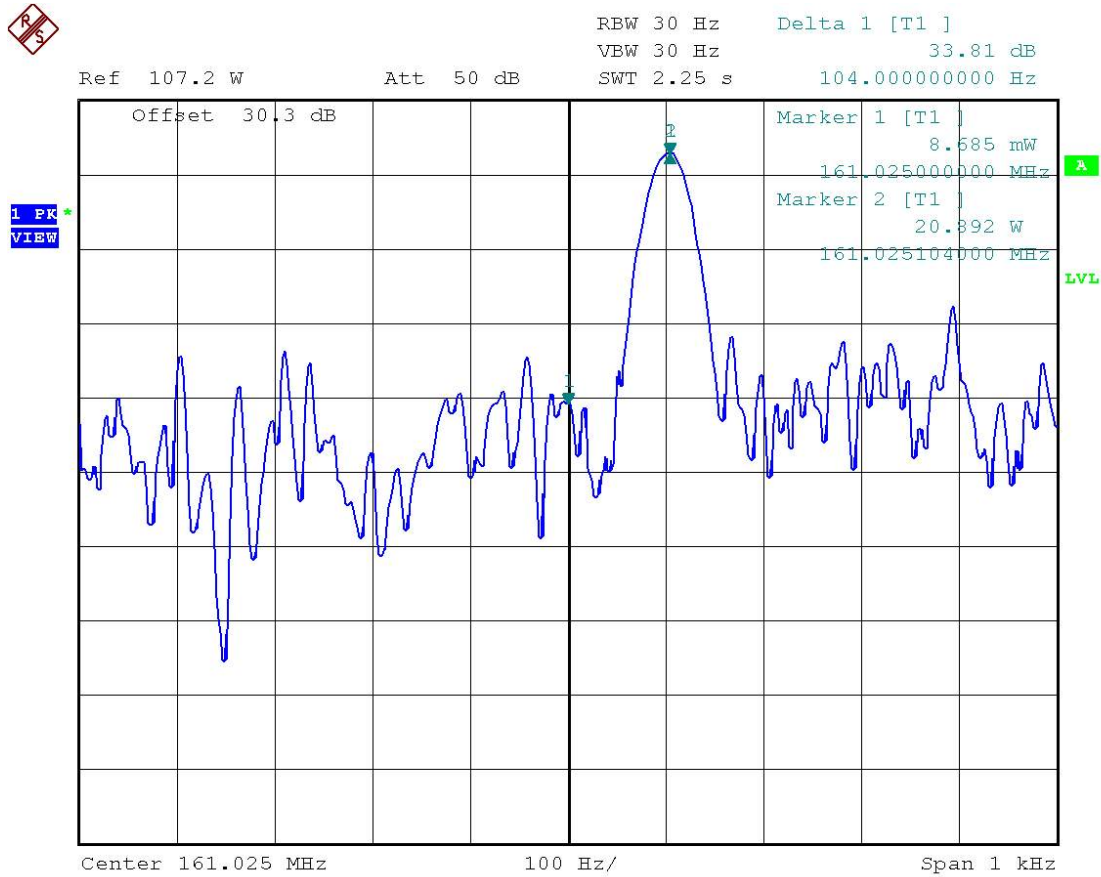
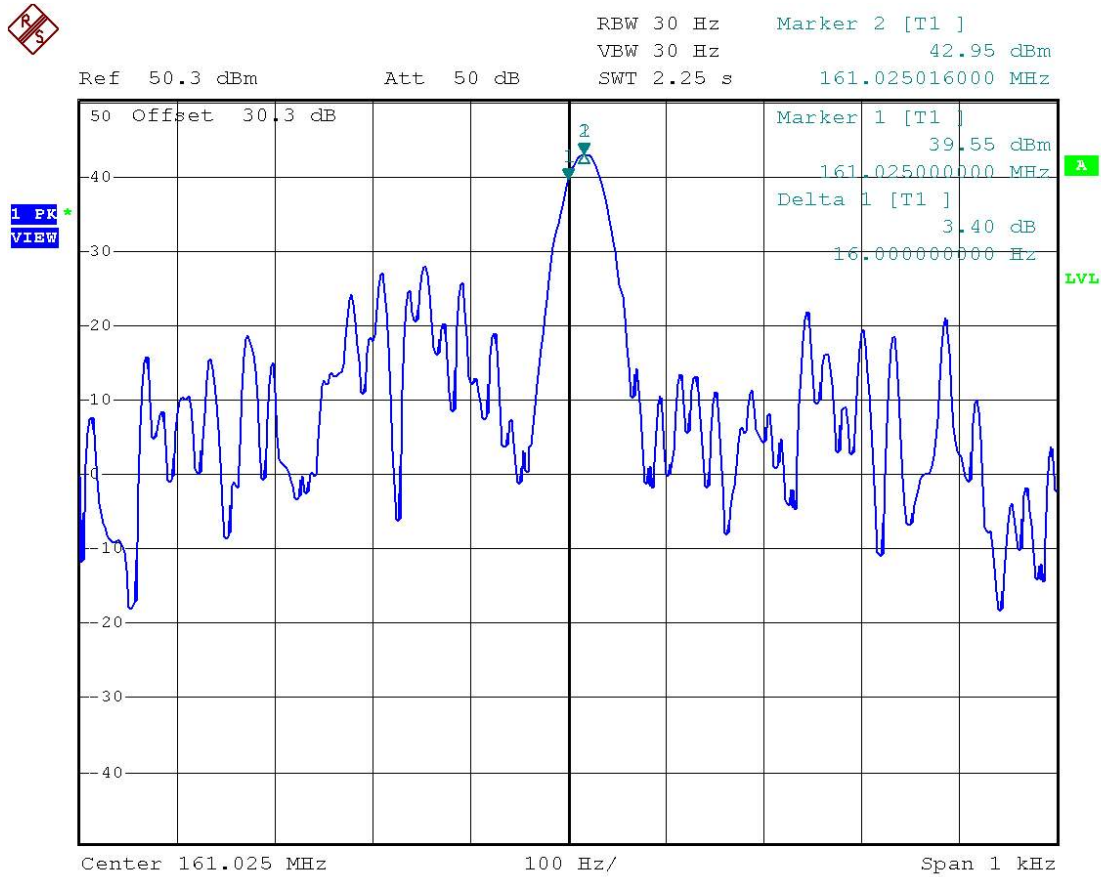


