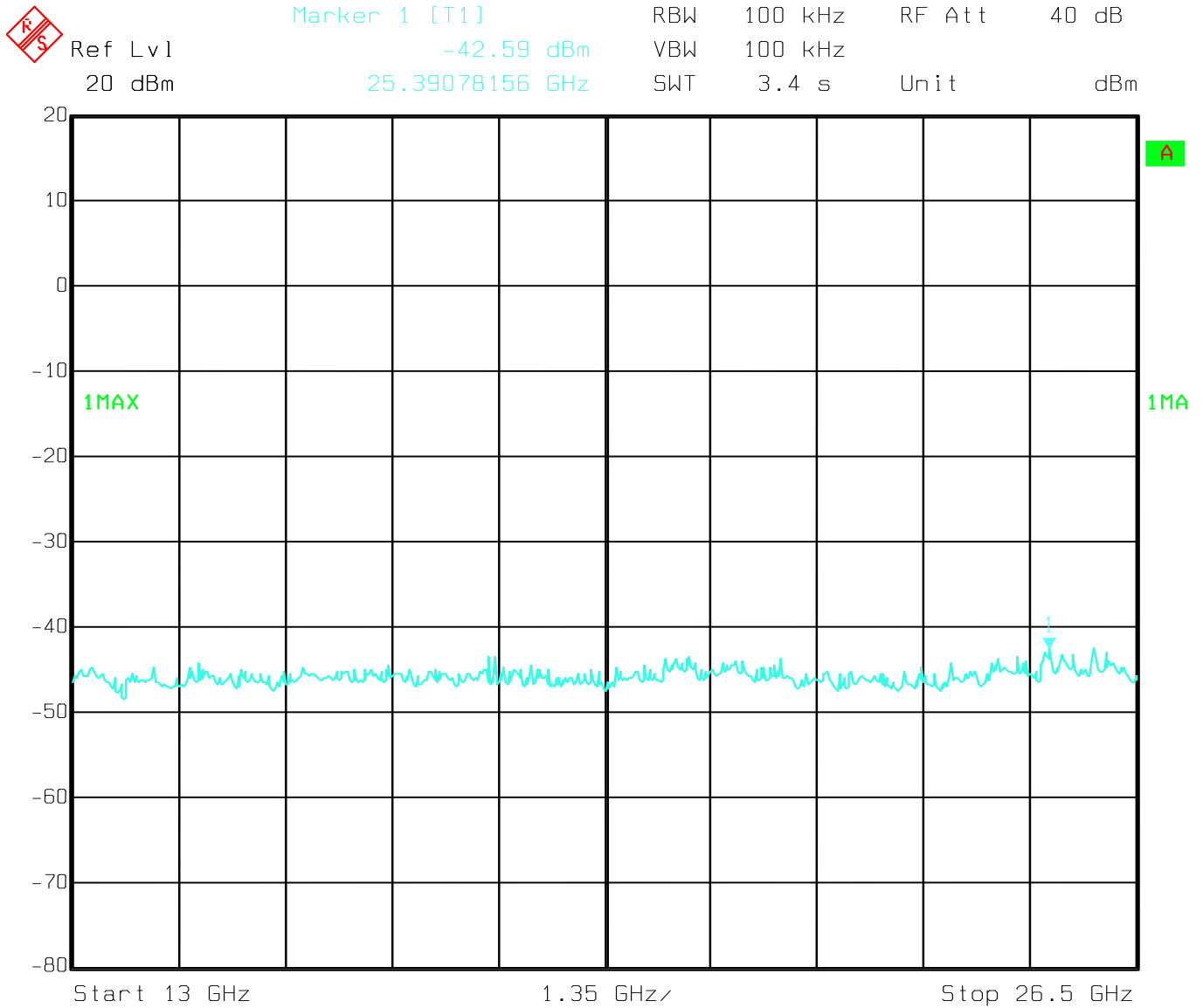
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**Figure 6c.7-1: Plot of spurious conducted emissions 9 kHz – 3 GHz (Low Channel Enabled).**



