EMC Test Report

Project Number:	**3044696**
Report Number:	**3044696EMC08** **Revision Level: 1**
Client:	**Intermec Technologies Corp.**
Equipment Under Test:	**Mobile Computer**
Model Name:	**CN51 Mobile Computer with AE37 AC Adapter**
Model Number:	**1015CP01**
Hardware Version:	**1.0.0.0334**
Applicable Standards:	**FCC Part 15 Subpart C, § 15.407**
	RSS-210, Issue 8, December 2010
	EN 301 893 V1.6.1
Report issued on:	**27 September 2013**
Test Result:	**Compliant**

Tested by: _____
Brian Forster, EMC Engineer

Reviewed by: _____
David Schramm, EMC Manager

Remarks:
This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Summary of Test Results

Basic Standards	Test Result
FCC Part 15.407/EN301 893 Non Occupancy Period	Compliant
FCC Part 15.407/EN301 893 Channel Move Time	Compliant
FCC Part 15.407/EN301 893 Channel Closing Transmission Time	Compliant

1.1 *Modifications Required to Compliance*

None

2 General Information

2.1 *Client Information*

Name:	Intermec Technologies Corp.
Address:	6001 36th Avenue W
City, State, Zip, Country:	Everett, WA 988203 United States

2.2 *Test Laboratory*

Name:	SGS North America, Inc.
Address:	620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country:	Suwanee, GA 30024, USA

2.3 *General Information of EUT*

Model Name:	CN51 Mobile Computer with AE37 AC Adapter	
Model Number:	1015CP01	
Serial Number:	333X1200044	
Build Version:	1.0.0.0334	
Rated Voltage:	3.8VDC	
Applicable Operating Frequencies:	BT:	2402 - 2480 MHz,
	802.11b,g,n:	2412 - 2462MHz,
	802.11a,n:	5180 - 5240 MHz
		5260 – 5320 MHz(DFS Band)
		5500 – 5700 MHz(DFS Band)
		5745 – 5825 MHz

Sample Received Date:	February 22, 2013
Dates of testing:	February 25 to 21MAY2013

2.4 *Device Description*

Operating mode
The device has no radar detection capabilities and no ad-hoc capabilities in the 5GHz DFS bands.

Master device identification
The DFS compliant master device used for testing was a Cisco Dual Band Access Point Model AIR-SAP2602E-A-K9; SN FGL1648Z5HP; FCC ID: LDK102080; IC: 2461B-102080.

Channel loading messages or sequences
Testing was performed with the specified MPEG test file installed on an Intermec supplied LINUX video server computer. The test file was streamed in full motion video at 30 frames per second from the master to the client system. Intermec has provided the following attestation regarding the fulfillment of the channel loading requirements.

"Per Section 7.7 of the FCC Procedure, the Intermec DFS Test system uses the test file designated by the NTIA. The video format and codec are equivalent to those specified by the NTIA"

List the highest and lowest possible power level(EIRP of the equipment
The maximum 5 GHz EIRP is 10.94 dBm, the minimum EIRP is 9.03 dBm.
Transmit Power Control
Since the device does not exceed 27dBm EIRP, TPC is not required.

User access to detected radar waveforms
The device does not utilize radar detection, this requirement is not applicable

Time required for master or client device to complete its power on cycle
The master device took 1 minute 11 seconds to complete its power on cycle.
The client device does not have radar detection. Its power on time is not applicable.

