

Test of Samsung Electronics 802.11a/b/g/n

To: FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: ARTC01-U3 Rev A





Test of Samsung Electronics 802.11a/b/g/n

to

To FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: ARTC01-U3 Rev A

Note: this report contains data with respect to the DFS Bands 5,250 – 5,250 and 5,470 - 5,7250 MHz frequency bands for Samsung Electronics, WEA302i Wireless Access Point.

This report supersedes None

Applicant: Samsung Electronics
129, Samsung-ro Yeongtong-gu
Sunwon-si, Gyeonggi-do
Korea 443-742

Product Function: Wireless Access Point

Copy No: pdf Issue Date: 26th August 2013

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.

440 Boulder Court, Suite 200

Pleasanton, CA 94566 USA

Phone: +1 (925) 462-0304

Fax: +1 (925) 462-0306

www.micomlabs.com



TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 3 of 193

This page has been left intentionally blank

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

MiCOM Labs, 440 Boulder Court, Suite 200, Pleasanton, CA 94566 USA, Phone: 925.462.0304, Fax: 925.462.0306, www.micomlabs.com



TABLE OF CONTENTS

ACCREDITATION, LISTINGS & RECOGNITION	5
TESTING ACCREDITATION	5
RECOGNITION	6
PRODUCT CERTIFICATION	7
1. TEST RESULT CERTIFICATE.....	9
2. REFERENCES AND MEASUREMENT UNCERTAINTY	10
2.1. Normative References.....	10
2.2. Test and Uncertainty Procedures.....	11
3. PRODUCT DETAILS AND TEST CONFIGURATIONS.....	12
3.1. Technical Details.....	12
3.2. Scope of Test Program	13
3.3. Equipment Model(s) and Serial Number(s)	14
3.4. Antenna Details	14
3.5. Cabling and I/O Ports	14
3.6. Test Configurations	15
3.7. Equipment Modifications	16
3.8. Deviations from the Test Standard.....	16
3.9. Subcontracted Testing or Third Party Data	16
4. TESTING EQUIPMENT CONFIGURATION(S)	17
4.1. Conducted RF Emission Test Set-up.....	17
4.2. Radiated Spurious Emission Test Set-up > 1 GHz	18
4.3. Digital Emissions Test Set-up (0.03 – 1 GHz).....	19
4.4. ac Wireline Emission Test Set-up	20
5. TEST SUMMARY.....	21
6. TEST RESULTS	24
6.1. Device Characteristics.....	24
6.1.1. Conducted Testing.....	24
6.1.2. Radiated Emission Testing	59
6.1.3. AC Wireline Conducted Emissions (150 kHz – 30 MHz)	80
6.1.4. Dynamic Frequency Selection (DFS).....	83
6.1.5. Dynamic Frequency Selection (DFS) Test Results.....	95
7. TEST EQUIPMENT DETAILS.....	117
APPENDIX	118
A. SUPPORTING INFORMATION.....	118
A.1. CONDUCTED TEST PLOTS	118
A.1.1. 26 dB & 99% Bandwidth	119
A.1.2. Peak Power Spectral Density	153
A.1.3. Peak Excursion Ratio.....	187

ACCREDITATION, LISTINGS & RECOGNITION

TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard EN ISO/IEC 17025. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-01.pdf>



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 6 of 193

RECOGNITION

MiCOM Labs, Inc has widely recognized Electrical testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA** countries. Our test reports are widely accepted for global type approvals.

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	US0159 Listing #: 4143A-2
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	APEC MRA 2	RCB 210
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA	NB 2280
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	CAB	APEC MRA 1	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	CAB	APEC MRA 1	
Singapore	Infocomm Development Authority (IDA)	CAB	APEC MRA 1	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	CAB	APEC MRA 1	
Vietnam	Ministry of Communication (MIC)	CAB	APEC MRA 1	

**APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.

Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

N/A – Not Applicable

**EU MRA – European Union Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries.

**NB – Notified Body

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC Guide 65. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-02.pdf>



USA Telecommunication Certification Body (TCB) - TCB Identifier – US0159

Industry Canada Certification Body - CAB Identifier – US0159

European Notified Body - Notified Body Identifier - 2280

Japan – Recognized Certification Body (RCB) - RCB Identifier - 210

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 8 of 193

DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	26 th August 2013	Initial release

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 9 of 193

1. TEST RESULT CERTIFICATE

Applicant:	Samsung Electronics 129, Samsung-ro Yeongtong-gu Sunwon-si, Gyeonggi-do Korea 443-742	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	Wireless LAN Access point	Tel:	+1 925 462 0304
Model:	WEA302i	Fax:	+1 925 462 0306
S/N:	Engineering Sample		
Test Date(s):	16th May - 23rd August 2013	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part 15.407 & IC RSS-210	EQUIPMENT COMPLIES

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.



TESTING CERTIFICATE #2381.01

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

Ref.	Publication	Year	Title
(i)	FCC 47 CFR Part 15.407	2012	Code of Federal Regulations
(ii)	FCC 06-96	June 2006	Memorandum Opinion and Order
(iii)	FCC OET KDB 662911	4 th April 2011	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
(iv)	Industry Canada RSS-210	2010	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment
(v)	Industry Canada RSS-Gen	2010	General Requirements and Information for the Certification of Radiocommunication Equipment
(vi)	ANSI C63.4	2009	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
(vii)	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
(viii)	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
(ix)	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
(x)	ETSI TR 100 028	2001	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
(xi)	A2LA	July 2012	Reference to A2LA Accreditation Status – A2LA Advertising Policy
(xii)	FCC Public Notice – DA 02-2138	2002	Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 11 of 193

2.2. Test and Uncertainty Procedures

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 12 of 193

3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description
Purpose:	Test of the Samsung Electronics 802.11a/b/g/n in the frequency range 5,250 – 5,350 and 5,470 - 5725 MHz to FCC Part 15.407 and Industry Canada RSS-210 regulations.
Applicant:	Samsung Electronics 129, Samsung-ro Yeongtong-gu Sunwon-si, Gyeonggi-do, Korea 443-742
Manufacturer:	As applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	ARTC01-U3 Rev A
Date EUT received:	13 th May 2013
Standard(s) applied:	FCC 47 CFR Part 15.407 & IC RSS-210
Dates of test (from - to):	16th May - 23rd August 2013
No of Units Tested:	Three units were exercised 1).. Conducted 2).. Radiated 3).. DFS
Type of Equipment:	2x2 Spatial Multiplexing MIMO configuration
Applicants Trade Name:	Wireless Access Point
Model(s):	WEA302i
Location for use:	Indoor only
Declared Frequency Range(s):	5250 – 5,350 and 5,470 – 5,725 MHz
Hardware Rev	Engineering Sample
Software Rev	Unknown
Type of Modulation:	Per 802.11 – OFDM
EUT Modes of Operation:	Legacy 802.11a, 802.11n HT-20, HT-40
Declared Nominal Output Power: (Average Power)	802.11a: Legacy +20 dBm 802.11n: HT-20 +20 dBm 802.11n: HT-40 +20 dBm
Transmit/Receive Operation:	Time Division Duplex
System Beam Forming:	WEA302i has no capability for beam forming
Rated Input Voltage and Current:	POE 12 Vdc 1.00 A
Operating Temperature Range:	Declared range 0° to +45°C
ITU Emission Designator:	802.11a 16M7D1D 802.11n HT-20 17M9D1D 802.11n HT-40 36M3D1D
Equipment Dimensions:	174mm (W) x 174mm (H) x 34.1mm (D)
Weight:	560 g
Primary function of equipment:	Wireless Access Point for transmitting data and voice.