Date: 02.FEB.2010 09:31:37

**Figure 6c.7-2: Plot of spurious conducted emissions 3 GHz – 13 GHz (Low Channel Enabled).**

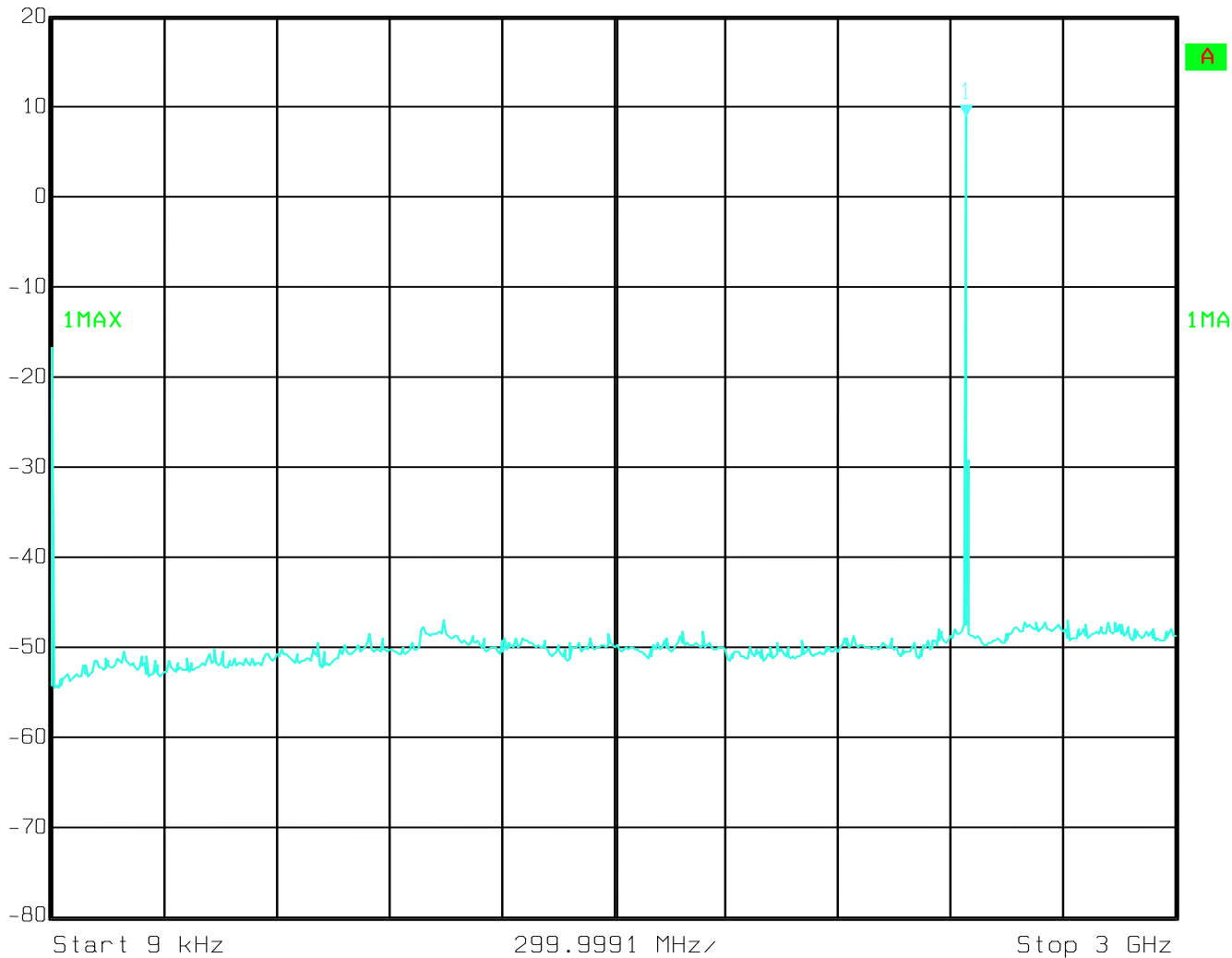


Date: 02.FEB.2010 09:32:24

**Figure 6c.7-3: Plot of spurious conducted emissions 13 GHz – 26.5 GHz (Low Channel Enabled).**



Marker 1 [T1] RBW 100 kHz RF Att 40 dB  
Ref Lvl 8.90 dBm VBW 100 kHz  
20 dBm 2.44088344 GHz SWT 760 ms Unit dBm