System Architecture
The EUT utilizes IP based system architecture

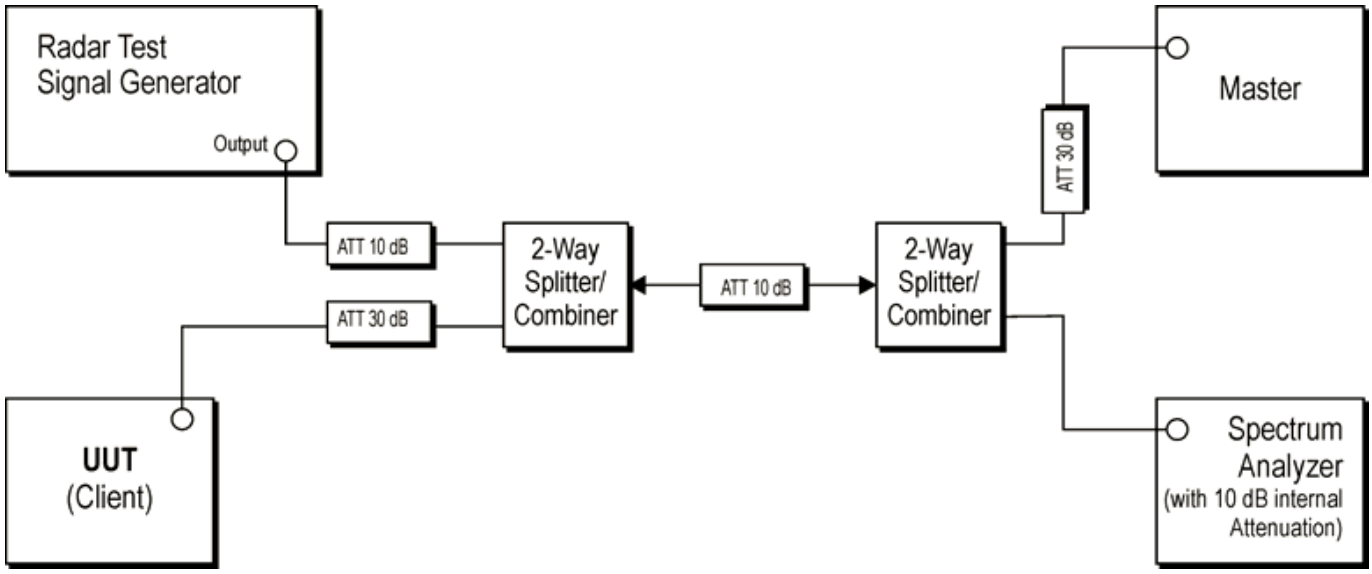
Uniform Channel Spreading
Not applicable for non radar detecting devices

List all antennas and their corresponding gains
The EUT has only one antenna and one antenna port, the DFS testing was conducted using a conducted setup, the port has 50Ω impedance.

The antenna gain was measured at Intermec's RF Lab, the maximum gain in the 5GHz bands is 4.13dBi and the minimum gain is 0.55.

The calibrated conducted DFS detection threshold level was set at -63 dBm at the antenna port of the Master device. This satisfies the DFS detection threshold requirement +1 dB.

2.5 *EUT Connection Block Diagram*



2.6 *System Configurations*

Device reference	Manufacturer	Description	Model Number	Serial Number
Master	Cisco	Access Point (support equipment)	AIR-SAP2602E-A-K9	FGL1648Z5HP
UUT	Intermec	Mobile Computer	1015CP01	333X1200044
Radar Test Signal Generator	Bench Forge	Radar Test Signal Generator (support equipment)	Colt	NA

3 DFS Requirements

3.1 *Test Result*

Test Description	Basic Standards	Test Result
Channel Shutdown/Closing Transmission/Non-occupancy	FCC Part 15.407 RSS 210 EN 301 893 V1.6.1	Compliant

3.2 *Test Method*

The EUT was tested i.a.w procedures for a device without radar detection, the radar signal was adjusted to meet the minimum detection threshold at the master device using a calibrated spectrum analyzer. The radar pulses were supplied to the access point during each test sequence as required by Part 15.407 and EN301 893 for the initiation of a channel closing command from the master device to the EUT slave device. The measurement start times were based on the end time of the radar pulse to the master device.

3.3 *DFS requirements / Limits*

Requirement	Limit
Channel Move Time	10 sec
Channel Closing Transmission Time	200 ms + an aggregate 60 ms over the following 10 seconds
Non-Ocupancy Period	30 Minutes