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

3.2. Scope of Test Program

Samsung Electronics Wireless LAN Access Point RF Testing

The scope of the test program was to test the Samsung Electronics WEA302i Wireless LAN Access Point, 2X2 Spatial Multiplexing MIMO configurations in the frequency range 5,150 - 5,250, 5,250 – 5,350 and 5,470 – 5,725 MHz for compliance against FCC 47 CFR Part 15.407 and Industry Canada RSS-210 specifications.

Equipment Configuration

The device operates in the 2.4 and all 5 GHz frequency bands. 2.4 and 5.8 GHz testing was performed under the FCC 15.247 specification and the 5150 – 5250, 5250 – 5350 and 5470 – 5725 MHz frequency bands tested using FCC 15.407.

5250 – 5350 and 5470 – 5725 MHz frequency bands are covered in this report.

There are 3 sets of 2x2 antenna ports – up to 6 active antennas transmitting simultaneously but no more than two active on the same channel at any given time

- Set #1 AoC: 5GHz: A1 & A3 – these were the ports tested and will fix the output power levels
- Set #2 AoC: 5GHz: A2, A4 - same output power as Set #1 and operates independent from Set #1
- Set #3 AoC: M1 & M2 independently operate (5GHz) - same output power as Set #1 and operates independent from Set #1

FCC OET KDB Implementation

This test program implements the following FCC KDB – 662911 4/4/2011;

Emissions Testing of Transmitters with Multiple Outputs in the Same Band

The KDB document provides guidance for measurements of conducted output emissions of devices that employ a single transmitter with multiple outputs in the same band, with the outputs occupying the same or overlapping frequency ranges. It applies to EMC compliance measurements on devices that transmit on multiple antennas simultaneously in the same or overlapping frequency ranges through a coordinated process. Examples include, but are not limited to, devices employing beam forming or multiple-input and multiple-output (MIMO.) This guidance applies to both licensed and unlicensed devices wherever the FCC rules call for conducted output measurements. Guidance is provided for in-band, out-of-band and spurious emission measurements.

This guidance does not apply to the multiple transmitters included in a composite device, such as a device that combines an 802.11 modem with a cell phone in one enclosure with each driving its own antenna.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 14 of 193

3.3. Equipment Model(s) and Serial Number(s)

Type (EUT/Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	Wireless LAN Access Point	Samsung Electronics	WEA302i	Engineering Sample
Support	Laptop PC	IBM	Thinkpad	None

3.4. Antenna Details

Model	Type	Gain	Freq. Band	Note
		dBi	MHz	
EC96-01196A	PIFA - Integral	4.5	5150 - 5850	(6x per unit)

3.5. Cabling and I/O Ports

Number and type of I/O ports

1. 1 x 10/100/1000 Ethernet
2. Console - Serial maintenance terminal
3. 12 Vdc, supply connector
4. Reset button

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



3.6. Test Configurations

Testing was performed to determine the highest power level versus bit rate. The variant with the highest power was used to exercise the product.

Matrix of test configurations

Operational Mode(s) (802.11)	Variant	Data Rates with Highest Power	Frequencies (MHz)
5250-5350 5470-5725	802.11a	6 MBit/s	5260,5280,5300,5320 5500,5580,5700
	802.11n HT-20	6.5 MBit/s	
	802.11n HT-40	13.5 MBit/s	5270,5310 5510,5550,5670

Spurious Emission and Band-Edge Test Strategy

Bands 5,250 – 5,350

11a	11n HT-20	11n HT-40
SE 5260	SE 5260	SE 5270
SE 5300	SE 5300	
SE 5320	SE 5320	SE 5310
BE 5350	BE 5350	BE 5350

KEY:-

SE – Spurious Emissions

BE – Band-Edge

Band 5,470 – 5,725

11a	11n HT-20	11n HT-40
SE 5500	SE 5500	SE 5510
SE 5580	SE 5580	SE 5550
SE 5700	SE 5700	SE 5670
BE 5470	BE 5470	BE 5470



3.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:

1. NONE

3.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:

1. NONE

3.9. Subcontracted Testing or Third Party Data

1. NONE

4. TESTING EQUIPMENT CONFIGURATION(S)

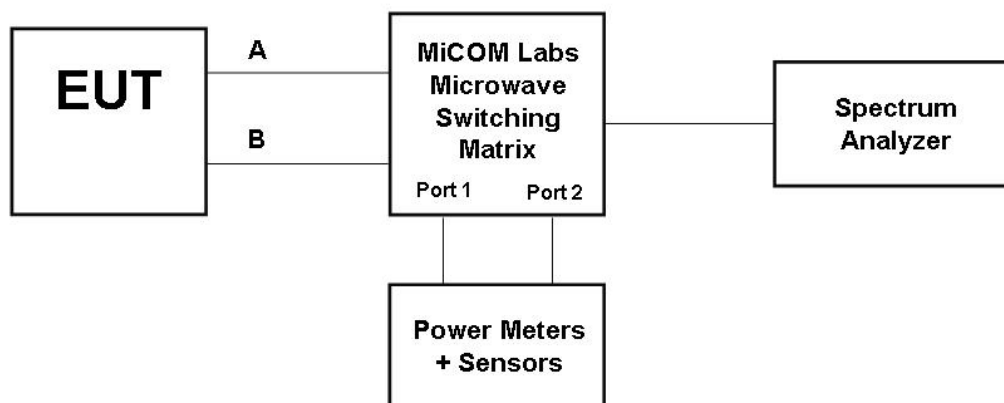
4.1. Conducted RF Emission Test Set-up

The following tests were performed using the conducted test set-up shown in the diagram below.