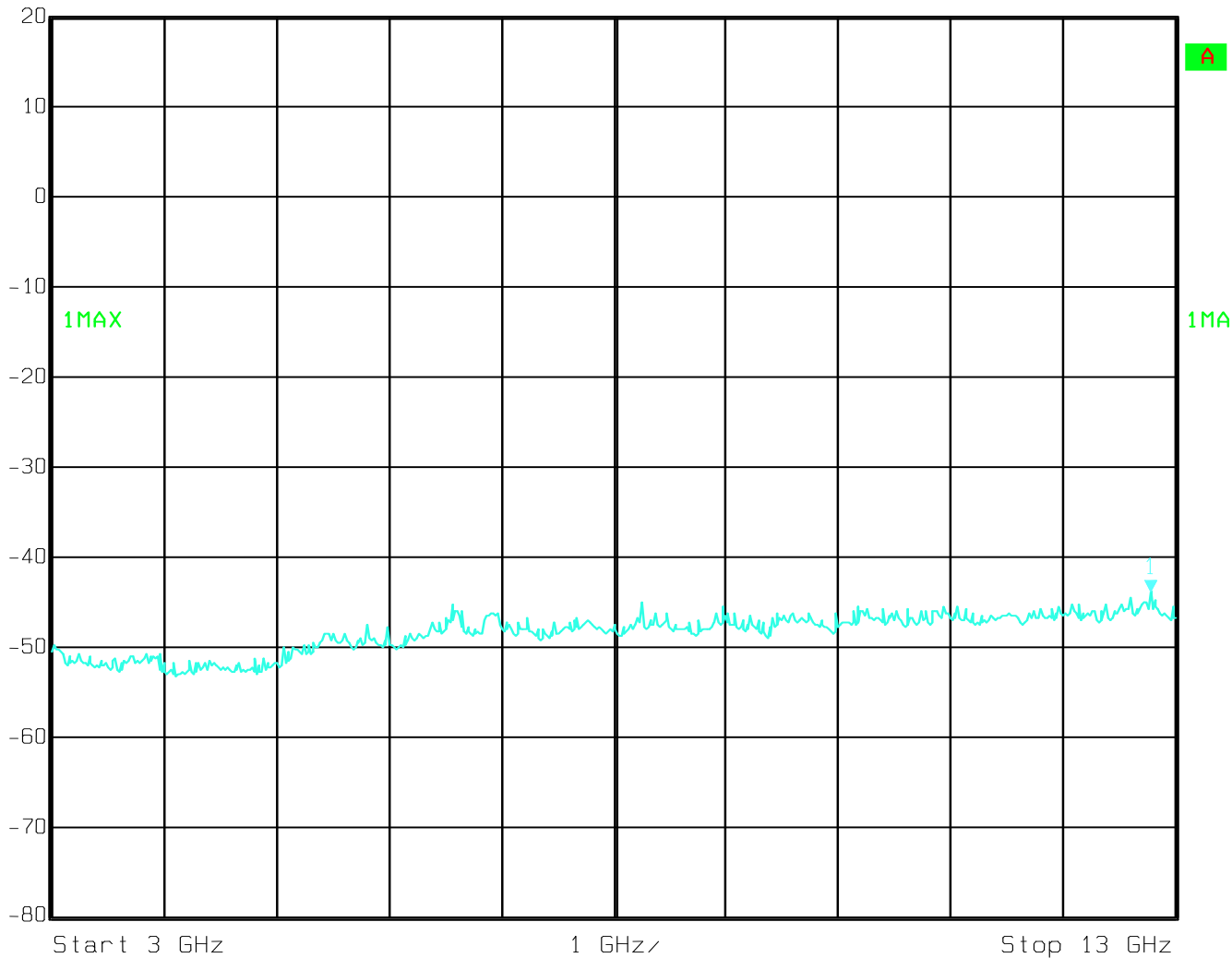


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**Figure 6c.7-4: Plot of spurious conducted emissions 9 kHz – 3 GHz (Mid Channel Enabled).**