3.4 *Test Site*

EMC Laboratory, Suwanee, GA

Environmental Conditions

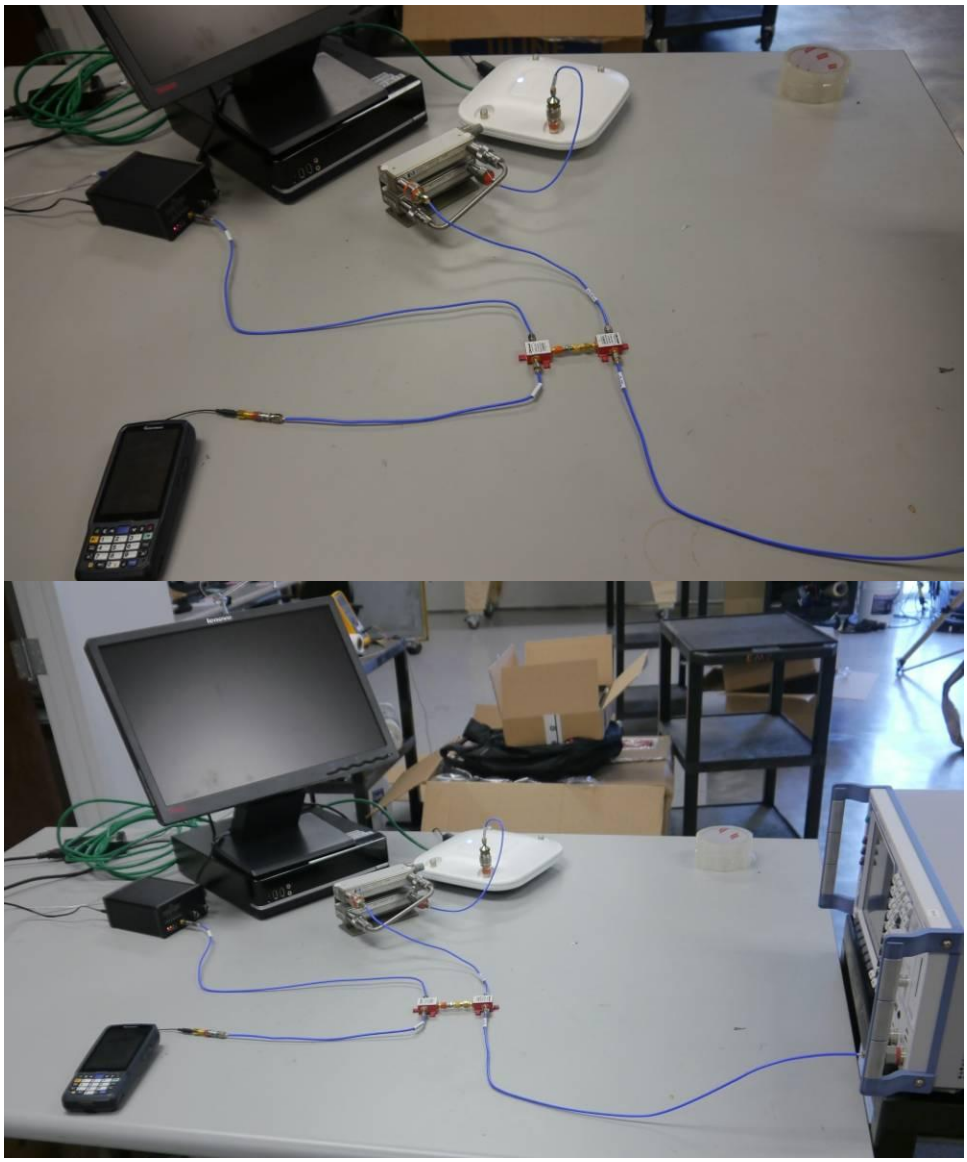
Temperature:	24.5 °C
Relative Humidity:	31.4 %
Atmospheric Pressure:	97.50 kPa

3.5 *Test Equipment*

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
Receiver	ESU40	R & S	B079629	24-Sep-13
Attenuator	BW-S30W2+	Mini-Circuits	NA	NA
Attenuator	BW-S30W2+	Mini-Circuits	NA	NA
Attenuator	BW-S10W2+	Mini-Circuits	NA	NA
Attenuator	BW-S10W2+	Mini-Circuits	NA	NA
Attenuator	8496B	Hewlet-Packard	NA	NA
Radar Test Generator	Colt	Benchforge	NA	NA
Acces Point	AIR SAP2602E A K9	Cisco	NA	NA
Power Splitter	ZFRSC-123-S+	Mini-Circuits	NA	NA
Power Splitter	ZFRSC-123-S+	Mini-Circuits	NA	NA
RF Cable	086-12SM+	Mini-Circuits	NA	NA
RF Cable	086-12SM+	Mini-Circuits	NA	NA
RF Cable	086-24SM+	Mini-Circuits	NA	NA
RF Cable	086-24SM+	Mini-Circuits	NA	NA

Note: The calibration period equipment is 1 year
All signal levels were calibrated i.a.w. the applicable standards using the ESU-40 Spectrum Analyzer..