1. Section 6.1.1.1. 26 dB and 99% Bandwidth
2. Section 6.1.1.2. Maximum Conducted Output Power
3. Section 6.1.1.3. Peak Power Spectral Density
4. Section 6.1.1.4. Peak Excursion Ratio

Conducted Test Set-Up Pictorial Representation

Test Measurement set up

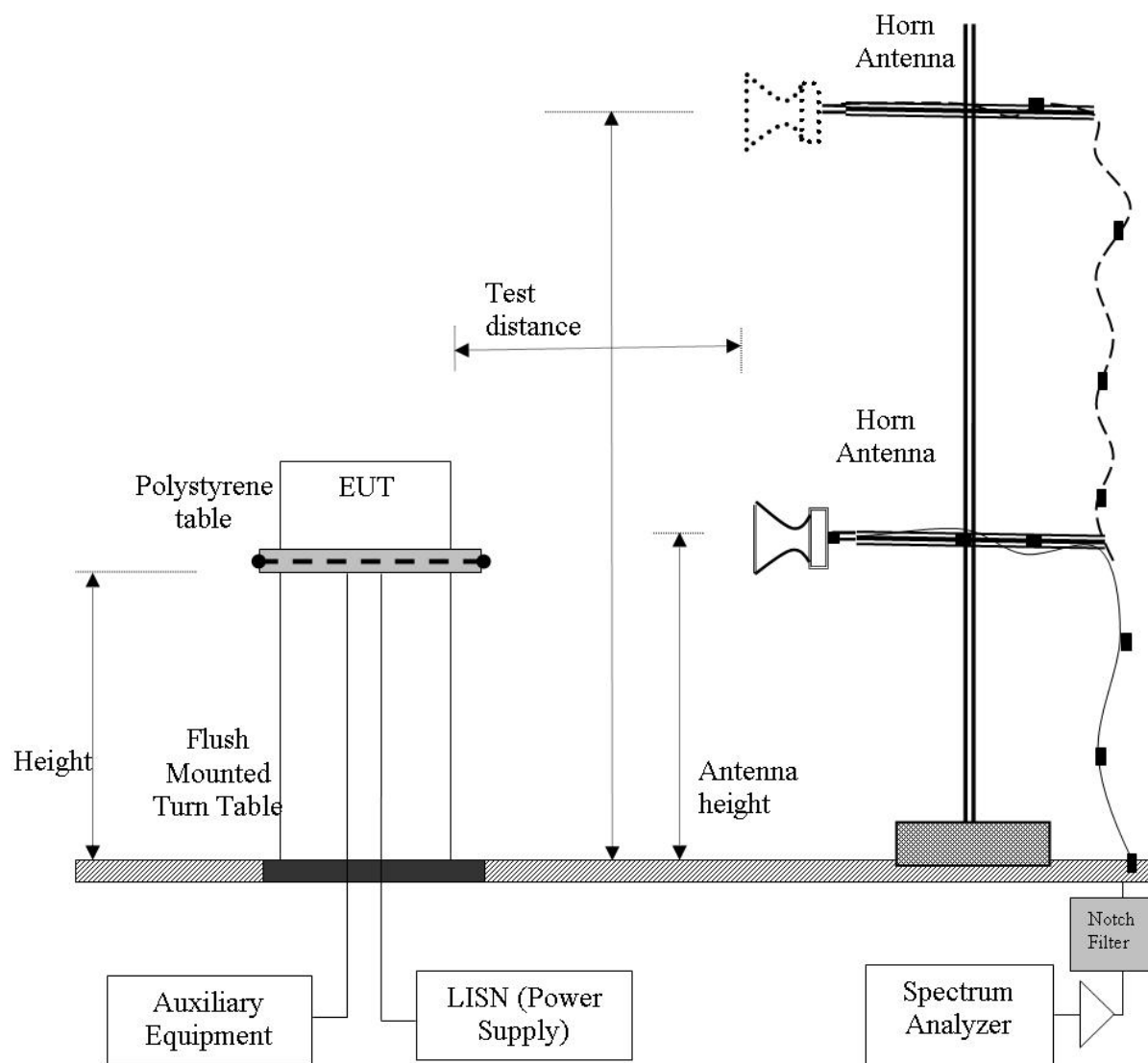


Conducted Test Measurement Setup with Environmental Temperature Cycling

4.2. Radiated Spurious Emission Test Set-up > 1 GHz

The following tests were performed using the conducted test set-up shown in the diagram below.

Radiated Emission Measurement Setup – Above 1 GHz



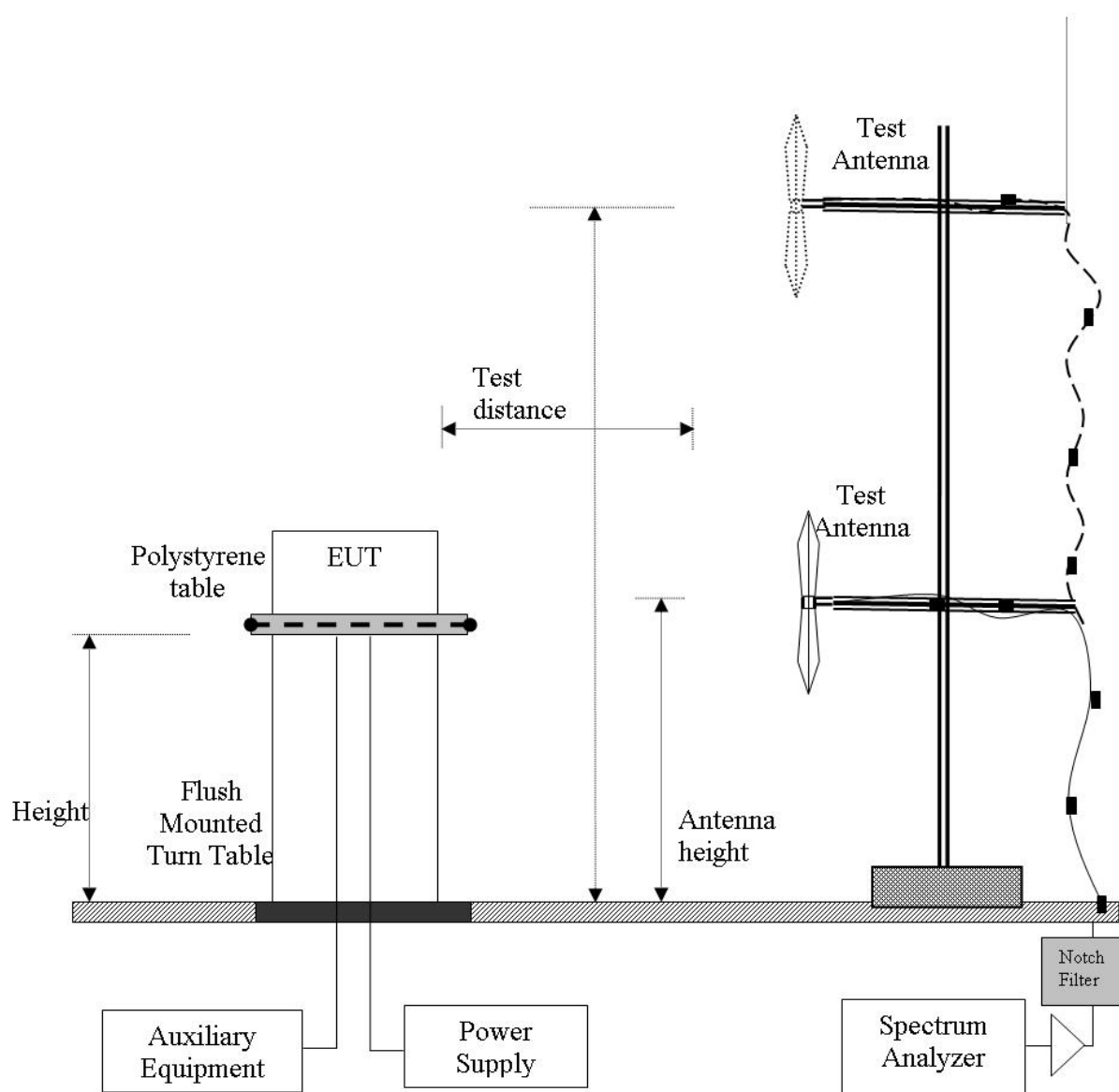
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