### 5.9.7.8 Plot 6 (+20°C)



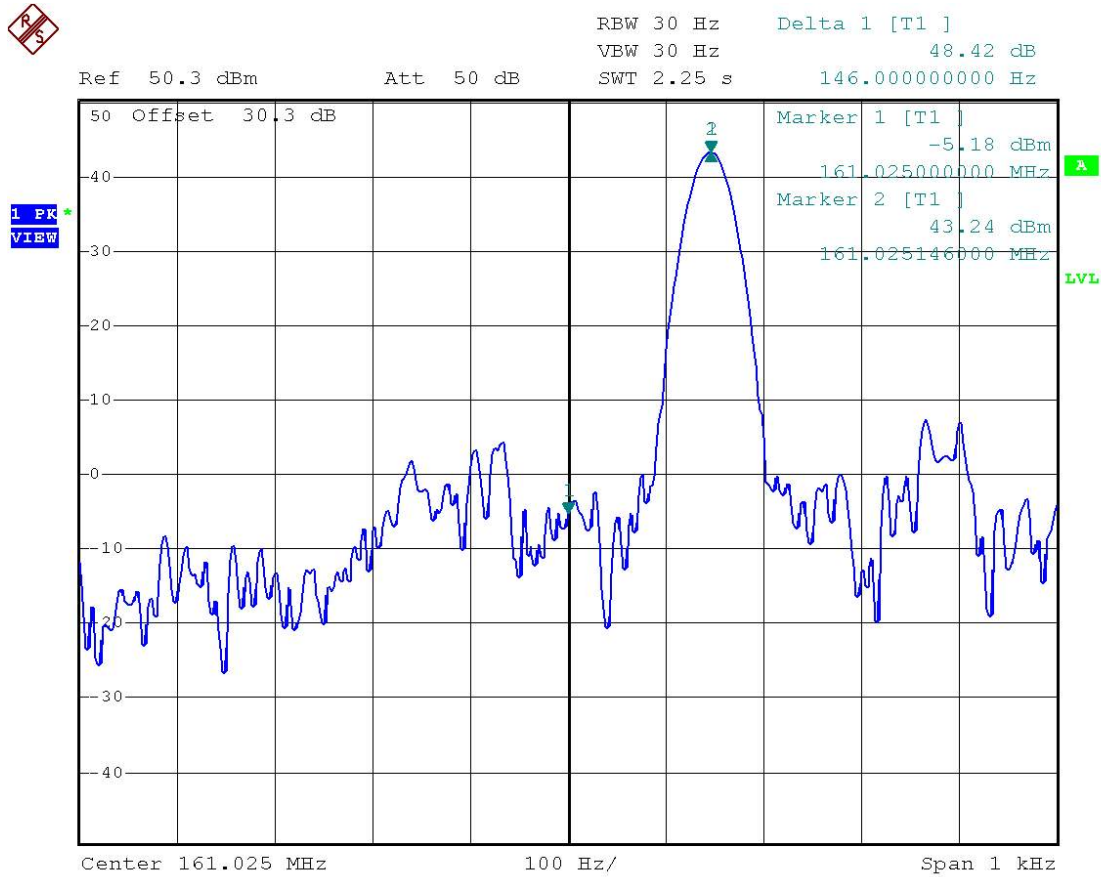
Date: 11.NOV.2008 13:52:42

### 5.9.7.9 Plot 7 (+30°C)



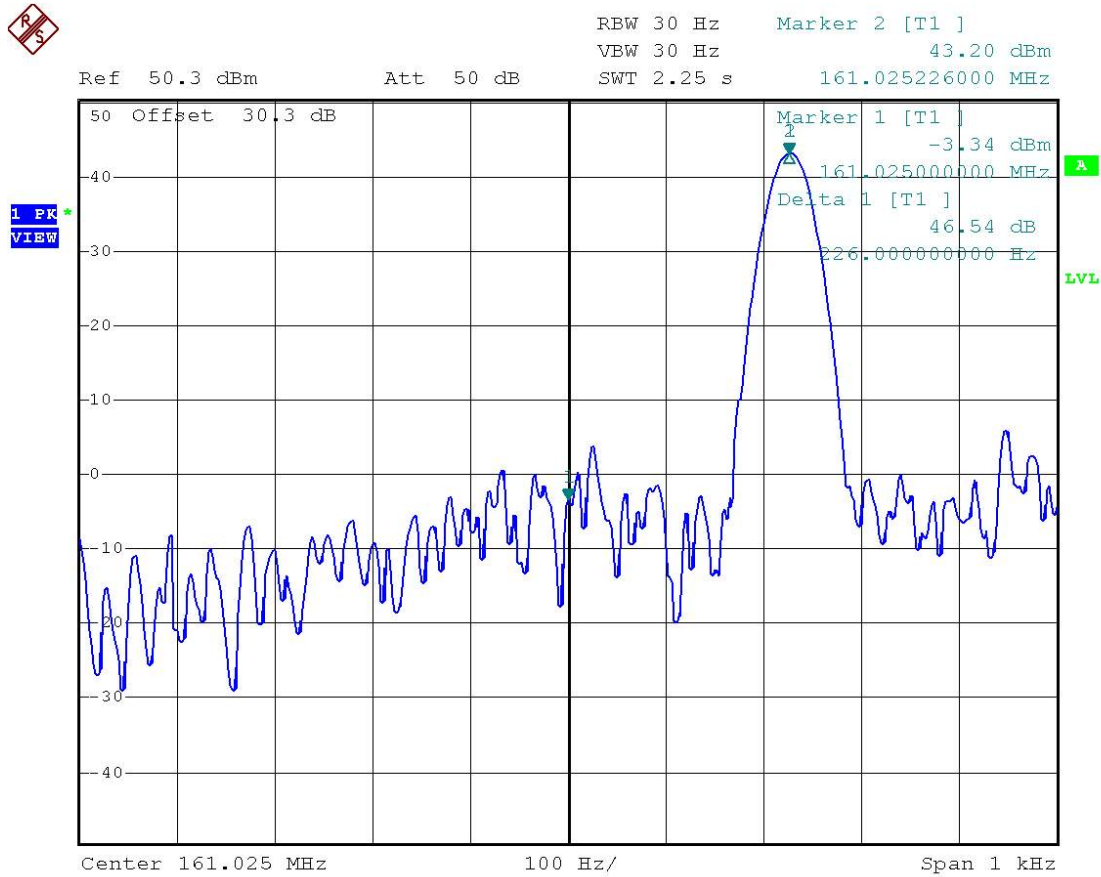
Date: 11.NOV.2008 15:40:41

### 5.9.7.10 Plot 8 (+40°C)



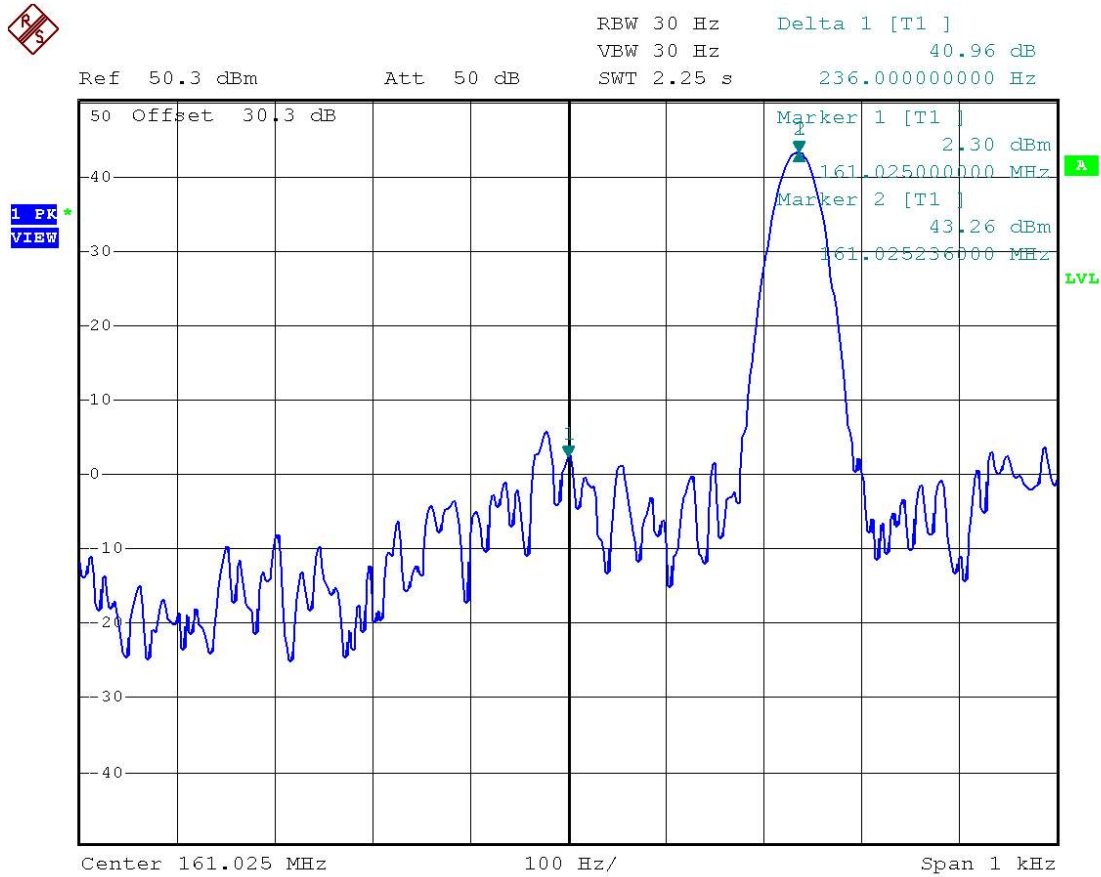
Date: 11.NOV.2008 16:00:35

### 5.9.7.11 Plot 9 (+50°C)



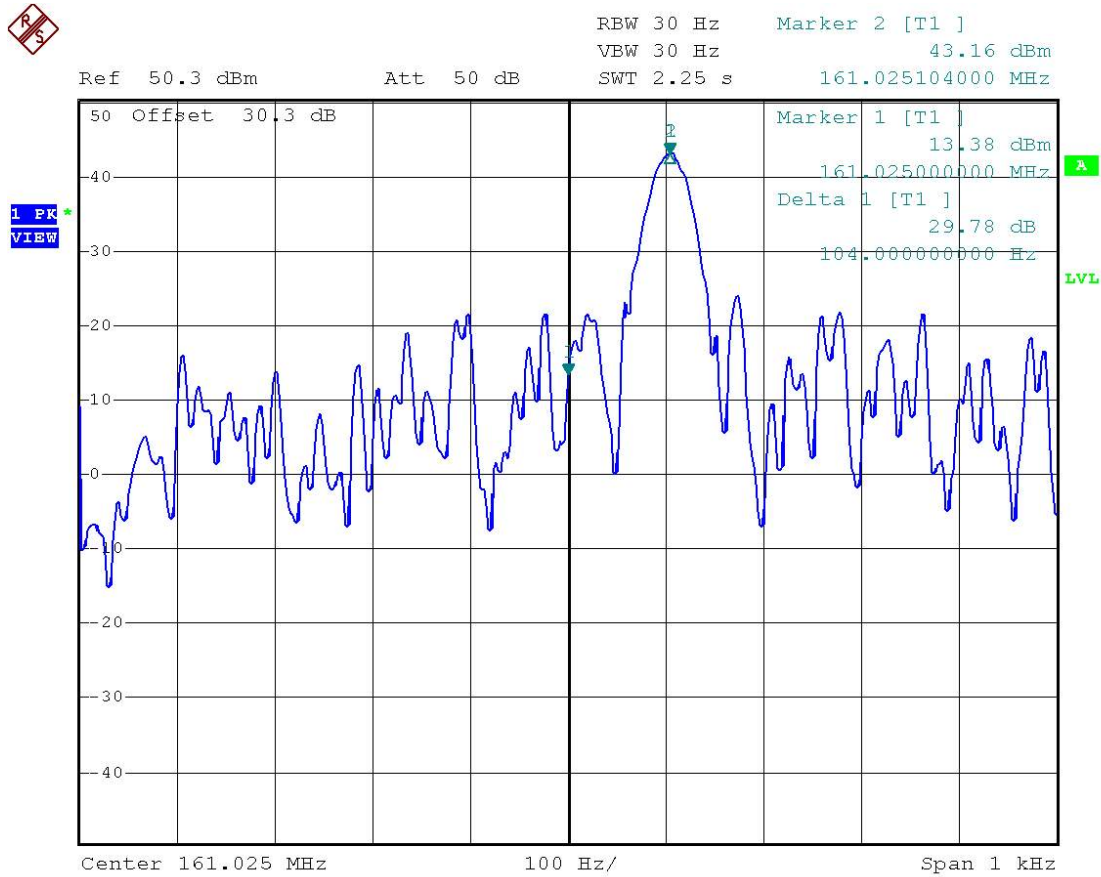
Date: 11.NOV.2008 16:32:00

### 5.9.7.12 Plot 10 (+60°C)



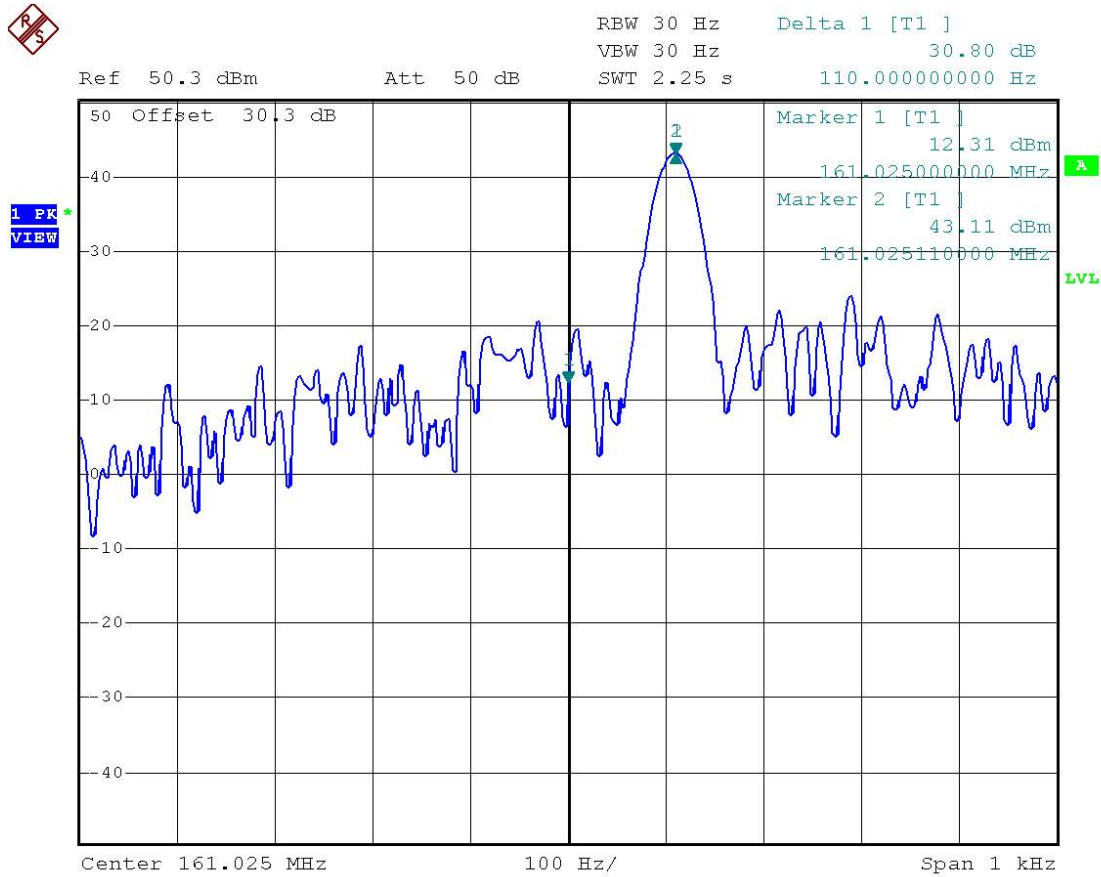
Date: 11.NOV.2008 16:44:48

### 5.9.7.13 Plot 11 (20°C, 11.73V)



Date: 11.NOV.2008 13:53:39

### 5.9.7.14 Plot 12 (20 °C, 15.87V)



Date: 11.NOV.2008 13:54:22

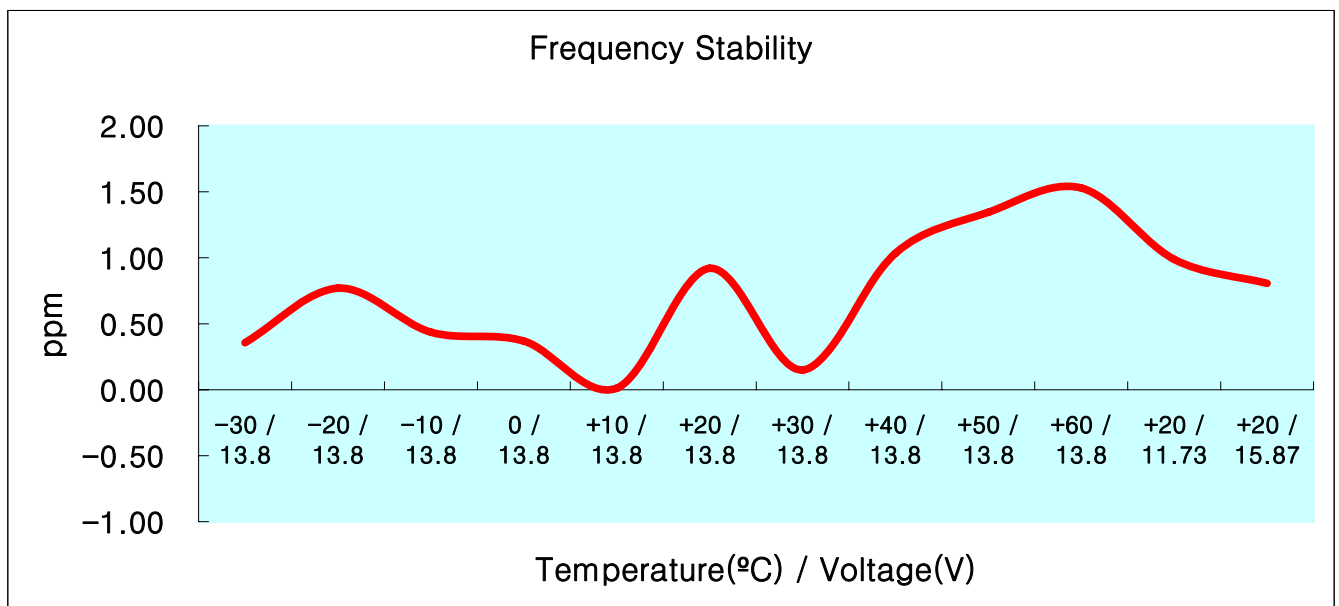
### 5.9.8 Test Result 3

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 2 §2.1055 & §90.231    |
| IC Rules :            | RSS-119 Issue 9 Section 5.3 |
| Operating Frequency : | 173.975 MHz                 |
| Channel :             | 3rd Channel                 |
| Power Output :        | 25 Watts                    |
| Modulation :          | Non-Modulation              |
| Reference Voltage :   | 13.8 VDC                    |