Marker 1 [T1] RBW 100 kHz RF Att 40 dB  
-43.81 dBm VBW 100 kHz  
12.77955912 GHz SWT 2.5 s Unit dBm  
Ref Lvl 20 dBm

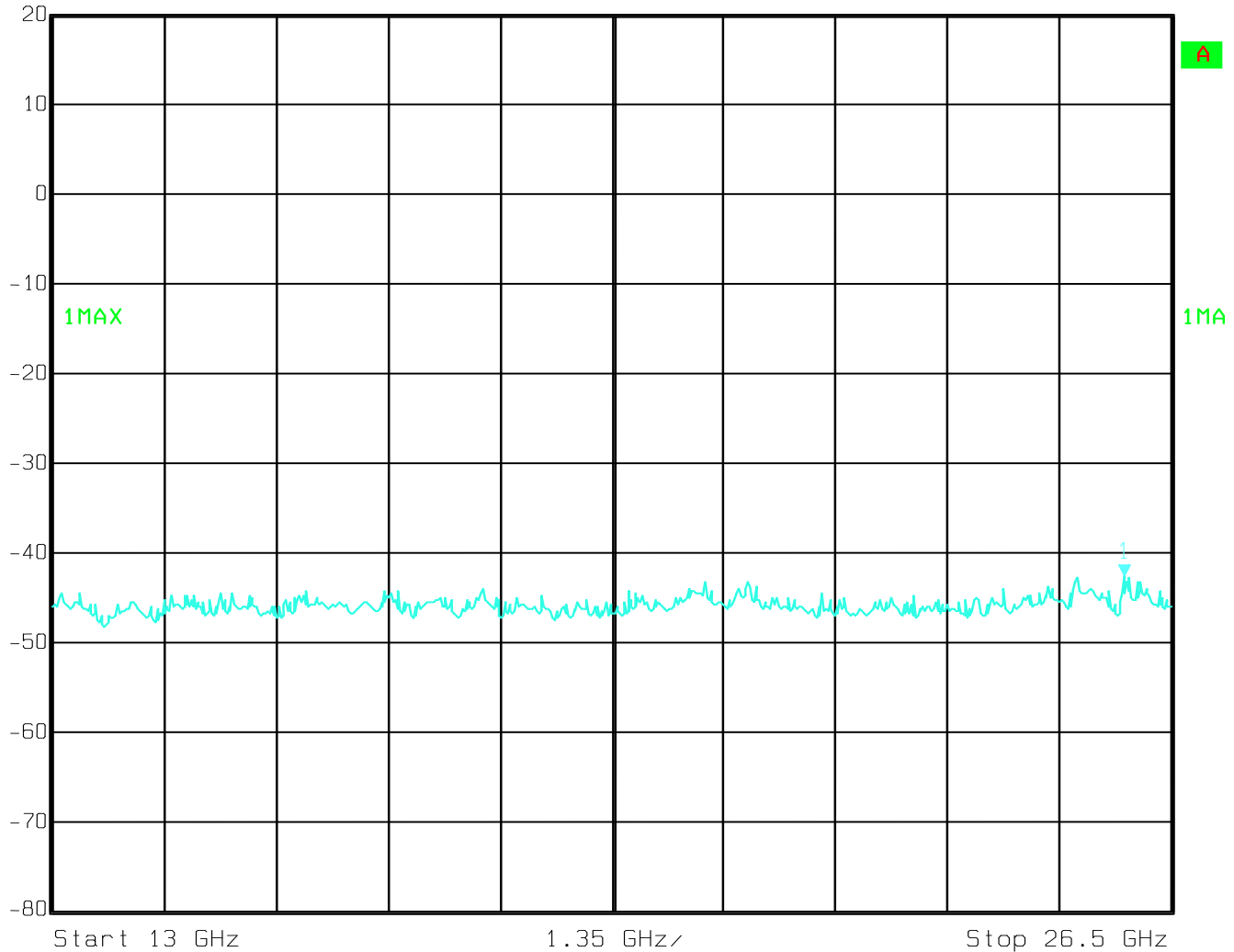


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**Figure 6c.7-5: Plot of spurious conducted emissions 3 GHz – 13 GHz (Mid Channel Enabled).**