4.3. Digital Emissions Test Set-up (0.03 – 1 GHz)

The following tests were performed using the conducted test set-up shown in the diagram below.

1. Section 6.1.2.4. Digital Emissions

Digital Emission Measurement Setup – Below 1 GHz



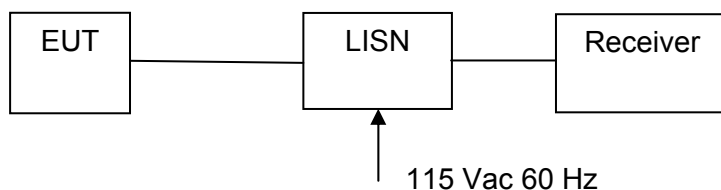
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

4.4. ac Wireline Emission Test Set-up

The following tests were performed using the conducted test set-up shown in the diagram below.

1. Section 6.1.3 ac Wireline Conducted Emissions

Conducted Test Set-Up Pictorial Representation



Measurement set up for ac Wireline Conducted Emissions Test



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 21 of 193

5. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(a) A9.2(2) 4.4	26dB and 99% Emission BW	Emission bandwidth measurement	Conducted	Complies	6.1.1.1 A.1.1
15.407(a) A9.2(2) 4.6	Maximum Conducted Output Power	Power Measurement	Conducted	Complies	6.1.1.2
15.407(a) A9.2(2)	Peak Power Spectral Density	PPSD	Conducted	Complies	6.1.1.3 A.1.2
15.407(a)(6)	Peak Excursion Ratio	<13dB in any 1MHz bandwidth	Conducted	Complies	6.1.1.4 A.1.3
15.407(g) 15.31 2.1 4.5	Frequency Stability	Limits: contained within band of operation at all times.	Applicant declaration	Complies	6.1.1.5
15.407(f) 5.5	Radio Frequency Radiation Exposure	Exposure to radio frequency energy levels, Maximum Permissible Exposure (MPE)	Conducted	See included MPE exhibit	--

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 22 of 193

List of Measurements (continued)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(b)(2) 15.205(a) 15.209(a) 2.2 2.6 A9.3(2) 4.7	Radiated Emissions		Radiated		6.1.2
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	6.1.2.1 6.1.2.2 6.1.2.3
	Radiated Band Edge	Band edge results		Complies	6.1.2.1 6.1.2.2 6.1.2.3
15.407(b)(6) 15.205(a) 15.209(a) 2.2	Radiated Emissions	Emissions <1 GHz (30M-1 GHz)		Complies	6.1.2.4
15.407(b)(6) 15.207 7.2.2	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	Complies	6.1.3

Note 1: Test results reported in this document relate only to the items tested

Note 2: The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria

Note 3: Section 3.7 Equipment Modifications highlights the equipment modifications that were required to bring the product into compliance with the above test matrix

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



List of Measurements (cont'd)

Dynamic Frequency Selection (DFS)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407(h)(2)** and **FCC Memorandum Opinion and Order FCC 06-96 (Compliance Measurement procedures for Unlicensed National Information Infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection)**.

Tests performed on Master Device

Section	Test Items	Description	Condition	Result	Test Report Section
	DFS	Dynamic Frequency Selection	Conducted		6.1.4
7.8.1	Detection Bandwidth	UNII Detection Bandwidth	Conducted	Complies	
7.8.2.1	Performance Requirements Check	Initial Channel Availability Check Time	Conducted	Complies	
7.8.2.2		Radar Burst at the Beginning of the Channel Availability Check Time	Conducted	Complies	
7.8.2.3		Radar Burst at the End of the Channel Availability Check Time	Conducted	Complies	
7.8.3	In-Service Monitoring	In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period	Conducted	Complies	
7.8.4	Radar Detection	Statistical Performance Check	Conducted	Complies	



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 24 of 193

6. TEST RESULTS

6.1. Device Characteristics

6.1.1. Conducted Testing

6.1.1.1. 26 dB and 99 % Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.407 (a)	Pressure (mBars):	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		
Test Procedure for 26 dB and 99% Bandwidth Measurement			
The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. KDB 789033 Section 5.1 Emission Bandwidth was used in order to prove compliance. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.			

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 25 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	26.152	37.876	--	--	37.876	26.152		
5300.0	22.846	36.673	--	--	36.673	22.846		
5320.0	22.846	35.371	--	--	35.371	22.846		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	16.834	18.838	--	--	18.838	16.834		
5300.0	16.733	18.437	--	--	18.437	16.733		
5320.0	16.733	18.036	--	--	18.036	16.733		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 26 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	25.351	36.473	--	--	36.473	25.351		
5300.0	23.647	35.271	--	--	35.271	23.647		
5320.0	23.046	36.573	--	--	36.573	23.046		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	17.936	18.737	--	--	18.737	17.936		
5300.0	17.936	18.437	--	--	18.437	17.936		
5320.0	17.735	18.537	--	--	18.537	17.735		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 27 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	44.689	72.545	--	--	72.545	44.689		
5310.0	44.088	72.545	--	--	72.545	44.088		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	36.273	36.874	--	--	36.874	36.273		
5310.0	36.273	36.874	--	--	36.874	36.273		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 28 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	28.858	28.657	--	--	28.858	28.657		
5580.0	31.162	35.772	--	--	35.772	31.162		
5700.0	28.858	40.080	--	--	40.080	28.858		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	16.934	16.934	--	--	16.934	16.934		
5580.0	17.234	17.936	--	--	17.936	17.234		
5700.0	16.934	19.238	--	--	19.238	16.934		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 29 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	28.758	28.357	--	--	28.758	28.357		
5580.0	31.964	34.770	--	--	34.770	31.964		
5700.0	31.764	38.477	--	--	38.477	31.764		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	18.036	18.036	--	--	18.036	18.036		
5580.0	18.136	18.537	--	--	18.537	18.136		
5700.0	18.136	20.140	--	--	20.140	18.136		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 30 of 193