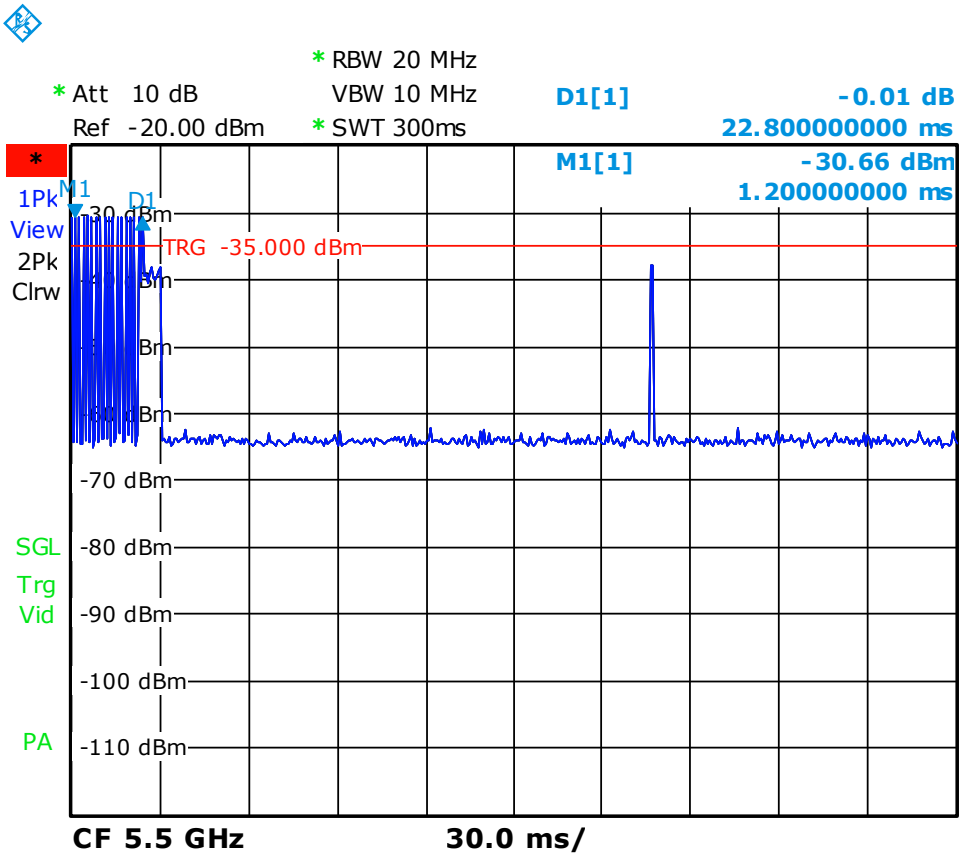
3.6 *Test Setup Photographs*



3.7 *Test Data*

Test Start Date: 5/20/2013 Tested By: BKF
Test End Date: 5/21/2013

Requirement	Sub band	Measurement	Limit	Result
300 ms	5470 - 5725	24 ms	NA	PASS
1.2 sec	5470 - 5725	<260 ms	≤ 260 ms aggregate	PASS
12 second	5470 - 5725	2 sec	10 sec	PASS
30 minute	5470 - 5725	>30 min	>30 min	PASS
300 ms	5150 - 5350	24.3 ms	NA	PASS
1.2 sec	5150 - 5350	<260 ms	≤ 260 ms aggregate	PASS
12 second	5150 - 5350	4.74 sec	10 sec	PASS
30 minute	5150 - 5350	>30 min	>30 min	PASS