#### 5.9.8.1 Data

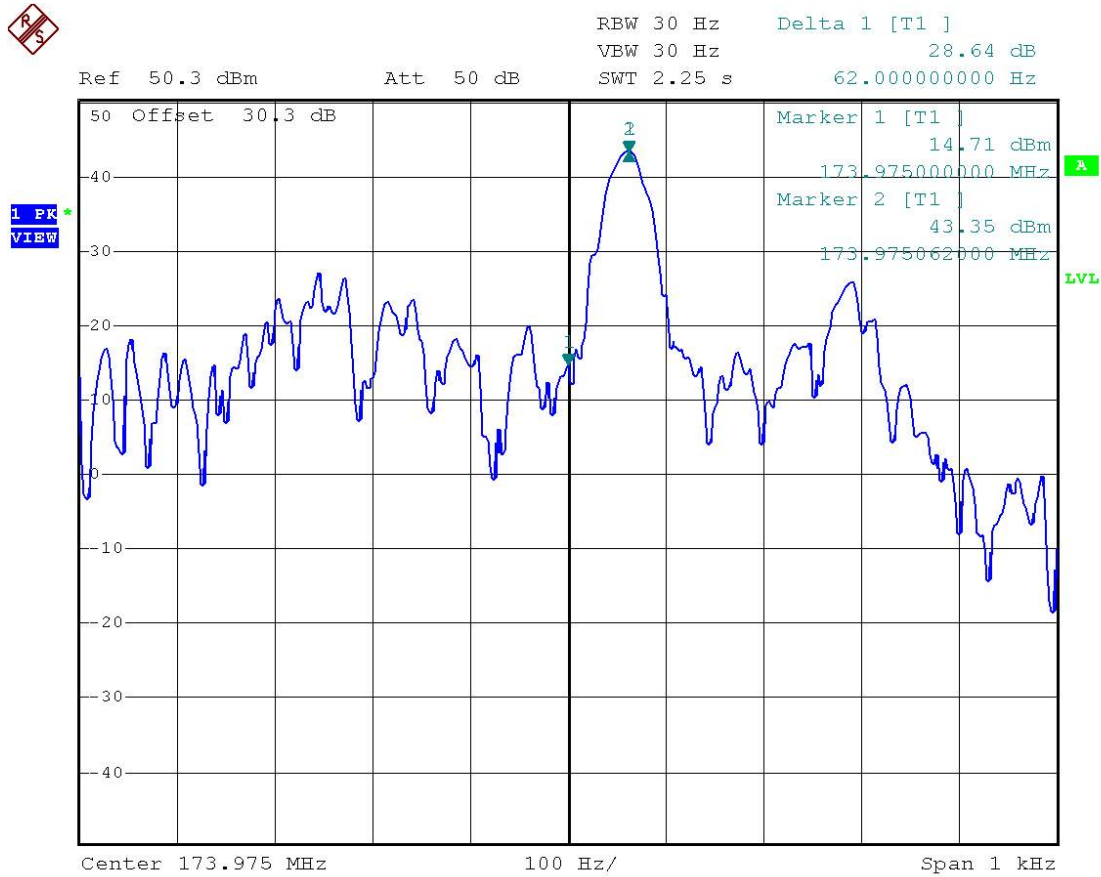
| Voltage (%) | Power Supply (Vdc) | Temperature (°C) | Frequency (Hz) | Deviation (ppm) | Limit (ppm) |
|-------------|--------------------|------------------|----------------|-----------------|-------------|
| 100 %       | 13.8               | -30              | 173975062      | 0.36            | 2.5         |
| 100 %       | 13.8               | -20              | 173975134      | 0.77            | 2.5         |
| 100 %       | 13.8               | -10              | 173975076      | 0.44            | 2.5         |
| 100 %       | 13.8               | 0                | 173975064      | 0.37            | 2.5         |
| 100 %       | 13.8               | +10              | 173975002      | 0.01            | 2.5         |
| 100 %       | 13.8               | +20 (ref)        | 173975160      | 0.92            | 2.5         |
| 100 %       | 13.8               | +30              | 173975026      | 0.15            | 2.5         |
| 100 %       | 13.8               | +40              | 173975180      | 1.03            | 2.5         |
| 100 %       | 13.8               | +50              | 173975234      | 1.35            | 2.5         |
| 100 %       | 13.8               | +60              | 173975266      | 1.53            | 2.5         |
| 85 %        | 11.73              | +20              | 173975172      | 0.99            | 2.5         |
| 115 %       | 15.87              | +20              | 173975140      | 0.80            | 2.5         |