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	46.293	56.713	--	--	56.713	46.293		
5550.0	49.098	55.912	--	--	55.912	49.098		
5670.0	52.505	77.355	--	--	77.355	52.505		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	36.273	36.273	--	--	36.273	36.273		
5550.0	36.273	36.473	--	--	36.473	36.273		
5670.0	36.473	37.675	--	--	37.675	36.473		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 31 of 193

Specification

Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or +4 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or +11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-Gen 4.4

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 32 of 193

6.1.1.2. Maximum Conducted Output Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.407 (a)	Pressure (mBars):	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		
Test Procedure for Maximum Conducted Output Power Measurement			
<u>Method PM (Measurement using an RF average power meter).</u> Section C) 4) of KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All cable losses and offsets were taken into consideration in the measured result. All operational modes and frequency bands were measured independently and the resultant □ calculated. For multiple outputs, the measurements were made simultaneously on each output port and summed in a linear fashion. This technique was used in order to prove compliance.			

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Antenna Beam and Non-Beam Forming Power Levels

15. 407 (a)(1), (a) (2) Operation with directional antenna gains greater than 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi 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 dBi. Further FCC KDB 662911 D01 Multiple Transmitter Output v01 requires that the gain of antennas transmitting the same data (legacy 802.11a mode) must be increased by $10 * \log(N)$ when N is the number of antenna elements.

Maximum Transmit (Conducted) Power, FCC Limits and Industry Canada Limits

Bands 5150 – 5250 MHz

FCC Limits

Conducted Power Limit lesser of: 50 mW or 4 dBm + 10 log (B) dBm. B is the 26 dB emission bandwidth in MHz.

Mode	Frequency Range (MHz)	Minimum 26 dB Bandwidth (MHz)	4 + 10 Log (B) (dBm)	Limit (dBm)
a	5150 – 5250	20.441	+17.11	+17.00
HT-20		20.441	+17.11	+17.00
HT-40		39.679	+19.99	+17.00
ac-40		41.082	+20.14	+17.00
ac-80		90.581	+23.57	+17.00

Industry Canada Limits

EIRP Limit 5150 – 5250 MHz: Lesser of 200 mW (+23 dBm) or 10 + 10 Log (B) dBm. B is the 99% emission bandwidth in MHz.

Mode	Frequency Range (MHz)	Minimum 99 % Bandwidth (MHz)	4 + 10 Log (B) (dBm)	Limit (dBm)
a	5150 – 5250	17.735	+16.49	+16.18
HT-20		17.735	+16.49	+16.49
HT-40		36.273	+19.60	+17.00
ac-40		36.673	+19.64	+17.00
ac-80		76.563	+22.84	+17.00



FCC Limits

Bands 5250 – 5350 and 5470 – 5725 MHz

Limit lesser of: 250 mW or 11 dBm + 10 log (B) dBm.

Mode	Frequency Range (MHz)	Maximum 26 dB Bandwidth (MHz)	11 + 10 Log (B) (dBm)	Limit (dBm)
a	5250 – 5350 5470 – 5725	20.641	+24.15	+24.0
HT-20		20.641	+24.15	+24.0
HT-40		39.674	+26.99	+24.0
ac-40		40.281	+27.05	+24.0
ac-80		84.168	+30.25	+24.0

Industry Canada Limits

Bands 5250 – 5350 and 5470 – 5725 MHz

Limit lesser of: 250 mW or 11 dBm + 10 log (B) dBm.

Mode	Frequency Range (MHz)	99% Bandwidth (MHz)	11 + 10 Log (B) (dBm)	Limit (dBm)
a	5250 – 5350 5470 – 5725	19.936	+24.00	+24.0
HT-20		17.936	+24.00	+24.0
HT-40		36.273	+26.60	+24.0
ac-40		36.673	+26.64	+24.0
ac-80		76.152	+29.82	+24.0



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 35 of 193

WEA302i Maximum Power Settings

Power settings for each operational mode and frequency are provided in the following test matrix.

6.1.1.2.1 Measurement Results for Maximum Conducted Output Power Ports A1, A3

Equipment Configuration for Peak Transmit Power									
Variant:		802.11a				Duty Cycle (%):		100	
Data Rate:		6 MBit/s				Antenna Gain (dBi):		Not Applicable	
Modulation:		OFDM				Beam Forming Gain (Y):		Not Applicable	
TPC:		Not Applicable							
Engineering Test Notes:		Antenna ports measured A1/A3							

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260.0	17.03	19.77	--	--	21.62	26.152	24.00	-2.38	20.00
5300.0	16.84	19.38	--	--	21.30	22.846	24.00	-2.70	20.00
5320.0	16.67	19.14	--	--	21.09	22.846	24.00	-2.91	20.00

Traceability to Industry Recognized Test Methodologies									
Work Instruction:					WI-03 MEASURING RF SPECTRUM MASK				
Measurement Uncertainty:					±2.81 dB				

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 36 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A1/A3		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260.0	16.39	19.54	---	---	21.25	25.351	24.00	-2.75	
5300.0	16.24	19.13	---	---	20.93	23.647	24.00	-3.07	
5320.0	16.39	18.95	---	---	20.87	23.046	24.00	-3.13	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 37 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A1/A3		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5270.0	16.09	19.74	---	---	21.30	44.689	24.00	-2.70	
5310.0	16.27	19.18	---	---	20.97	44.088	24.00	-3.03	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 38 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A1/A3		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500.0	18.20	18.26	---	---	21.24	28.657	24.00	-2.76	
5580.0	18.30	19.72	---	---	22.08	31.162	24.00	-1.92	
5700.0	17.54	20.13	---	---	22.04	28.858	24.00	-1.96	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 39 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A1/A3		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500.0	17.90	18.08	---	---	21.00	28.357	24.00	-3.00	
5580.0	18.07	19.59	---	---	21.91	31.964	24.00	-2.09	
5700.0	17.48	20.30	---	---	22.13	31.764	24.00	-1.87	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 40 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A1/A3		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5510.0	17.73	18.01	---	---	20.88	46.293	24.00	-3.12	
5550.0	17.68	18.78	---	---	21.28	49.098	24.00	-2.72	
5670.0	17.81	20.02	---	---	22.06	52.505	24.00	-1.94	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 41 of 193

6.1.1.2.2 Measurement Results for Maximum Conducted Output Power Ports A2, A4

Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes: Antenna ports measured A2/A4			

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260	20.08	18.04	---	---	N/A	22.19	24.00	-1.81	
5300	20.04	18.10	---	---	N/A	22.19	24.00	-1.81	
5320	20.07	18.29	---	---	N/A	22.28	24.00	-1.72	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes: Antenna ports measured A2/A4			