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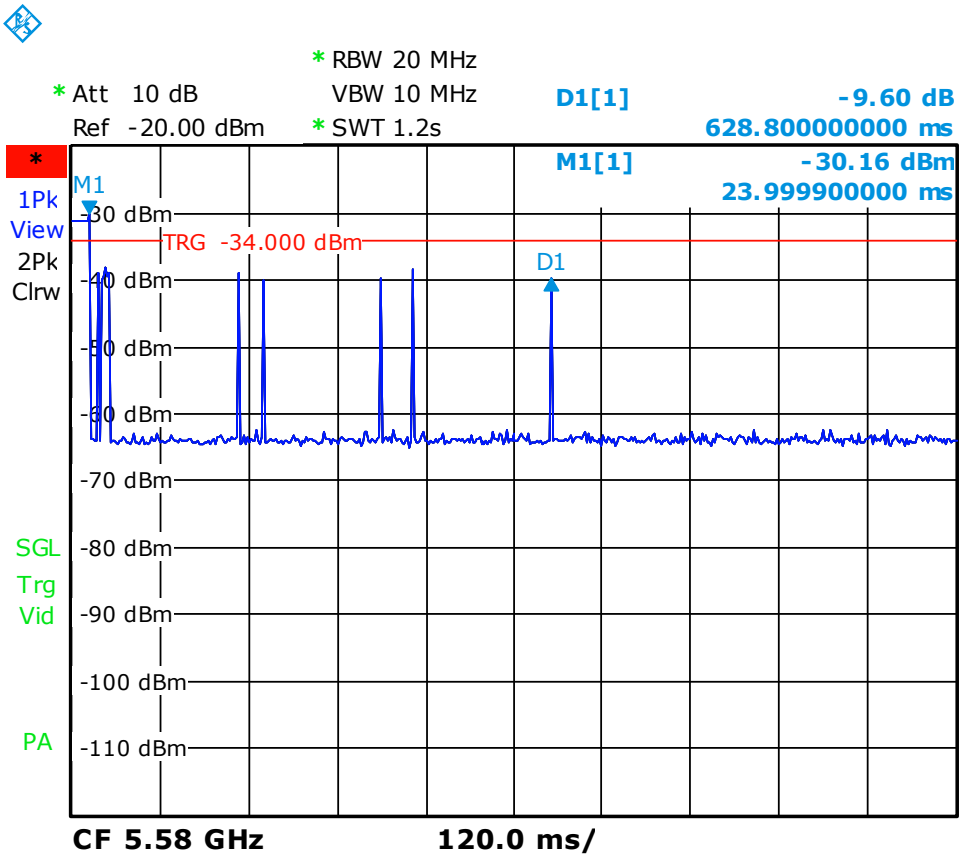

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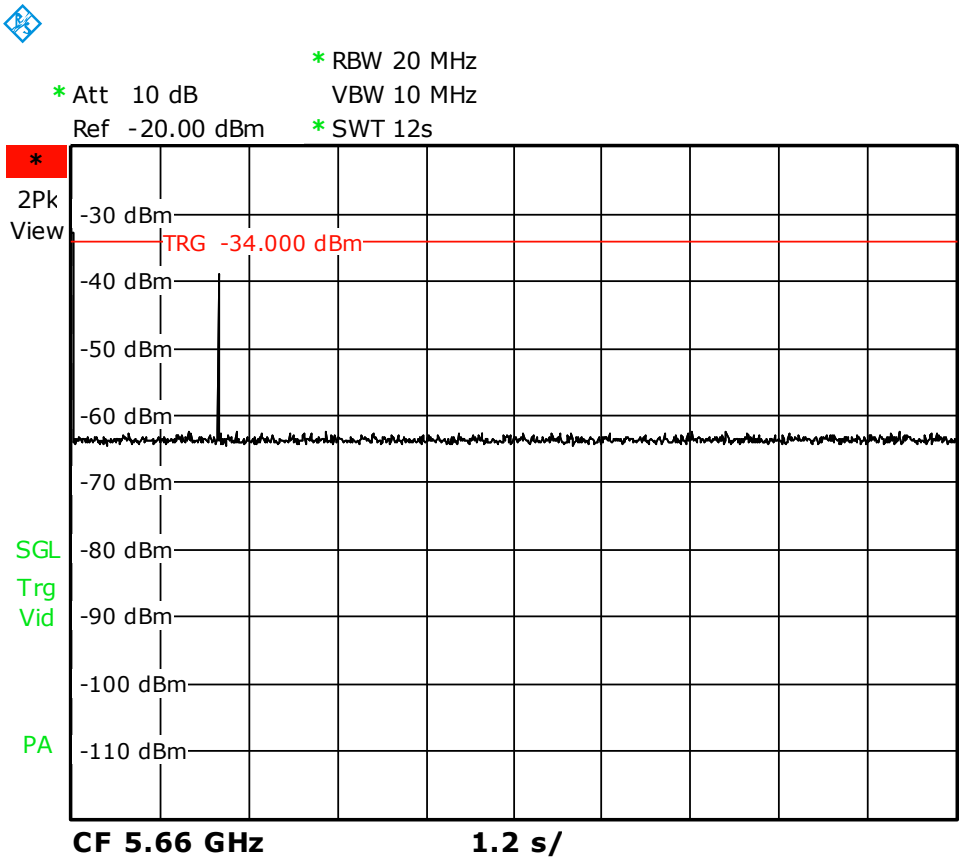