Ref Lvl 20 dBm  
Marker 1 [T1] -42.54 dBm  
25.93186373 GHz  
RBW 100 kHz  
RF Att 40 dB  
VBW 100 kHz  
SWT 3.4 s  
Unit dBm

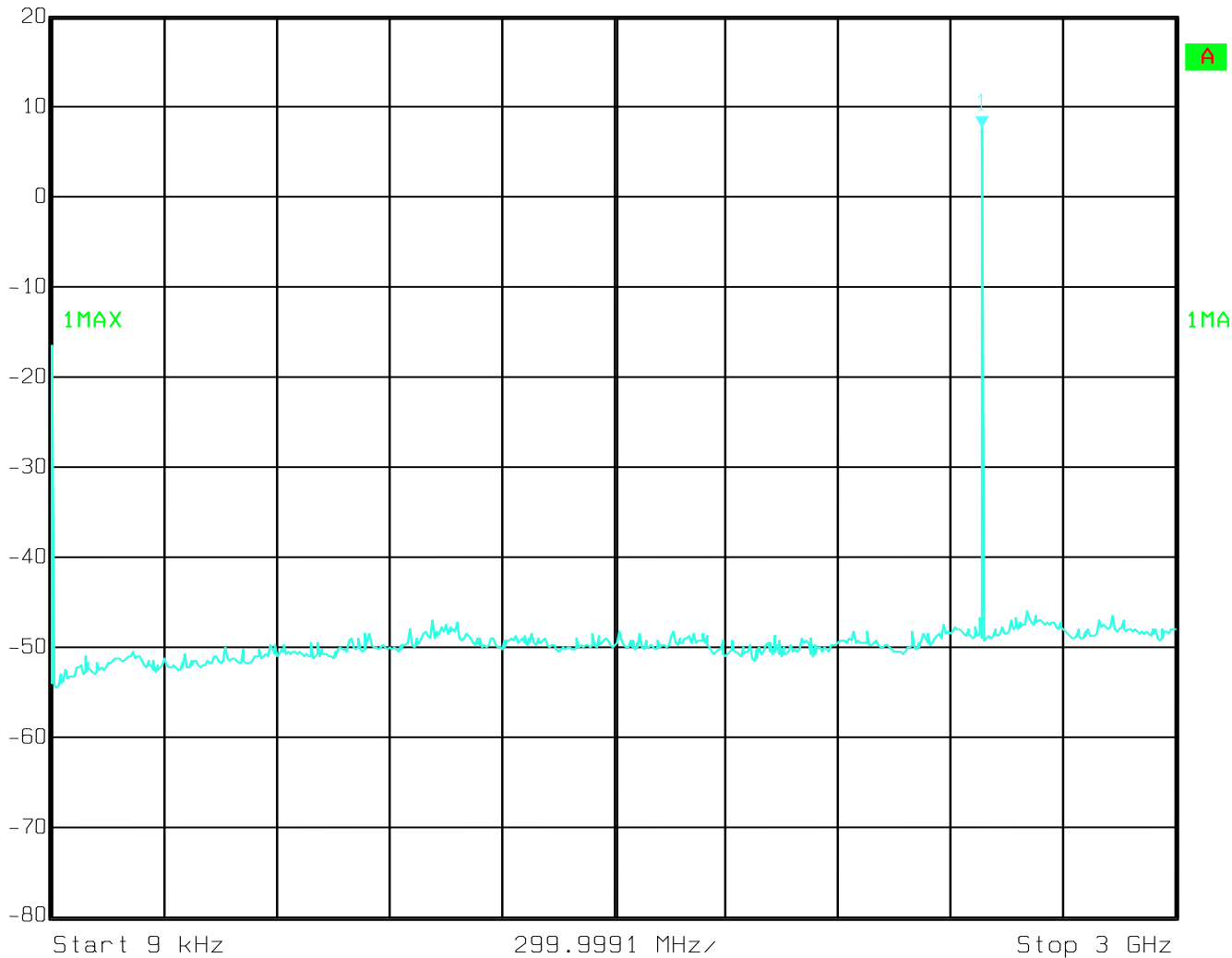


Date: 02.FEB.2010 09:34:45

**Figure 6c.7-6: Plot of spurious conducted