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500	19.67	19.90	---	---	N/A	22.8	24.00	-1.20	
5580	20.06	20.21	---	---	N/A	23.15	24.00	-0.85	
5700	19.51	19.20	---	---	N/A	22.37	24.00	-1.63	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 42 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A2/A4		

Test Measurement Results

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260	19.82	17.72	--	--	N/A	21.91	24.00	-2.09	
5300	19.85	17.81	--	--	N/A	21.96	24.00	-2.04	
5320	20.19	18.39	--	--	N/A	22.39	24.00	-1.61	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A2/A4		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500	19.56	19.73	--	--	N/A	22.80	24.00	-1.20	
5580	20.07	20.15	--	--	N/A	23.15	24.00	-0.85	
5700	20.04	19.69	--	--	N/A	22.37	24.00	-1.63	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 43 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A2/A4		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5270	20.09	17.74	--	--	N/A	22.08	24.00	-1.92	
5310	20.28	18.16	--	--	N/A	22.36	24.00	-1.64	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A2/A4		

Test Measurement Results

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5510	19.59	19.66	--	--	N/A	22.64	24.00	-1.36	
5550	19.8	19.93	--	--	N/A	22.88	24.00	-1.12	
5670	20.18	19.85	--	--	N/A	23.03	24.00	-0.97	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 44 of 193

6.1.1.2.3 Measurement Results for Maximum Conducted Output Power Ports M1, M2

Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured M1/M2		

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260	16.70	20.00	--	--	N/A	21.67	24.00	-2.33	
5300	16.70	19.00	--	--	N/A	21.01	24.00	-2.99	
5320	16.40	18.80	--	--	N/A	20.77	24.00	-3.23	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power			
Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured M1/M2		

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500	13.41	14.61	--	--	N/A	17.06	24.00	-6.94	
5580	14.43	17.00	--	--	N/A	18.91	24.00	-5.09	
5700	15.56	16.30	--	--	N/A	18.96	24.00	-5.04	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 45 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes: Antenna ports measured M1/M2			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5260	16.70	20.00	---	---	N/A	21.67	24.00	-2.33	
5300	16.60	18.80	---	---	N/A	20.85	24.00	-3.15	
5320	16.30	18.80	---	---	N/A	20.74	24.00	-3.26	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes: Antenna ports measured A2/A4			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5500	14.00	16.81	--	--	N/A	18.64	24.00	-5.36	
5580	14.22	16.81	--	--	N/A	18.72	24.00	-5.28	
5700	15.62	16.38	--	--	N/A	19.03	24.00	-4.97	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 46 of 193

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured M1/M2		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5270	16.7	19.8	--	--	N/A	21.53	24.00	-2.47	
5310	16.4	18.7	--	--	N/A	20.71	24.00	-3.29	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:	Antenna ports measured A2/A4		

Test Measurement Results

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5510	13.86	16.51	--	--	N/A	18.39	24.00	-5.61	
5550	14.02	16.58	--	--	N/A	18.50	24.00	-5.50	
5670	15.27	16.60	--	--	N/A	19.00	24.00	-5.00	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Specification Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $+4 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 and 5470-5725 MHz GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $+11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 §A9.2(2)

For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Traceability

Test Equipment Used

0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117
--



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 48 of 193

6.1.1.3. Peak Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Power Spectral Density	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.247 (a)	Pressure (mBars):	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Power Spectral Density

The In-Band power spectral density was measured using the measure and sum approach per FCC KDB 662911 (D01 Multiple Transmitter Output v01.)

Measure and sum the spectra across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The individual spectra are then summed mathematically in linear power units. Unlike in-band power measurements, in which the sum involves a single measured value (output power) from each output, measurements for compliance with PSD limits involve summing entire spectra across corresponding frequency bins on the various outputs. Consistency is maintained for any device with N transmitter outputs to be certain the individual outputs are all aligned with the same span and same number of points. In this instance, the linear power spectrum value within the first spectral bin of output 0 is summed with that in the first spectral bin of output 1, and the first spectral bin of output 2, and so on up to the Nth output to obtain the true value for the first frequency bin of the summed spectrum. The summed spectrum value for each frequency bin is computed in this fashion. These summed spectral values were calculated on a computer, and the results read back into the spectrum analyzer as a data file to produce a representative plot of total spectral power density.

Calculated Power = A + 10 log (1/x) dBm

A = Total Power Spectral Density [10 Log10 (10a/10 + 10 b/10 + 10c/10 + 10d/10)]

x = Duty Cycle

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 49 of 193

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	6.014	8.872	---	---	10.684	11.0	-0.3
5300.0	5.782	8.258	---	---	10.204	11.0	-0.8
5320.0	5.529	7.869	---	---	9.865	11.0	-1.1

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	7.092	7.051	---	---	10.082	11.0	-0.9
5580.0	7.221	8.528	---	---	10.934	11.0	-0.1
5700.0	6.468	9.076	---	---	10.975	11.0	0.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 50 of 193

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	5.141	8.619	--	--	10.230	11.0	-0.8
5300.0	4.993	7.833	--	--	9.651	11.0	-1.3
5320.0	5.024	7.191	--	--	9.252	11.0	-1.7

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	6.700	6.890	--	--	9.806	11.0	-1.2
5580.0	6.820	8.151	--	--	10.547	11.0	-0.5
5700.0	6.047	8.964	--	--	10.756	11.0	-0.2

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 51 of 193

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5270.0	1.778	5.836	---	---	7.275	11.0	-3.7
5310.0	1.972	4.539	---	---	6.453	11.0	-4.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	4.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A	Tested By:	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Calculated Power Spectral Density Σ Port(s)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5510.0	3.169	3.624	---	---	6.413	11.0	-4.6
5550.0	3.378	4.568	---	---	7.024	11.0	-4.0
5670.0	3.377	5.935	---	---	7.852	11.0	-3.1

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 52 of 193

Specification

FCC, Part 15 §15.407 (a)(1), (a)(2)

5150 – 5250 MHz

(a)(1) The peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

5250 – 5350 MHz & 5470 – 5725 MHz

(a)(2) The peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 § A9.2(1), A9.2(2)

5150 – 5250 MHz

§ **A9.2(1)** The eirp spectral density shall not exceed +10 dBm in any 1 MHz band

5250 – 5350 MHz & 5470 – 5725 MHz

§ **A9.2(2)** The power spectral density shall not exceed +11 dBm in any 1 MHz band

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 53 of 193

6.1.1.4. Peak Excursion Ratio

Conducted Test Conditions for Peak Excursion Ratio			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Peak Excursion Ratio	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.407 (a)(6)	Pressure (mBars):	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		
Test Procedure for Peak Excursion Ratio			
Compliance with the peak excursion requirement is demonstrated by confirming the ratio of the maximum of the peak-hold spectrum to the maximum of the average spectrum during continuous transmission. Section F) of KDB 789033 was used in order to prove compliance. This is a conducted measurement using a spectrum analyzer using dual traces. Peak Excursion Ratio is the difference in amplitude (dB) between both traces; The following identifies two spectrum traces on the same plot. <u>Trace 1</u> is the max hold Peak detector, and <u>Trace 2</u> is the recalled trace data from Peak Power Spectral Density measurements. Each frequency and operational mode is recalled in order to prove compliance.			