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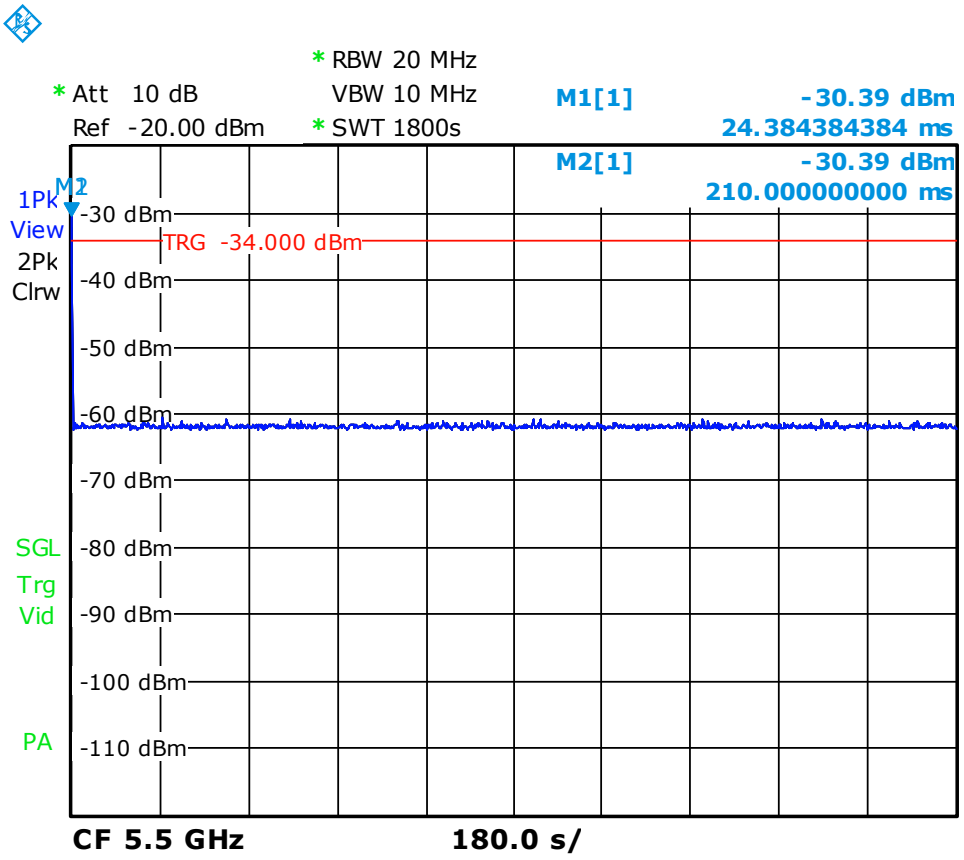

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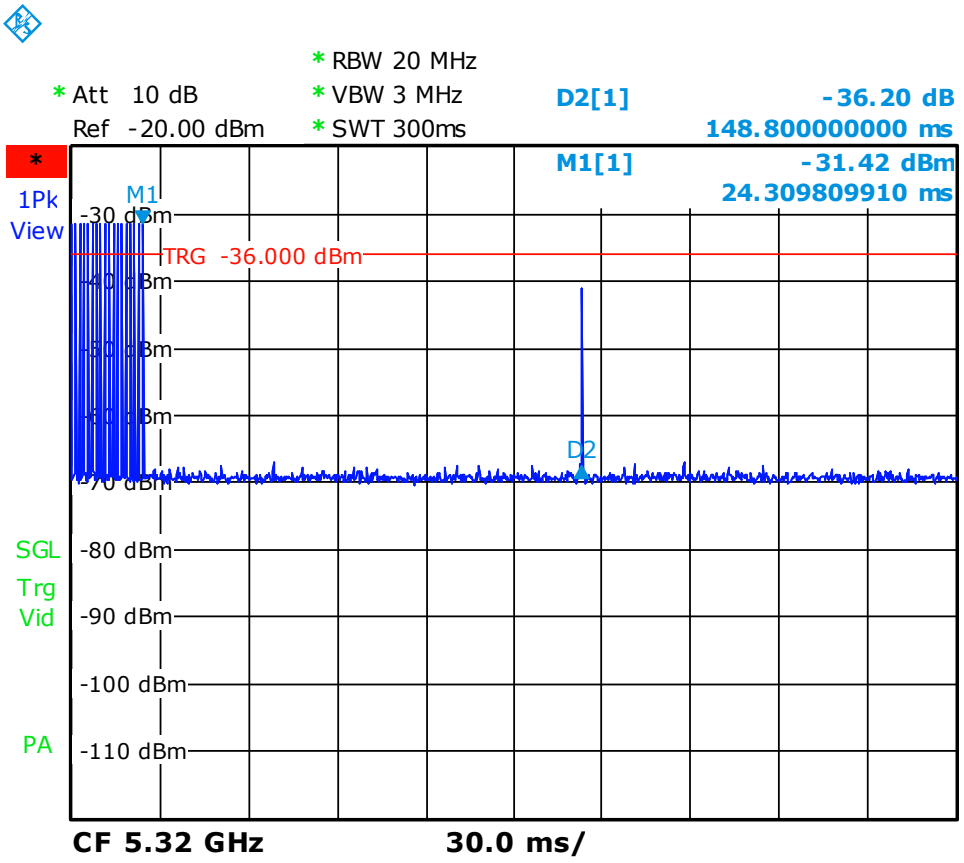