emissions 13 GHz – 26.5 GHz (Mid Channel Enabled).**

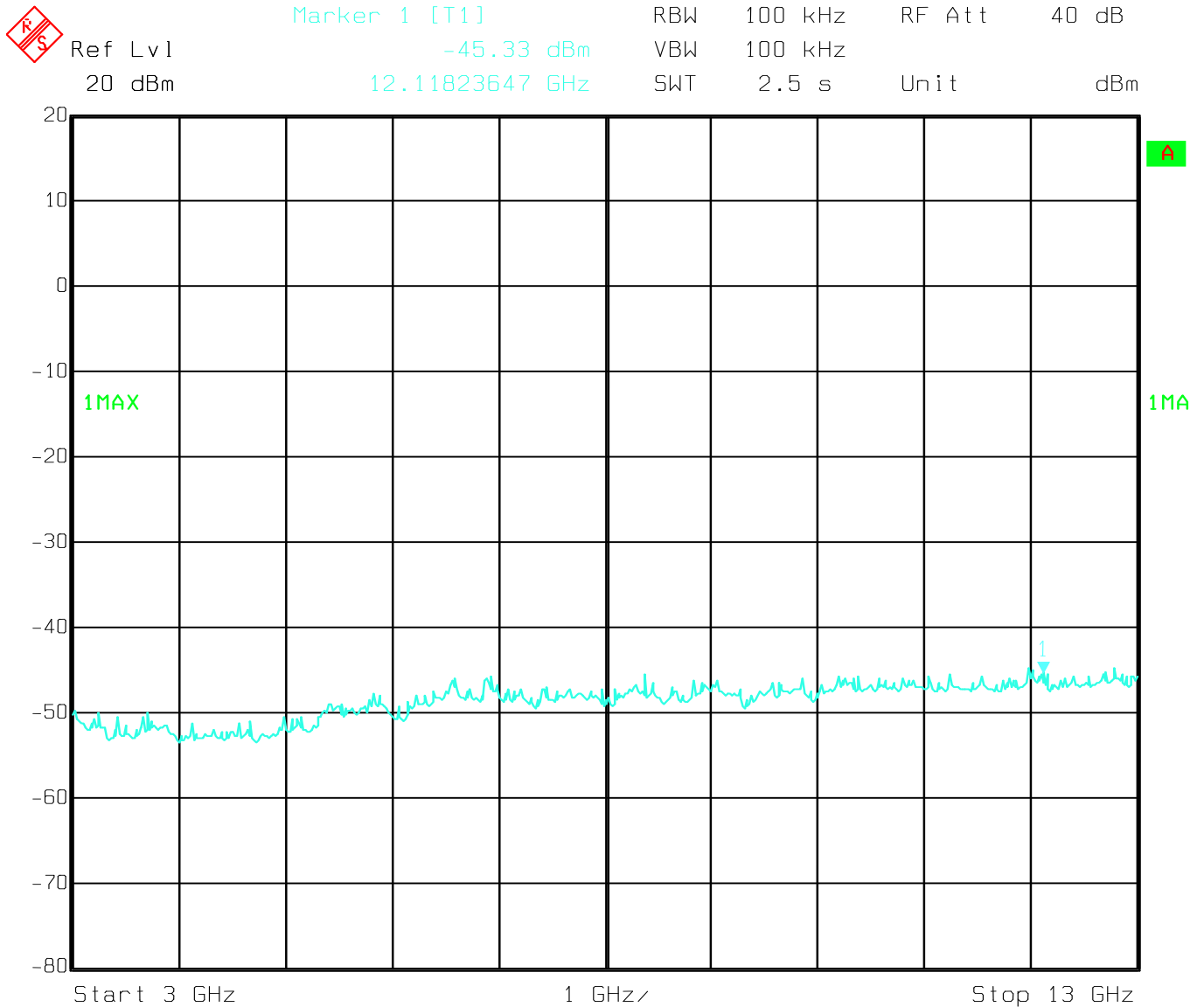


Ref Lvl 20 dBm  
Marker 1 [T1] 7.52 dBm  
2.48296748 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 100 kHz  
SWT 760 ms Unit dBm