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 54 of 193

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5260.0	8.92	--	---	--	8.92	8.92	13.0	-4.08

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5260.0	9.44	--	---	--	9.44	9.44	13.0	-3.56

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 55 of 193

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5270.0	9.29	--	---	--	9.29	9.29	13.0	-3.71

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11a	Duty Cycle (%):	100
Data Rate:	6 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5500.0	8.81				8.81	8.81	13.0	-4.19

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 56 of 193

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11n HT-20	Duty Cycle (%):	100
Data Rate:	6.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5500.0	9.13				9.13	9.13	13.0	-3.87

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Excursion Ratio

Variant:	802.11n HT-40	Duty Cycle (%):	100
Data Rate:	13.5 MBit/s	Antenna Gain (dBi):	Not Applicable
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	N/A		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB)				Ratio (dB)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	dB	MHz
MHz	a	b	c	d				
5510.0	10.12				10.12	10.12	13.0	-2.88

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 57 of 193

Specification

Limits

§15.407 (a)(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less

Traceability

Test Equipment Used

0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117
--

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 58 of 193

6.1.1.5. Frequency Stability

FCC, Part 15 Subpart C §15.407(g)
Industry Canada RSS-210 §2.1

Test Procedure

The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions.

Manufacturer Declaration

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore all of the RF signals should have ± 20 ppm stability.

This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

± 20 ppm at 5.250 GHz translates to a maximum frequency shift of ± 105 KHz. As the edge of the channels is at least one MHz from either of the band edges, ± 105 KHz is more than sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the EUT.

Specification

Limits

§15.407 (g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.



6.1.2. Radiated Emission Testing

FCC, Part 15 Subpart C §15.407(b)(2), §15.205(a)/15.209(a)
Industry Canada RSS-210 §A9.3(2); §2.2; §2.6; RSS-Gen §4.7

Test Procedure

Testing was performed in a 3-meter anechoic chamber. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. Preliminary emissions were recorded with in Spectrum Analyzer mode, using a maximum peak detector while in peak hold mode. Depending on the frequency band spanned a notch filter and/or waveguide filter was used to remove the fundamental frequency.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR compliant receiver. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

$$FS = R + AF + CORR - FO$$

FS = Field Strength

R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

$$CORR = \text{Correction Factor} = CL - AG + NFL$$

CL = Cable Loss

AG = Amplifier Gain

FO = Distance Falloff Factor

NFL = Notch Filter Loss or Waveguide Loss

Field Strength Calculation Example:

Given receiver input reading of 51.5 dB μ V; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength of the measured emission is:

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 \text{ dB}\mu\text{V/m}$$

Conversion between dB μ V/m (or dB μ V) and μ V/m (or μ V) are done as:

$$\text{Level (dB}\mu\text{V/m)} = 20 * \text{Log (level (\mu V/m))}$$

$$40 \text{ dB}\mu\text{V/m} = 100 \mu\text{V/m}$$

$$48 \text{ dB}\mu\text{V/m} = 250 \mu\text{V/m}$$

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \text{ } \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBμV/m

Note: The data in this Section identifies that the EUT is in compliance with the -27dBm/MHz EIRP limit (68.23 dBμV/m) for out of band emissions. All out of band emissions are less than 68.23 dB μV/m.

Specification

Radiated Spurious Emissions

15.407 (b)(2). All emissions outside of the 5,150-5,350MHz band shall not exceed an EIRP of -27dBm/MHz.

FCC §15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

FCC §15.205 (a) Except as shown in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

FCC §15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table.

RSS-210 §A9.3(2) For transmitters operating in the 5250-5350 MHz band, all emissions outside the 5150-5350 MHz band shall not exceed -27 dBm/MHz e.i.r.p. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band shall not exceed out of band emission limit of 27 dBm/MHz e.i.r.p. in the 5150-5250 MHz band in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the 5150-5250 MHz band and shall be labeled "for indoor use only".

RSS-Gen §4.7 The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate of carrier frequency), or from 30 MHz, whichever is the lowest frequency, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

RSS-Gen §6 Receiver Spurious Emission Standard

If a radiated measurement is made, all spurious emissions shall comply with the limits of the following Table. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emission measurements below 1.0 GHz and 1.0 MHz for measurements above 1.0 GHz



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 62 of 193

Table 1: FCC 15.209 Spurious Emissions Limits

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m}$)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Traceability:

Test Equipment Used
0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

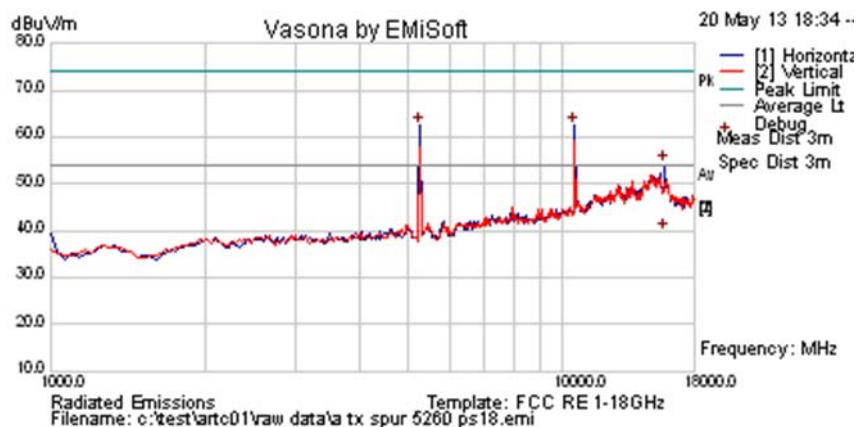
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 63 of 193

6.1.2.1. Integral PIFA Antenna – Spurious Emissions

Test Freq.	5260 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	27
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	32
Power Setting	20.0	Press. (mBars)	1001
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