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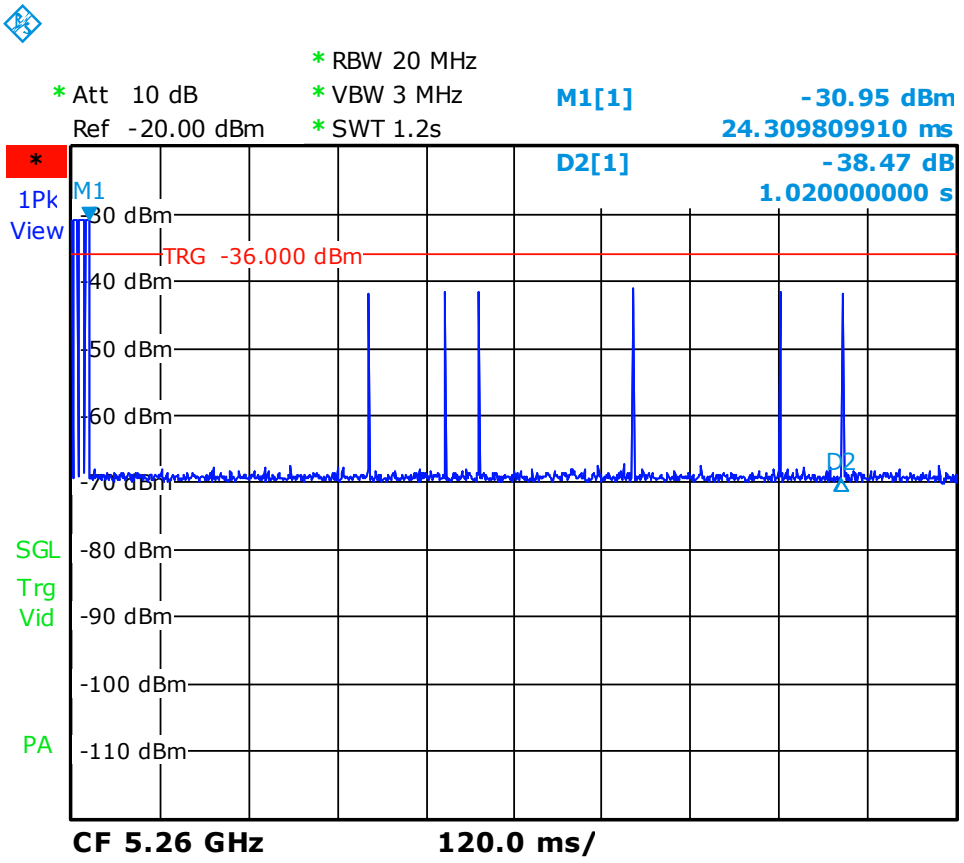