#### 5.9.8.2 Graph



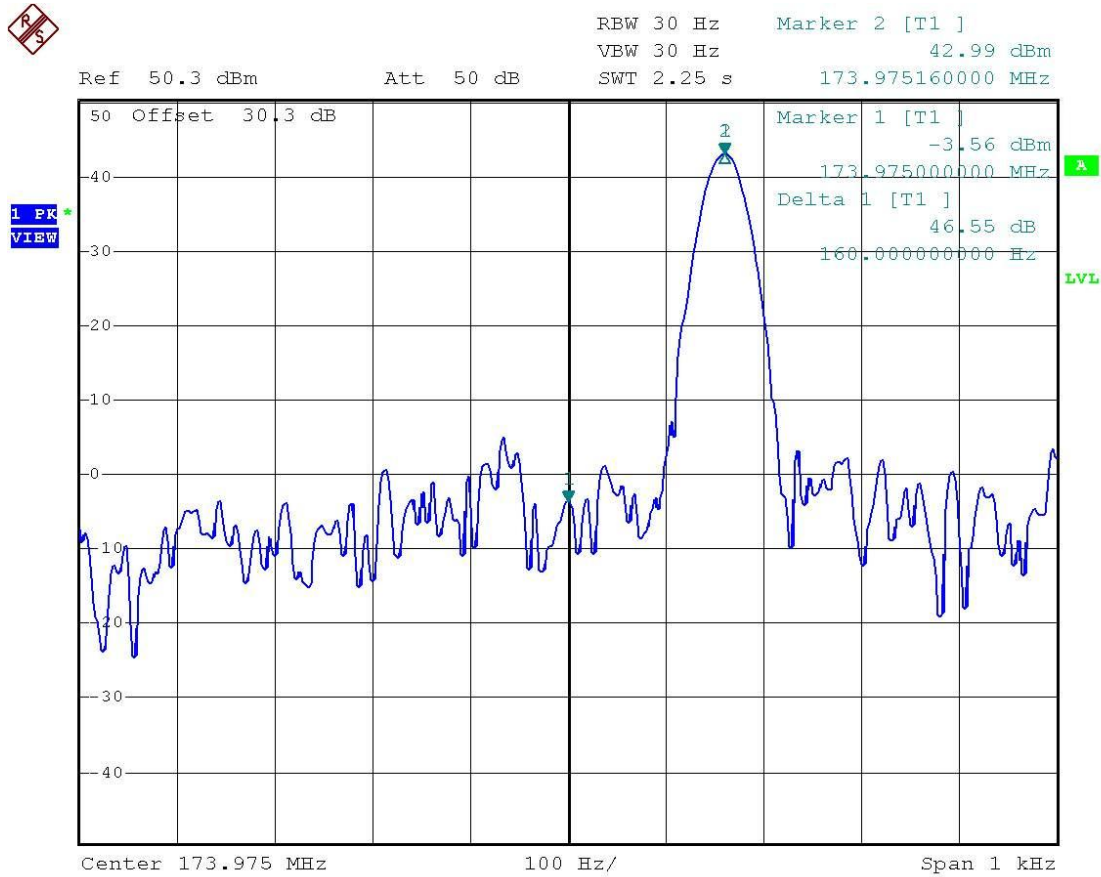


### 5.9.8.3 Plot 1 (-30°C)



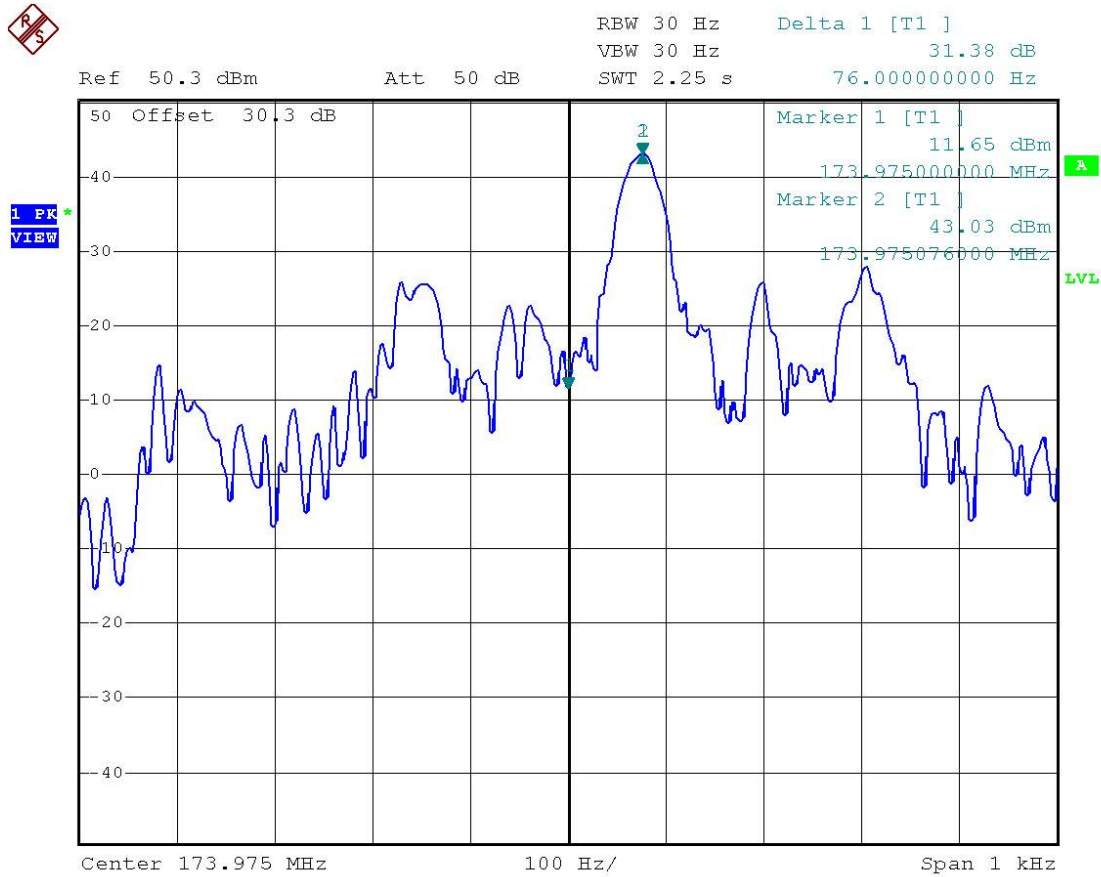
Date: 11.NOV.2008 14:23:43

#### 5.9.8.4 Plot 2 (-20°C)



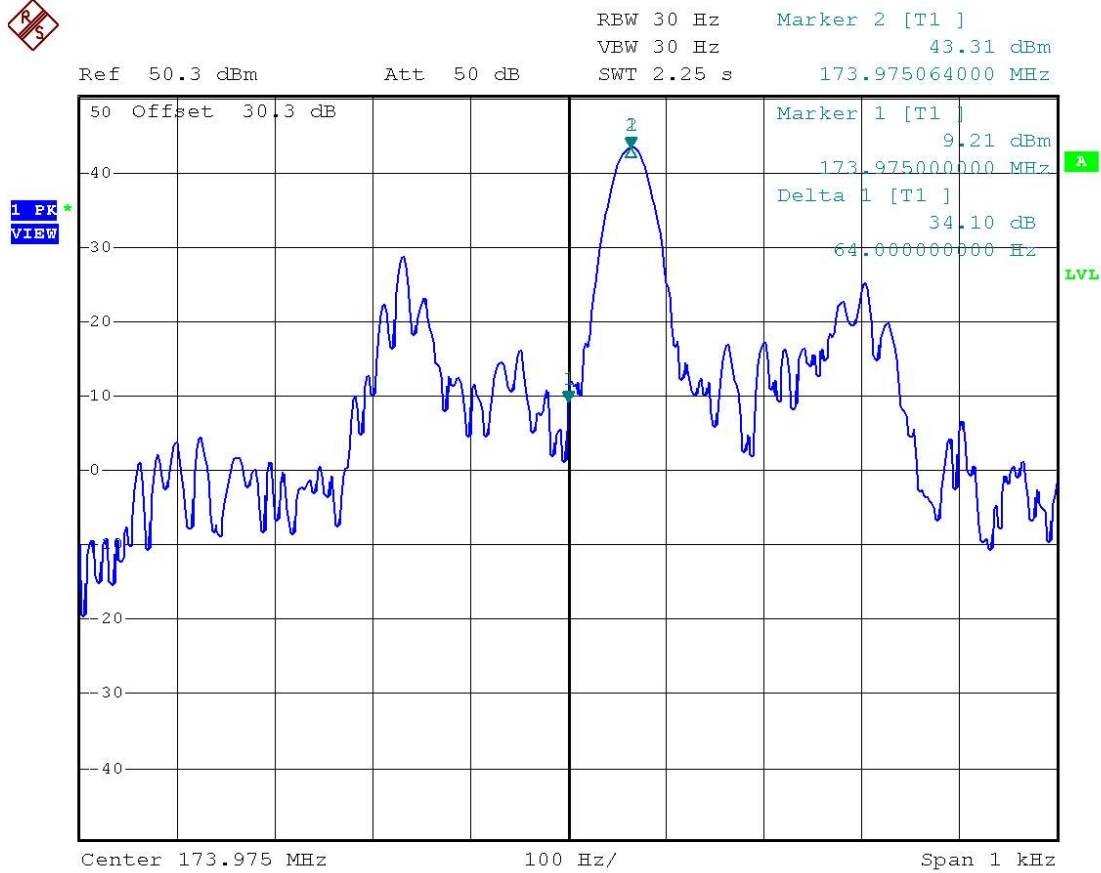
Date: 11.NOV.2008 13:57:59

### 5.9.8.5 Plot 3 (-10°C)



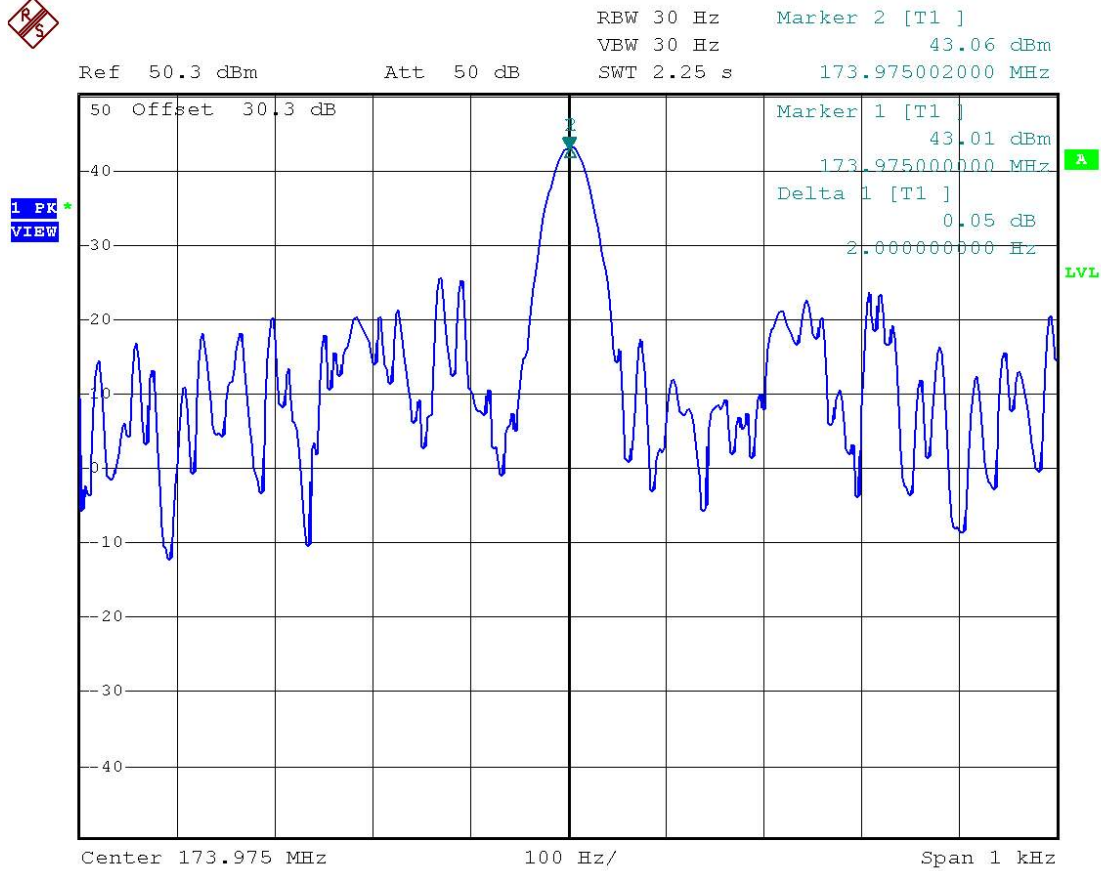
Date: 11.NOV.2008 14:53:53

### 5.9.8.6 Plot 4 (0°C)



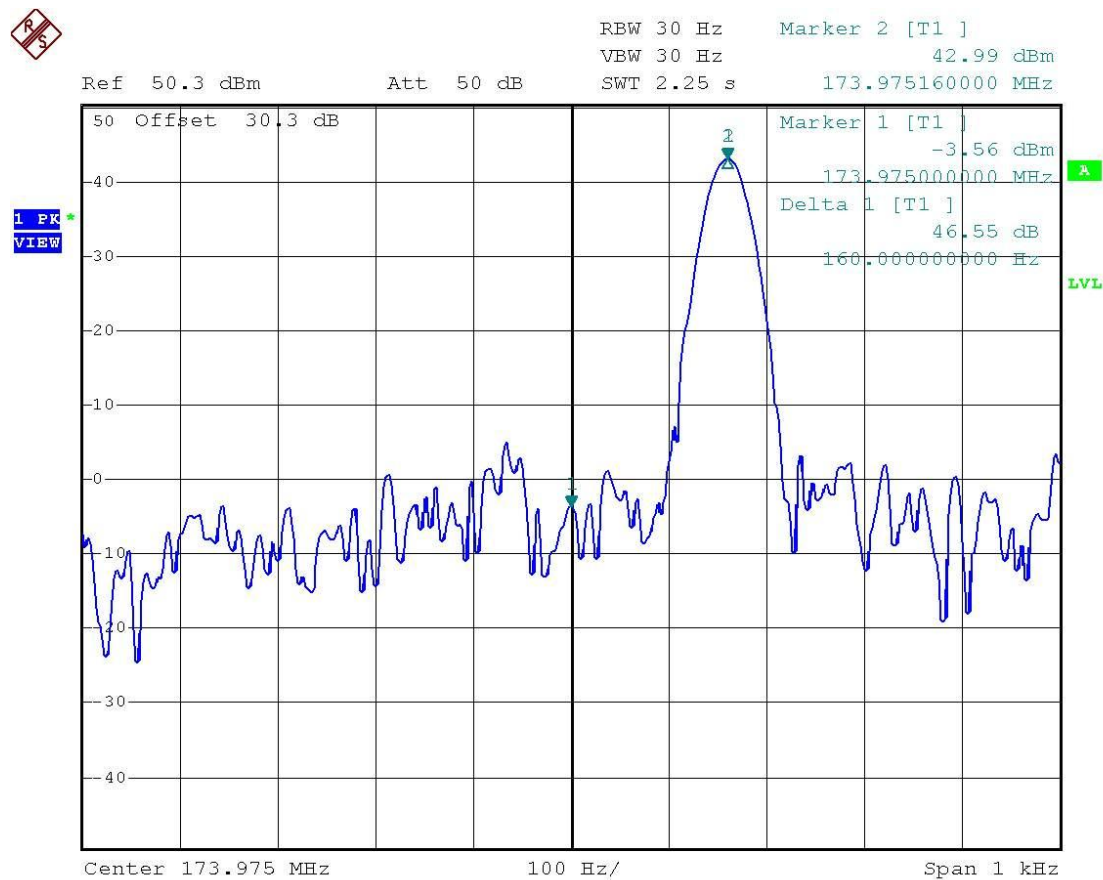
Date: 11.NOV.2008 15:06:59

### 5.9.8.7 Plot 5 (+10°C)



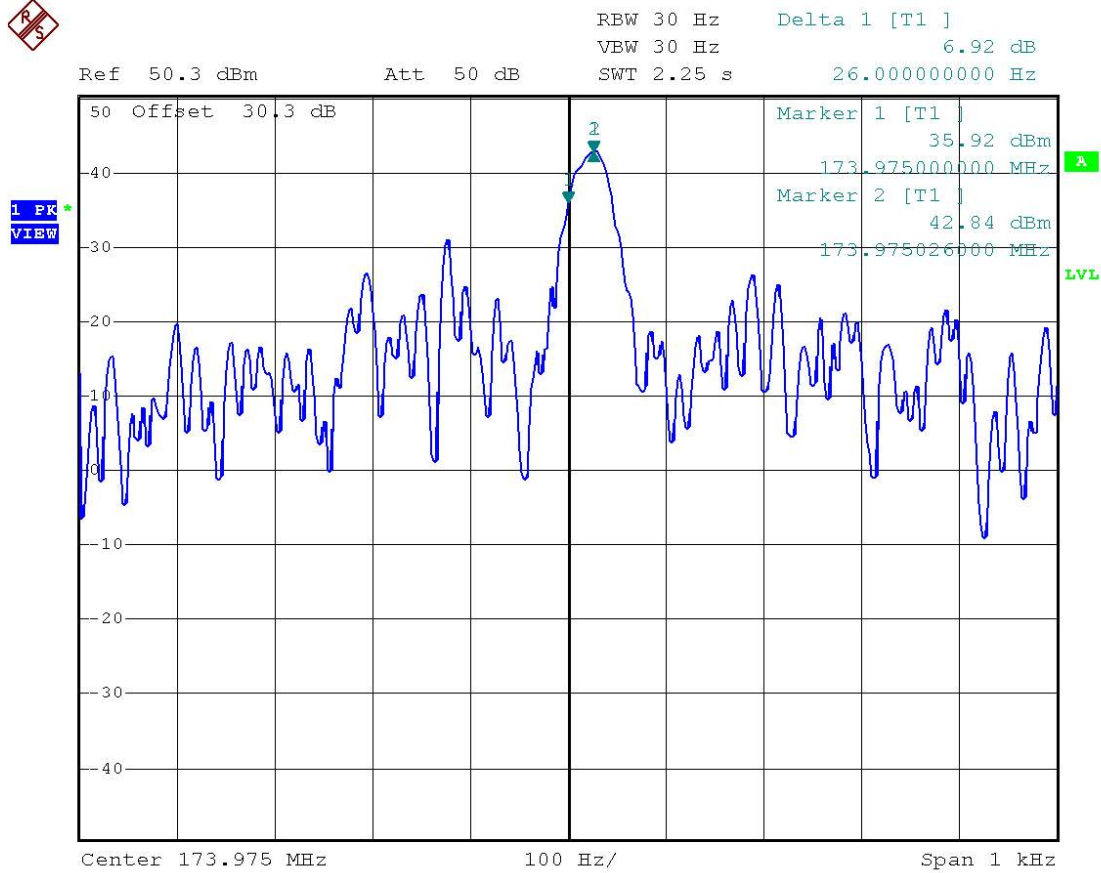
Date: 11.NOV.2008 15:25:29

### 5.9.8.8 Plot 6 (+20°C)



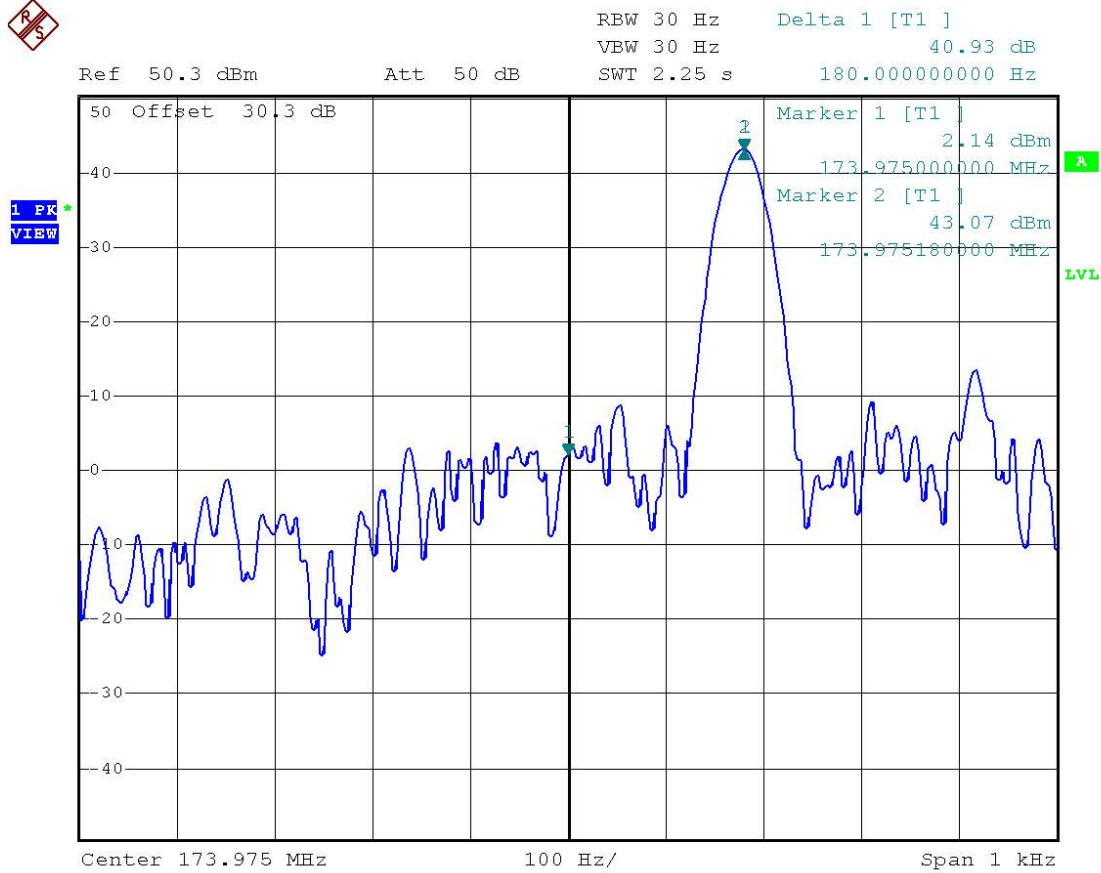
Date: 11.NOV.2008 13:57:59

### 5.9.8.9 Plot 7 (+30°C)



Date: 11.NOV.2008 15:39:45

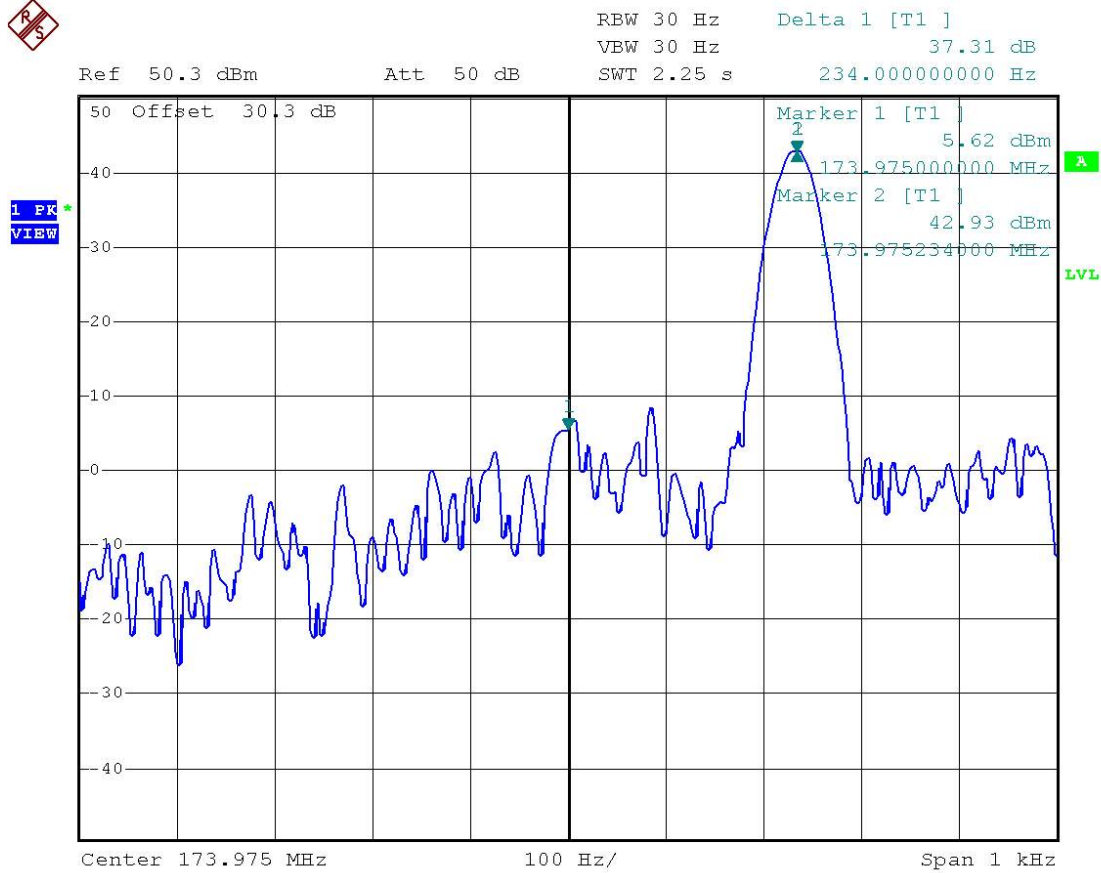
### 5.9.8.10 Plot 8 (+40°C)