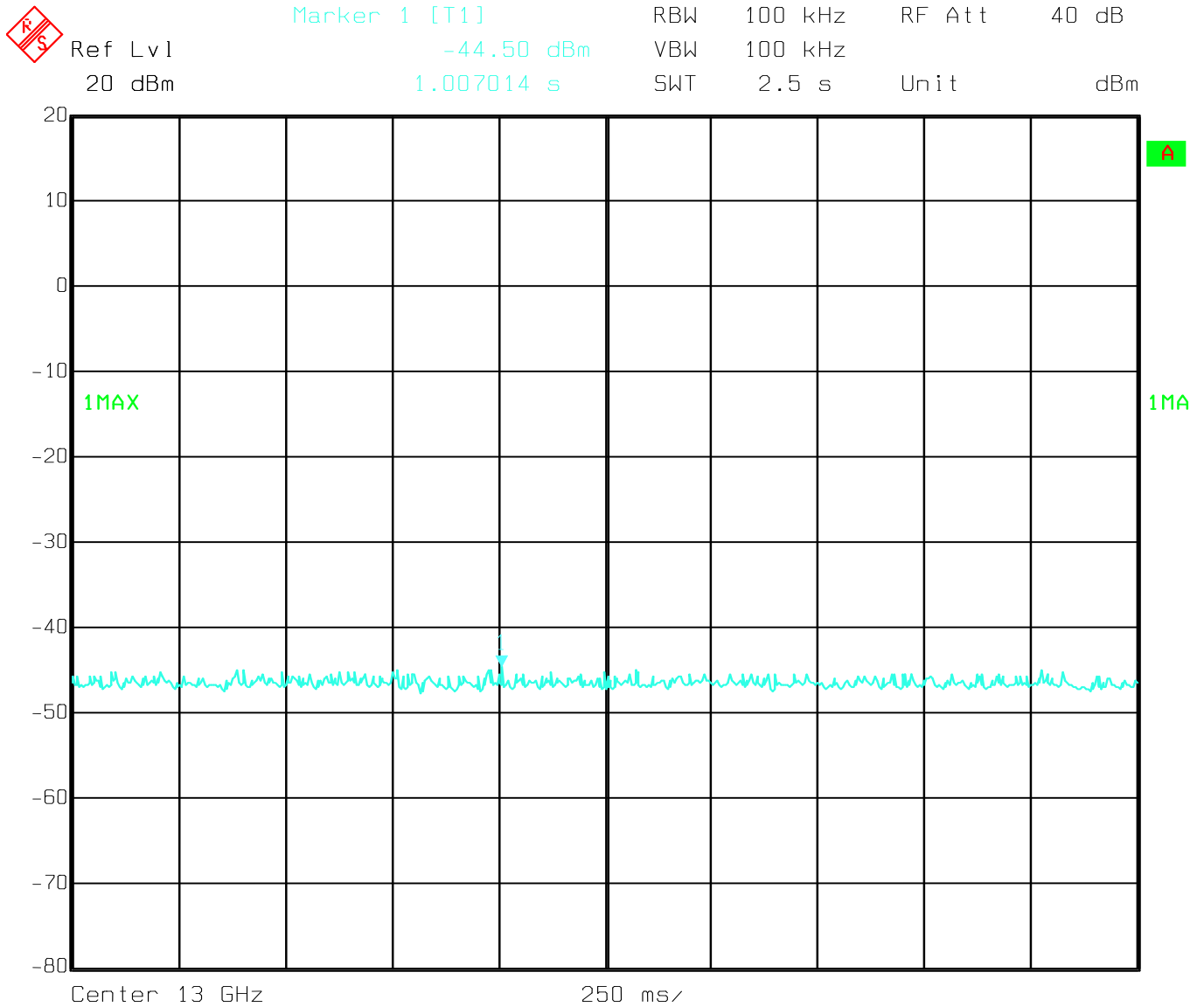
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**Figure 6c.7-7: Plot of spurious conducted emissions 9 kHz – 3 GHz (High Channel Enabled).**



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**Figure 6c.7-8: Plot of spurious conducted emissions 3 GHz – 13 GHz (High Channel Enabled).**



Date: 02.FEB.2010 09:37:25

**Figure 6c.7-9: Plot of spurious conducted emissions 13 GHz – 26.5 GHz (High Channel Enabled).**