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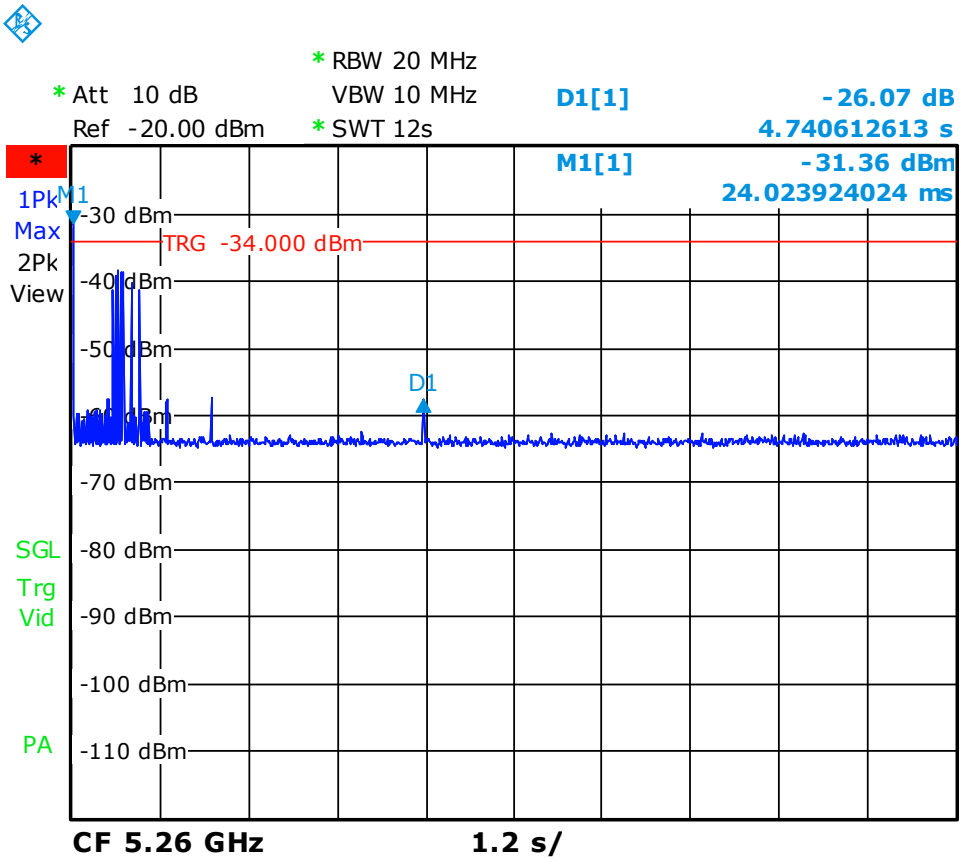

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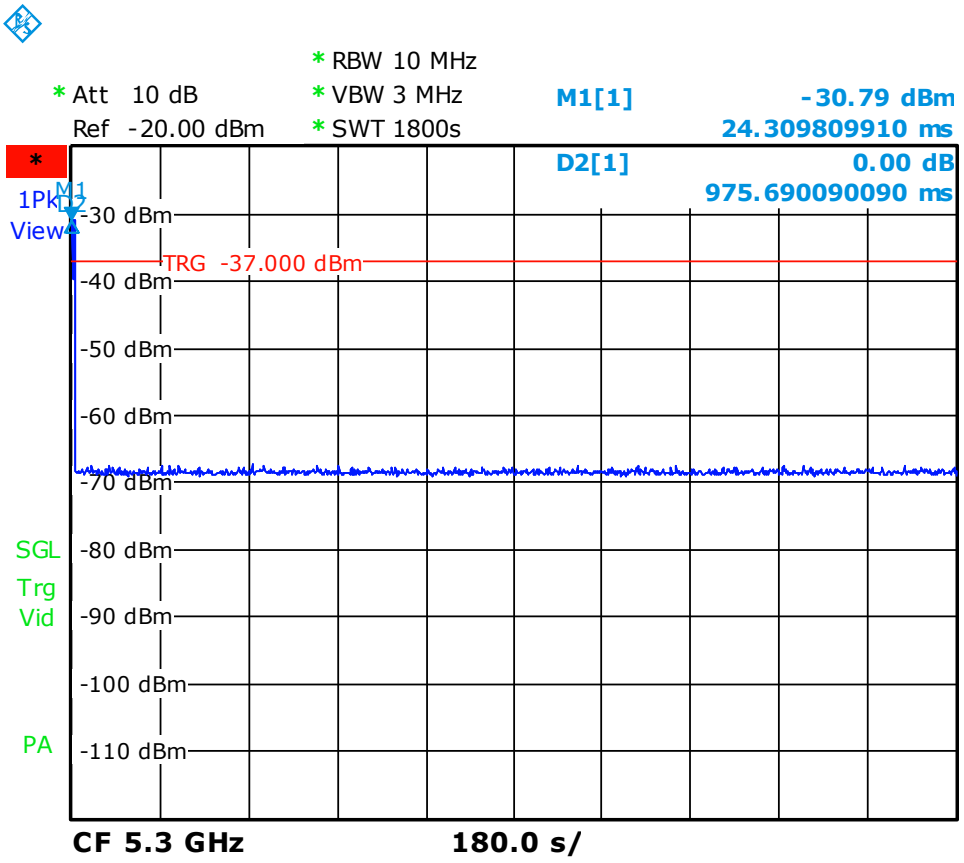

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4 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	29 August 2013
1	Added FCC DFS required information from KDB 905462	27 Sep 2013