Date: 11.NOV.2008 16:01:43

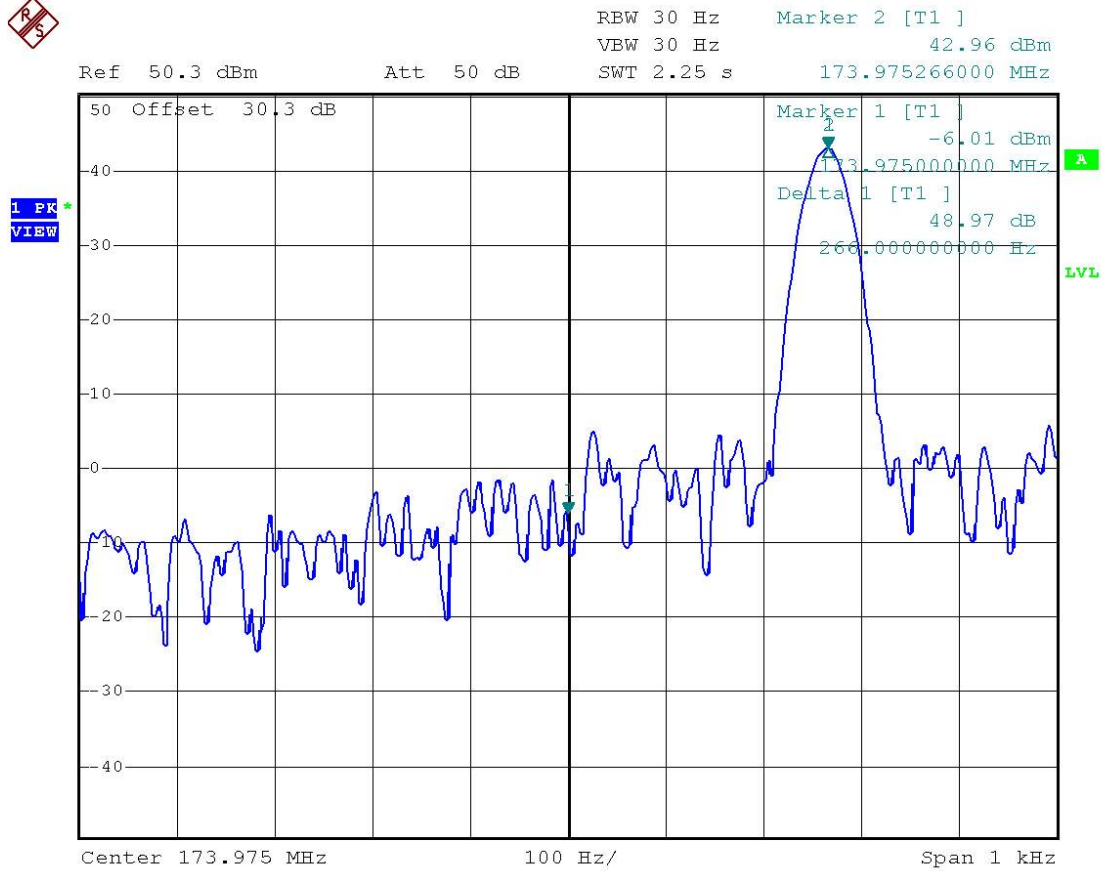


### 5.9.8.11 Plot 9 (+50°C)



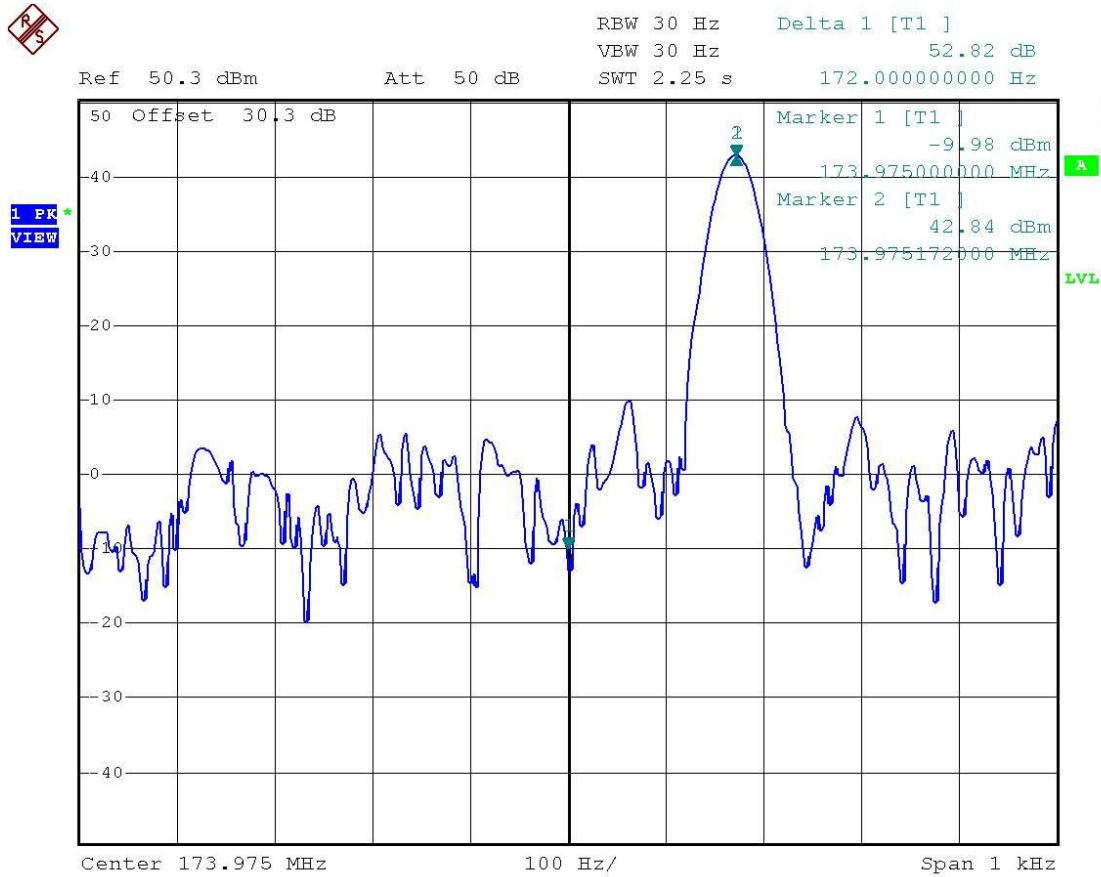
Date: 11.NOV.2008 16:33:03

### 5.9.8.12 Plot 10 (+60°C)



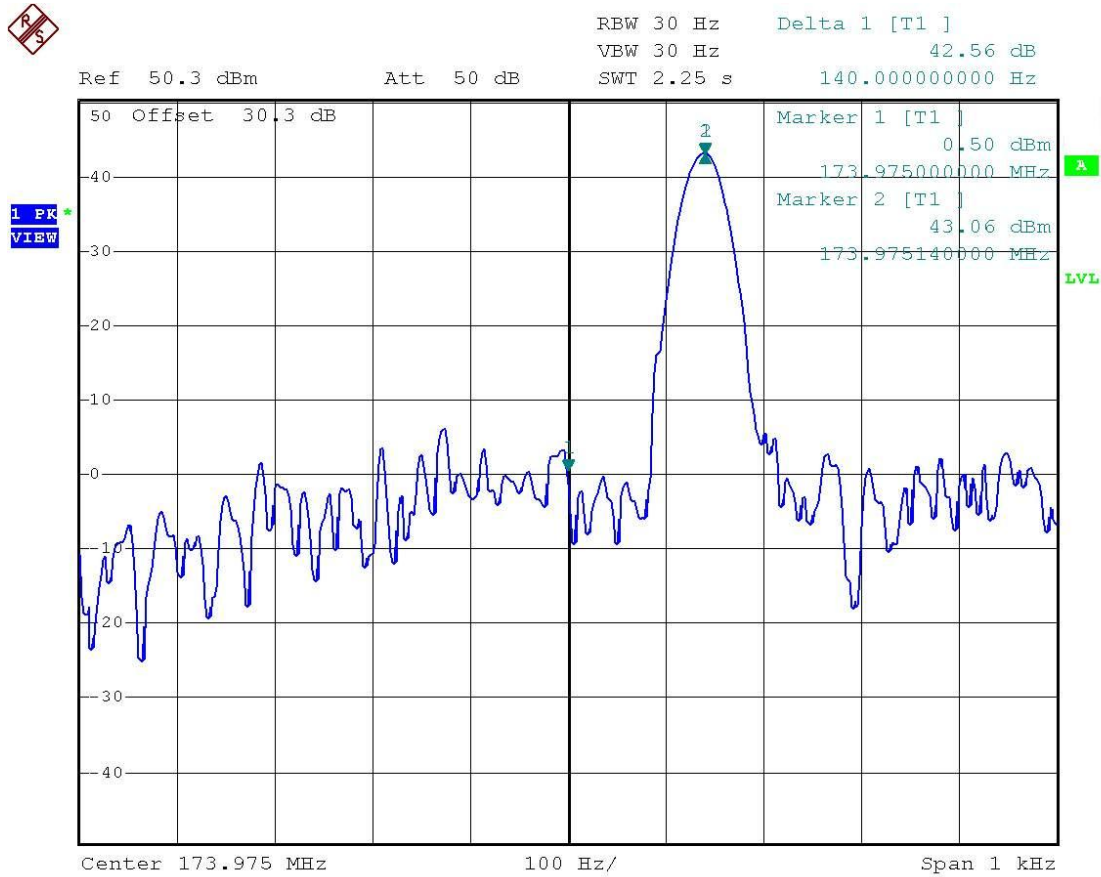
Date: 11.NOV.2008 16:43:58

### 5.9.8.13 Plot 11 (20°C, 11.73V)



Date: 11.NOV.2008 13:57:32

### 5.9.8.14 Plot 12 (20 °C, 15.87V)



Date: 11.NOV.2008 13:58:36

## 5.10 Transient Frequency Behavior

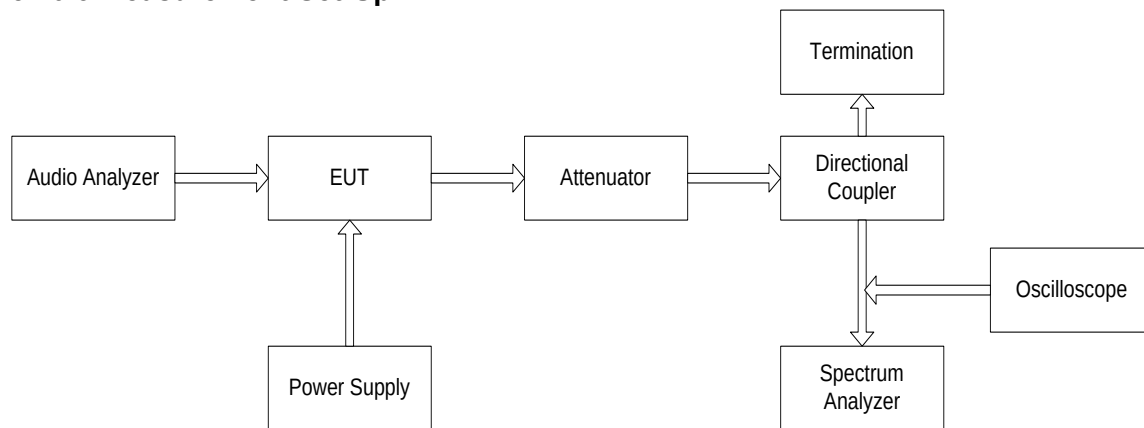
### 5.10.1 Specification

FCC Rules Part 90, Section 90.214  
Industry Canada, RSS-119 Issue 9 Section 5.9

### 5.10.2 Method of Measurement

ANSI/TIA-603-B-2002 Section 2.2.19

### 5.10.3 Measurement Set-Up



**Fig.9**

### 5.10.4 Test Equipment List

| Equipment           | Model Name  | Manufacturer    |
|---------------------|-------------|-----------------|
| EUT                 | SM2102      | Maxon CIC Corp. |
| Power Supply        | IPS-30B03DD | INTERACT        |
| Audio Analyzer      | 8903B       | Agilent         |
| Attenuator          | 33-30-33    | WEINSCHEL       |
| Directional Coupler | 778D        | Agilent         |
| Termination         | 8173        | Bird            |
| Oscilloscope        | TDS3032     | Tektronix       |
| Spectrum Analyzer   | FSP7        | Rohde & Shwarz  |

### 5.10.5 Test Procedure

- The unit was turn-up in accordance with the alignment procedure stated in the FIG. 9, and was loaded into a 50 ohm resistive termination.
- Using the variable attenuator the transmitter level was set to 40 dB below the test receivers maximum input level, then the transmitter was turned off.
- With the transmitter off the signal generator was set 20dB below the level of the transmitter in the above step, this level will be maintained with the signal generator through-out the test.
- Reduce the attenuation between the transmitter and the RF detector by 30 dB.
- With the levels set as above the transient frequency behavior was observed & recorded.
- Requirements

## 5.10.6 Limit

**Transient Frequency Difference Limits**

| Time Interval | Max. Permitted Frequency Difference for 25 and 30 kHz Channel Spacing (in kHz) | Max. Permitted Frequency Difference for 12.5 and 15 kHz Channel Spacing (in kHz) |
|---------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| t1 or t3      | 25                                                                             | 12.5                                                                             |
| t2            | 12.5                                                                           | 6.25                                                                             |

**Transient Duration Limits**

| Time Intervals | Frequency Ranges (MHz) |            |            |
|----------------|------------------------|------------|------------|
|                | 30 to 174              | 406 to 512 | 806 to 940 |
| t1             | 5.0 ms                 | 10.0 ms    | 20.0 ms    |
| t2             | 20.0 ms                | 25.0 ms    | 50.0 ms    |
| t3             | 5.0 ms                 | 10.0 ms    | 10.0 ms    |

The transient frequency behaviour of the transmitter is the variation in time of the transmitter frequency difference from the nominal frequency of the transmitter when the RF output power is switched on and off.

**ton:** according to the method of measurement described the switch-on instant ton of a transmitter is defined by the condition when the output power, measured at the antenna terminal, exceeds 0,1 % of the nominal power.

**t1:** period of time starting at ton and finishing.

**t2:** period of time starting at the end of t1 and finishing.

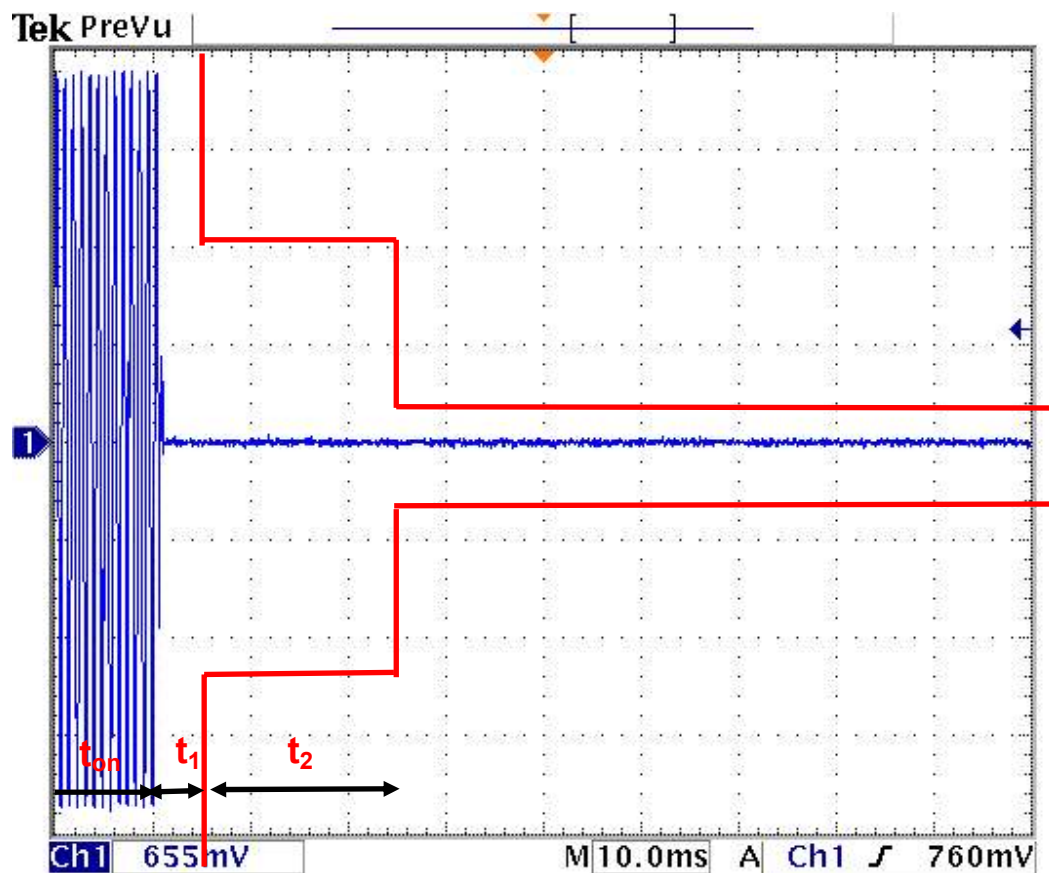
**toff:** switch-off instant defined by the condition when the nominal power falls below 0,1 % of the nominal power.

**t3:** period of time that finishing at toff and starting.

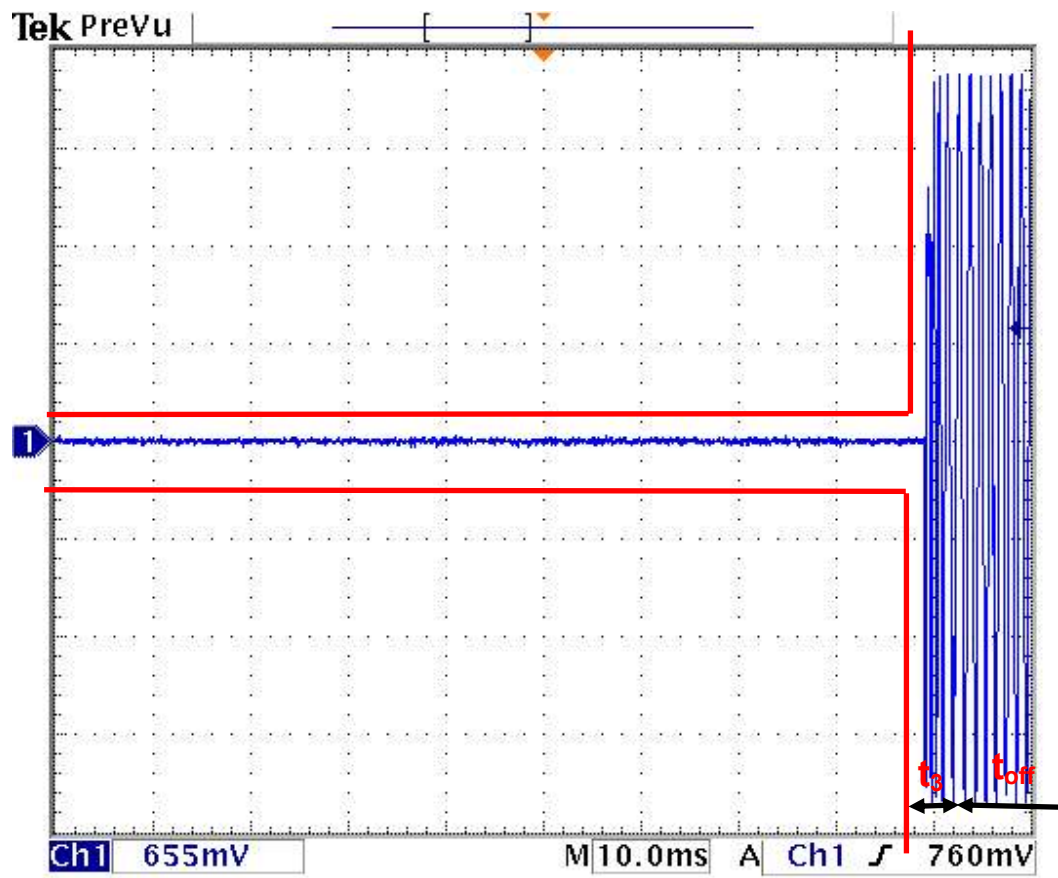
### 5.10.7 Test Plot 1

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 148.025 MHz                 |
| Channel :             | 1st Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | Narrow Band                 |
| Reference Voltage :   | 13.8 VDC                    |

#### 5.10.7.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



5.10.7.2 Switch off condition  $t_3$ ,  $t_{off}$

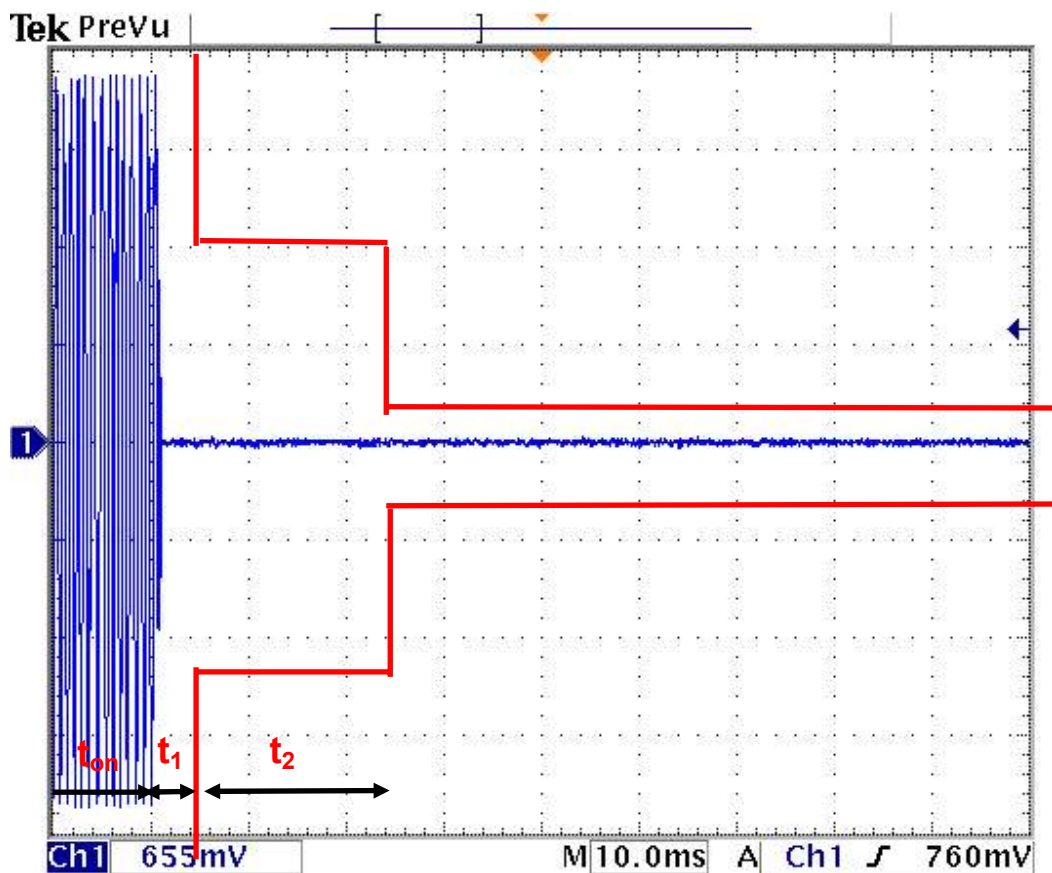




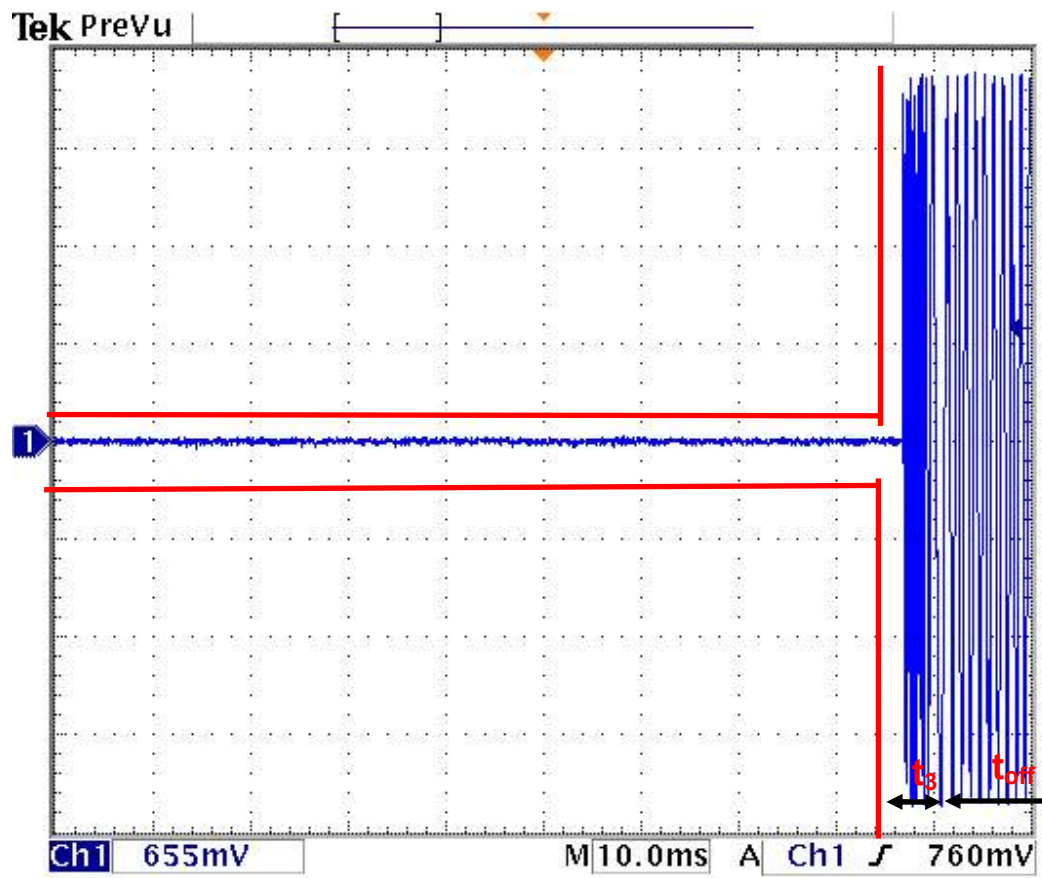
## 5.10.8 Test Plot 2

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 161.025 MHz                 |
| Channel :             | 2nd Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | Narrow Band                 |
| Reference Voltage :   | 13.8 VDC                    |

### 5.10.8.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



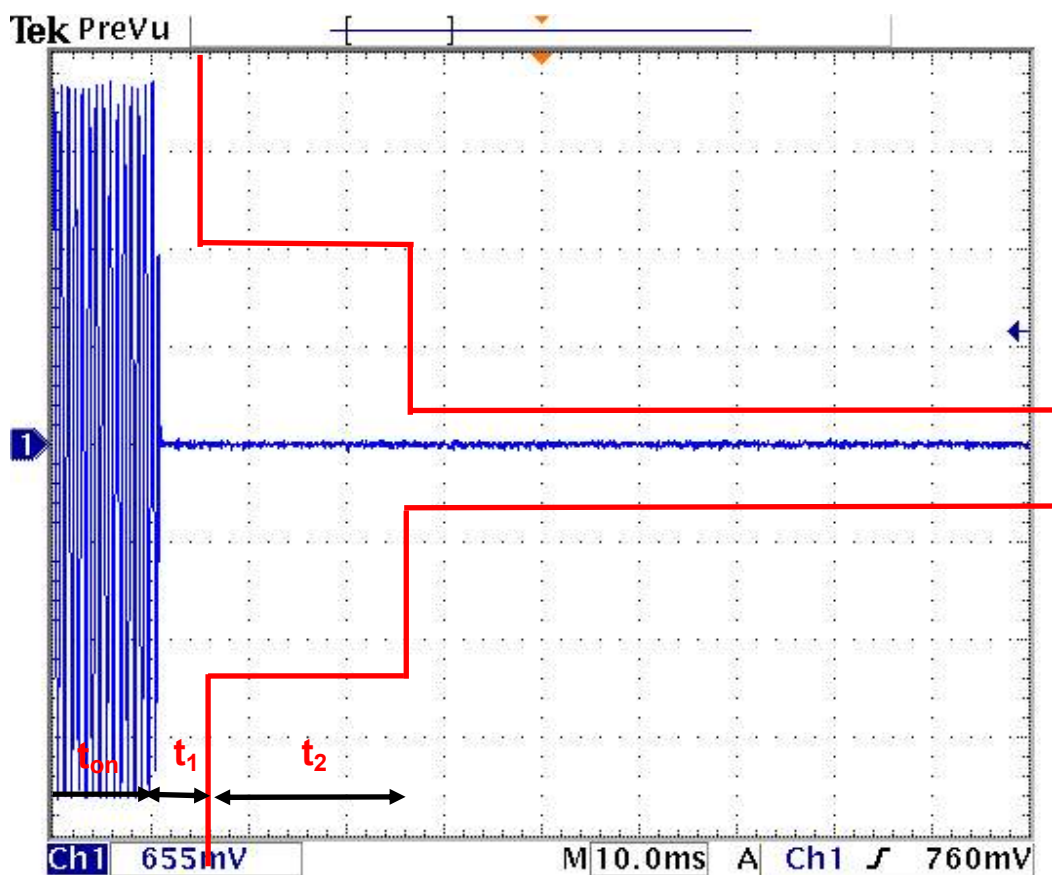
5.10.8.2 Switch off condition  $t_3$ ,  $t_{off}$



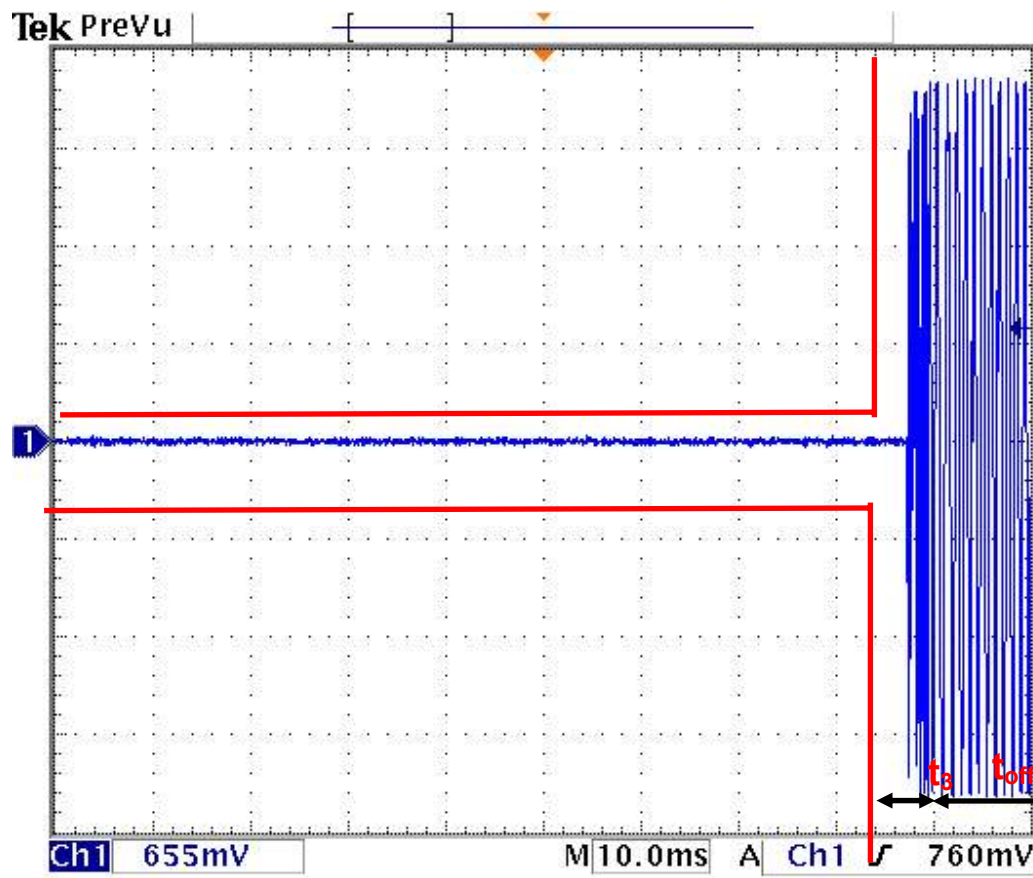
### 5.10.9 Test Plot 3

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 173.975 MHz                 |
| Channel :             | 3rd Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | Narrow Band                 |
| Reference Voltage :   | 7.4 VDC                     |

#### 5.10.9.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



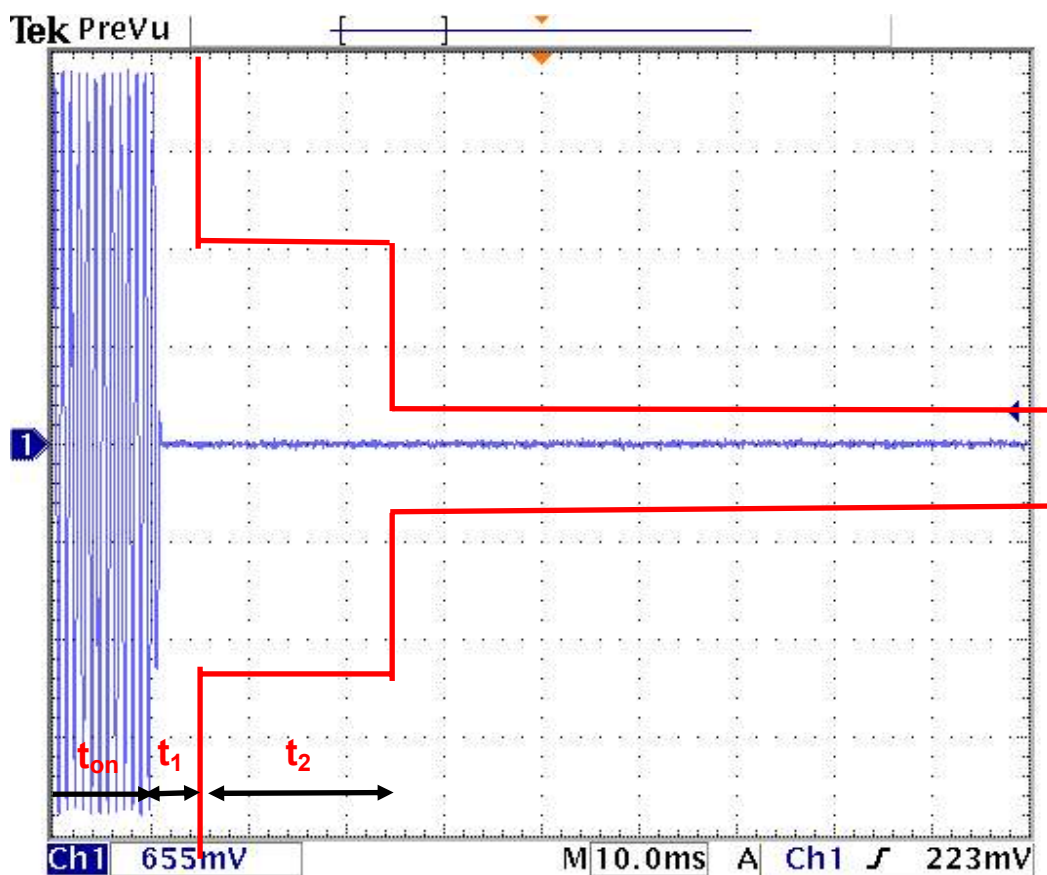
5.10.9.2 Switch off condition  $t_3$ ,  $t_{off}$



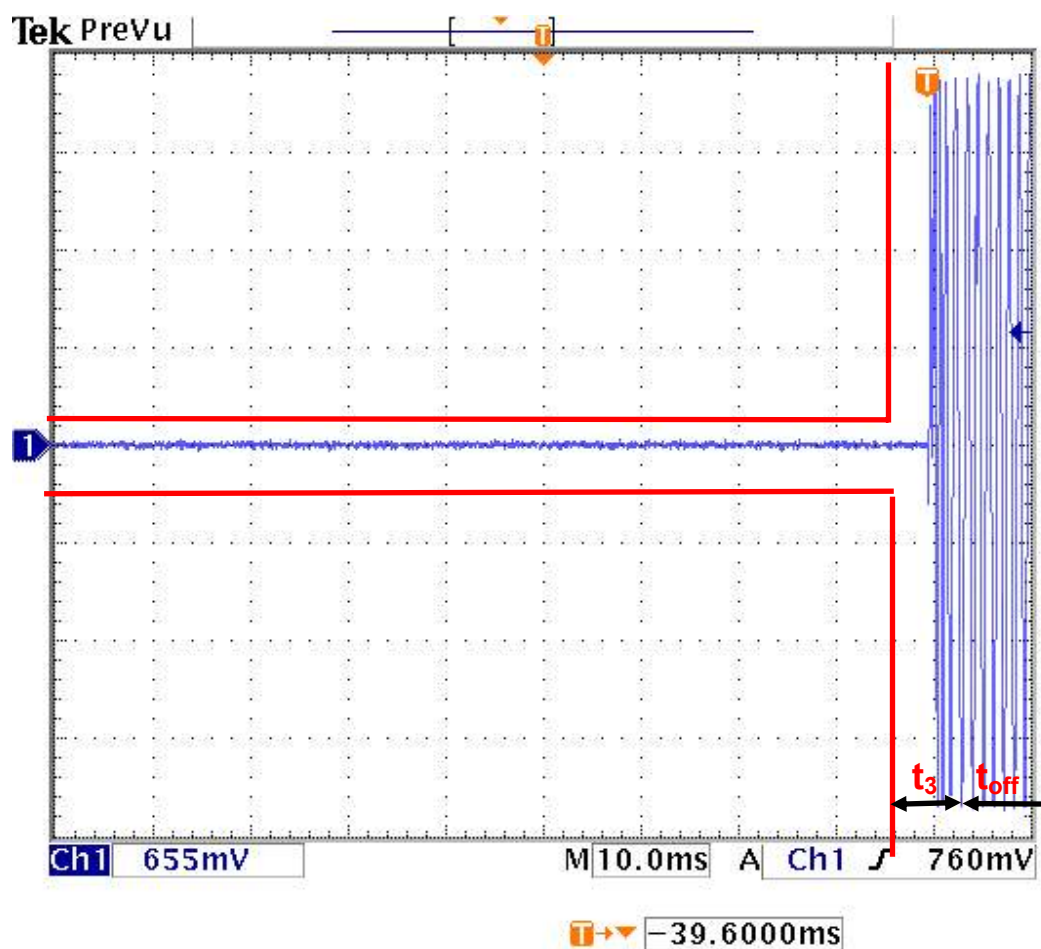
#### 5.10.10 Test Plot 4

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 148.025 MHz                 |
| Channel :             | 1st Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | WideBand                    |
| Reference Voltage :   | 13.8 VDC                    |

##### 5.10.10.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



5.10.10.2 Switch off condition  $t_3$ ,  $t_{off}$

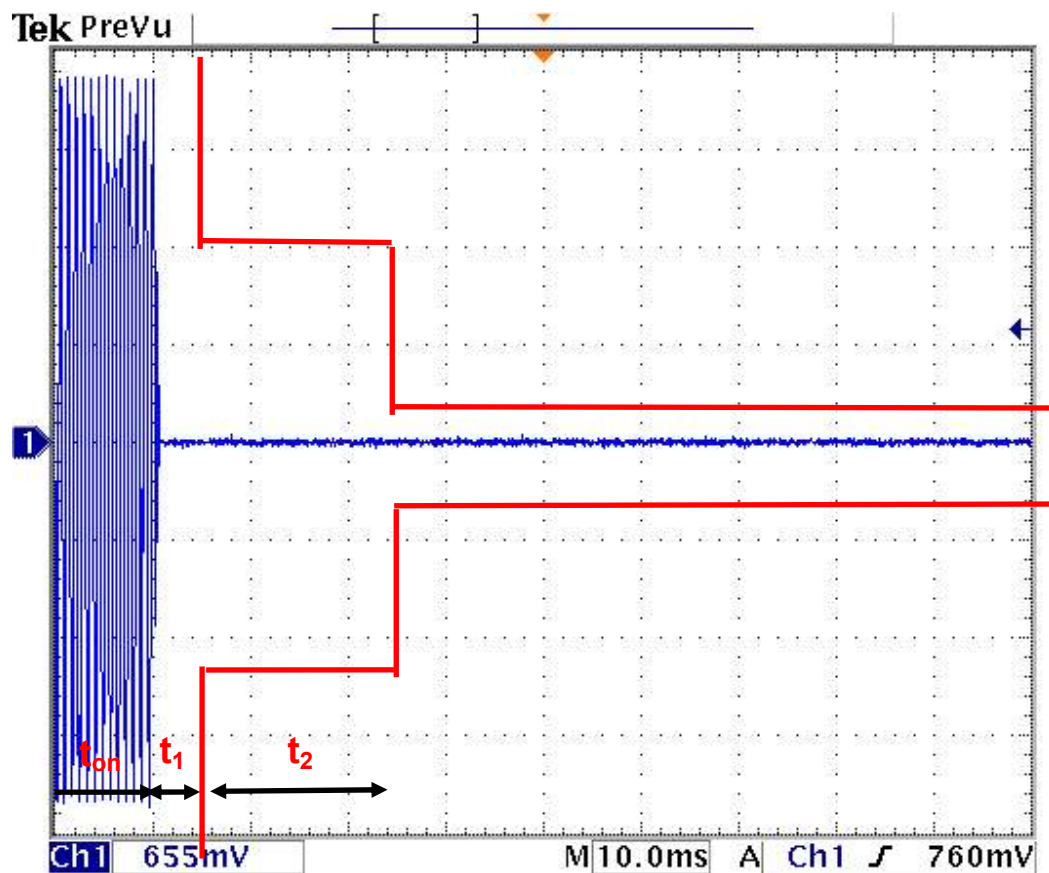




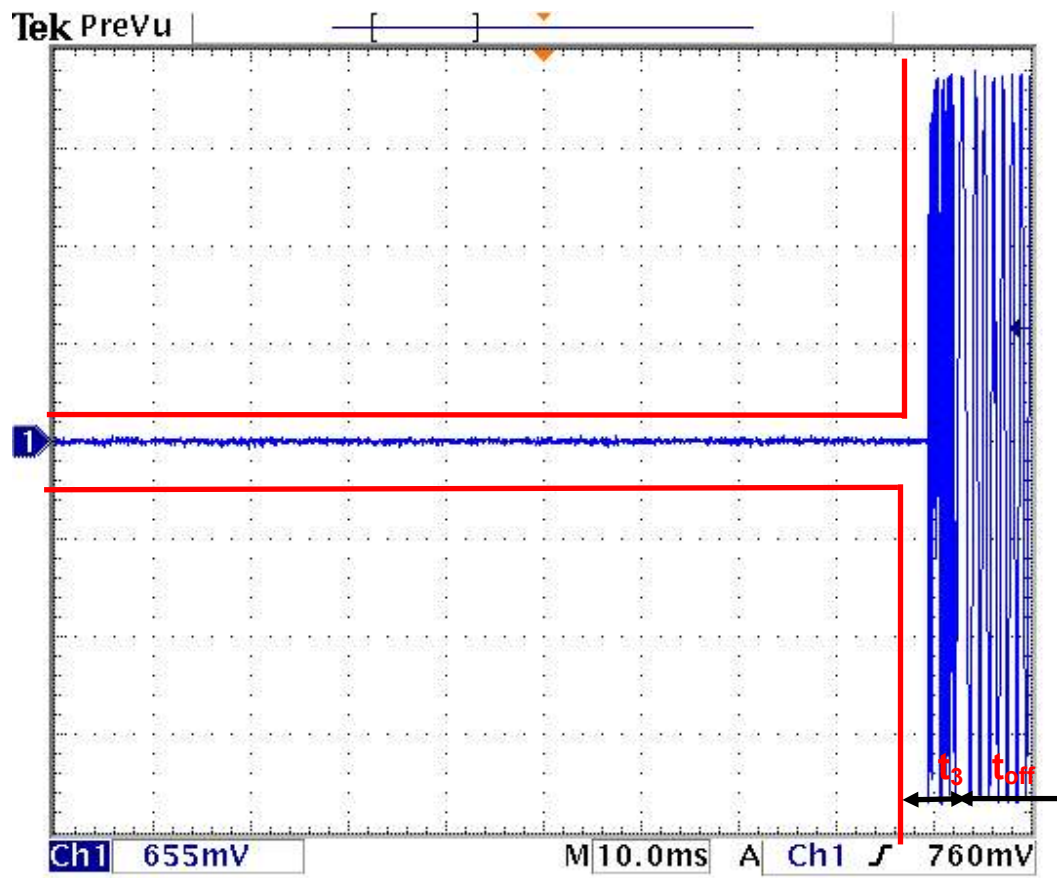
### 5.10.11 Test Plot 5

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 161.025 MHz                 |
| Channel :             | 2nd Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | WideBand                    |
| Reference Voltage :   | 13.8 VDC                    |

#### 5.10.12.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



5.10.11.2 Switch off condition  $t_3$ ,  $t_{off}$

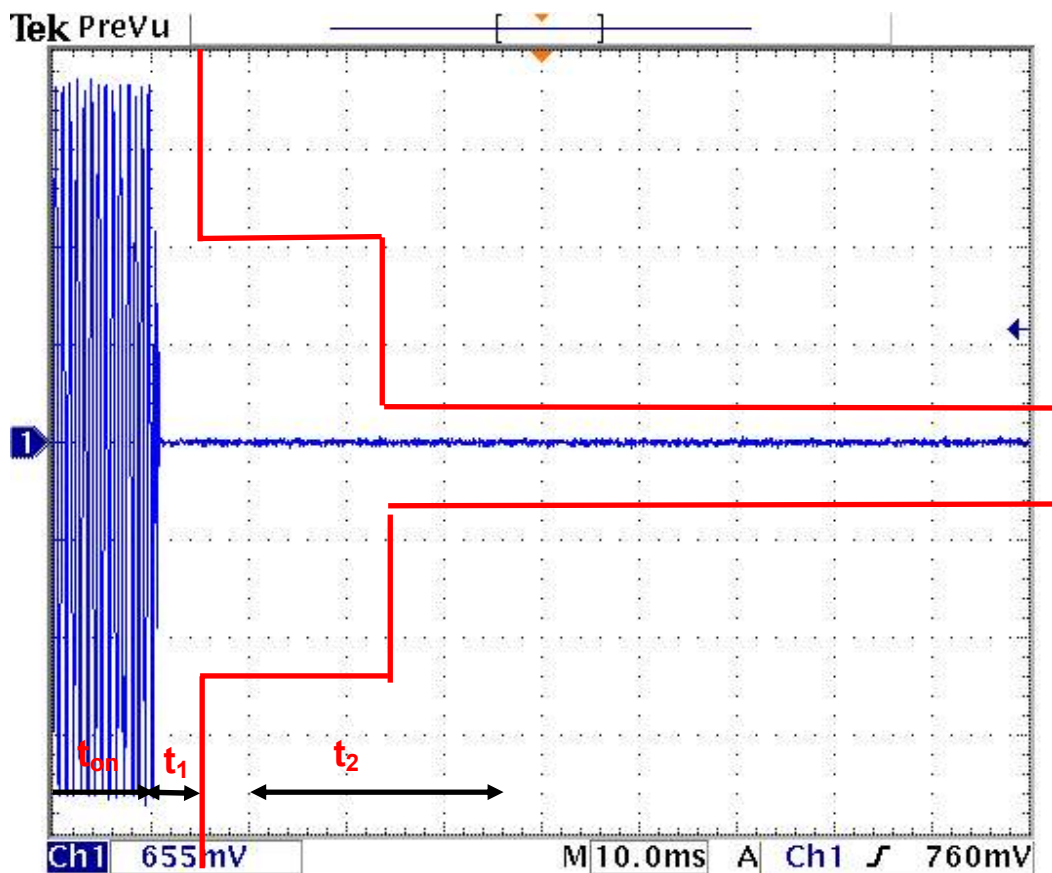




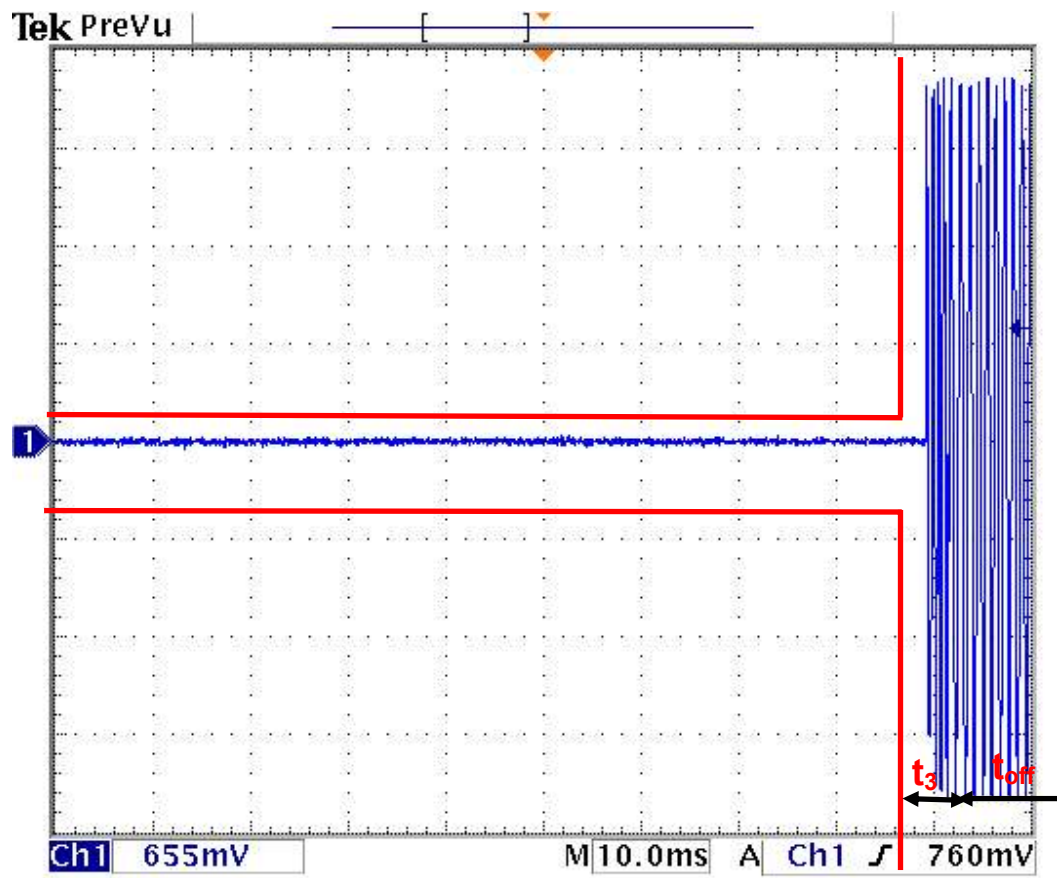
## 5.10.12 Test Plot 6

|                       |                             |
|-----------------------|-----------------------------|
| FCC Rules :           | Part 90 §90.231             |
| IC Rules :            | RSS-119 Issue 9 Section 5.9 |
| Operating Frequency : | 173.975 MHz                 |
| Channel :             | 3rd Channel                 |
| Power Output :        | 25 Watts                    |
| Channel Spacing :     | WideBand                    |
| Reference Voltage :   | 13.8 VDC                    |

### 5.10.12.1 Switch on condition $t_{on}$ , $t_1$ and $t_2$



5.10.12.2 Switch off condition  $t_3$ ,  $t_{off}$



## 6. TEST EQUIPMENTS LIST

|    | EQUIPMENT                         | MODEL       | MANUFACTURE     | SERIAL NUMBER   | Calibration Due date |
|----|-----------------------------------|-------------|-----------------|-----------------|----------------------|
| 1  | Receiver                          | ESVN 30     | Rohde & Schwarz | 832854/010      | 07/25/09             |
| 2  | Spectrum analyzer                 | FSP7        | Rohde & Schwarz | 100001          | 02/22/09             |
| 3  | Signal Generator                  | E4432B      | Agilent         | US40053157      | 07/08/09             |
| 4  | Signal Generator                  | GT9000      | Gigatronics     | 9604010         | 02/22/09             |
| 6  | Modulation Analyzer               | 8901B       | Agilent         | 3028A03124      | 02/22/09             |
| 7  | Audio Analyzer                    | 8903B       | Agilent         | 3011A09344      | 02/22/09             |
| 8  | Digital Oscilloscope              | TDS3032     | Tektronix       | B019436         | 11/20/09             |
| 9  | Frequency Counter                 | R5372       | Advantest       | 41855204        | 02/22/09             |
| 10 | Shield Room<br>(7m x 4m x 3m)     | N/A         | SJEMC           | 0004            | N/A                  |
| 11 | Turn Table                        | OSC-30      | N/A             | BWS-01          | N/A                  |
| 12 | Antenna Mast                      | JAC-3       | Dail EMC        | N/A             | N/A                  |
| 13 | Temperature &<br>Humidity chanber | EN-GLMP-54  | Enex            | N/A             | 03/21/09             |
| 14 | Bilog Antenna                     | VULB9160    | Schwarzbeck     | VULB9160-3122   | 01/24/10             |
| 15 | Bilog Antenna                     | VULB9161    | Schwarzbeck     | VULB9161-4067   | 11/19/09             |
| 16 | Bilog Antenna                     | VULB9161    | Schwarzbeck     | VULB9161-4068   | 12/11/09             |
| 17 | Horn Antenna                      | 3115        | ETS-Lindgren    | 00055005        | 02/07/10             |
| 18 | Horn Antenna                      | BBHA 9120 D | Schwarzbeck     | BBHA 9120 D 234 | 03/16/09             |
| 19 | Horn Antenna                      | BBHA 9170   | Schwarzbeck     | BBHA9170157     | 12/07/10             |
| 20 | Power Meter                       | E4418A      | Agilent         | GB38272621      | 02/22/09             |
| 21 | Power Sensor                      | E9301B      | Agilent         | US40010238      | 02/22/09             |
| 22 | Power supply                      | IPS-30B03DD | Interact        | 42052           | 03/20/09             |
| 23 | Directional Coupler               | 778D        | Agilent         | 1144A08477      | 11/07/09             |
| 24 | Power Divider/Combiner            | 11636A      | Agilent         | 05774           | 06/25/09             |
| 25 | Power Divider/Combiner            | 11636A      | Agilent         | 05870           | 06/25/09             |