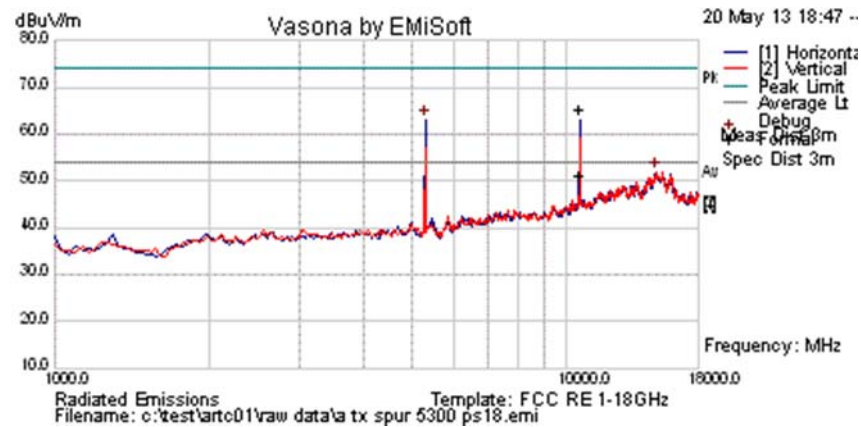
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
10505.010	58.0	7.0	-2.4	62.6	Peak [Scan]	H	150					NRB
5258.517	67.5	4.8	-9.7	62.5	Peak [Scan]	H						FUND
15781.443	45.5	8.9	-0.3	54.1	Peak Max	H	177	361	74.0	-19.9	Pass	RB
15781.443	31.0	8.9	-0.3	39.6	Average Max	H	177	361	54.0	-14.4	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 64 of 193

Test Freq.	5300 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	27
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	32
Power Setting	20.0	Press. (mBars)	1001
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

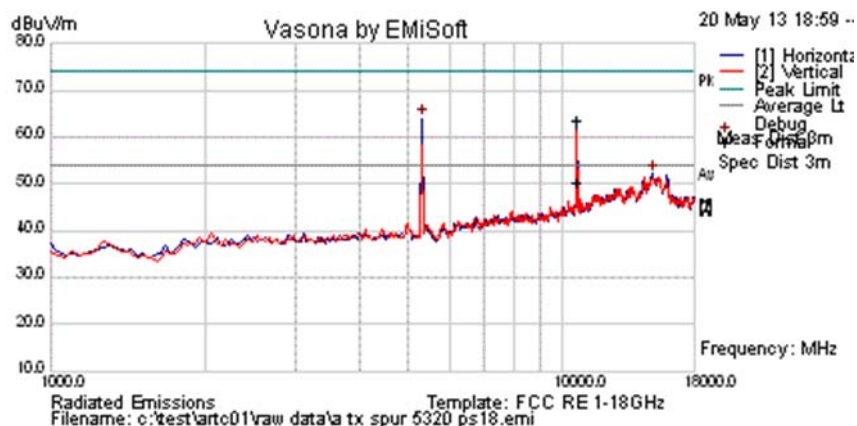
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	67.8	4.8	-9.6	63.1	Peak [Scan]	H						FUND
14933.868	45.7	8.6	-2.3	51.9	Peak [Scan]	V	100					Noise
10600.601	60.5	7.2	-2.4	65.2	Peak Max	H	98	45	74.0	-8.8	Pass	RB
10600.601	46.6	7.2	-2.4	51.3	Average Max	H	98	45	54.0	-2.7	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission												
NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 65 of 193

Test Freq.	5320 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	27
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	32
Power Setting	20.0	Press. (mBars)	1001
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

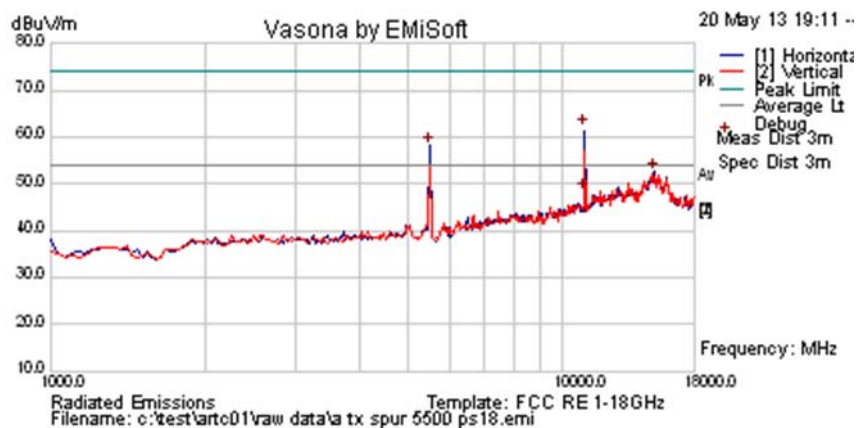
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	68.5	4.9	-9.5	63.9	Peak [Scan]	H						FUND
15002.004	45.9	8.5	-2.1	52.3	Peak [Scan]	H	150					Noise
10640.672	59.1	7.1	-2.4	63.8	Peak Max	H	98	39	74.0	-10.2	Pass	RB
10640.672	45.4	7.1	-2.4	50.1	Average Max	H	98	39	54.0	-3.9	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission												
NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 66 of 193

Test Freq.	5500 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	26
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	30
Power Setting	20.0	Press. (mBars)	998
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

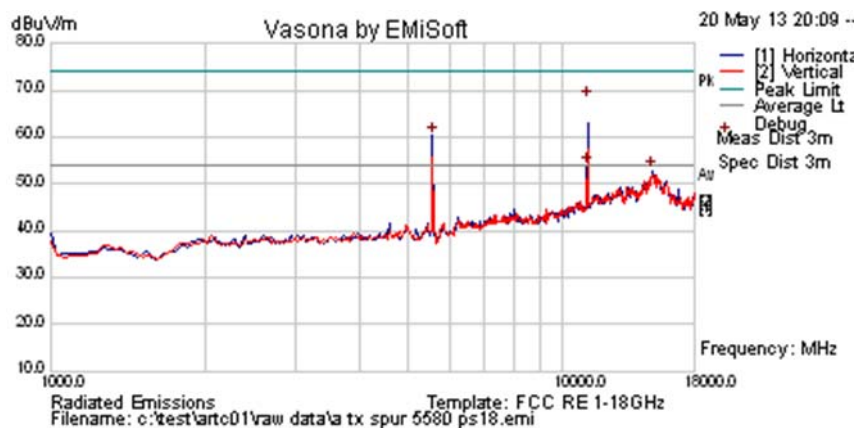
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5496.99399	62.7	5.0	-9.6	58.1	Peak [Scan]	H						FUND
15036.072	46.1	8.5	-2.0	52.6	Peak [Scan]	H	100					Noise
11001.763	57.9	7.2	-3.1	62.1	Peak Max	H	102	360	74.0	-11.9	Pass	RB
11001.763	44.2	7.2	-3.1	48.4	Average Max	H	102	360	54.0	-5.6	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 67 of 193

Test Freq.	5580 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	26
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	30
Power Setting	20.0	Press. (mBars)	998
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5565.13026	65.0	4.9	-9.7	60.2	Peak [Scan]	H						FUND
11161.443	63.7	7.3	-3.0	68.0	Peak Max	H	130	297	74.0	-6.0	Pass	RB
11161.443	49.3	7.3	-3.0	53.6	Average Max	H	130	297	54.0	-0.4	Pass	RB
14933.868	46.5	8.6	-2.3	52.8	Peak [Scan]	H	200	0	54.0	-1.2	Pass	Noise

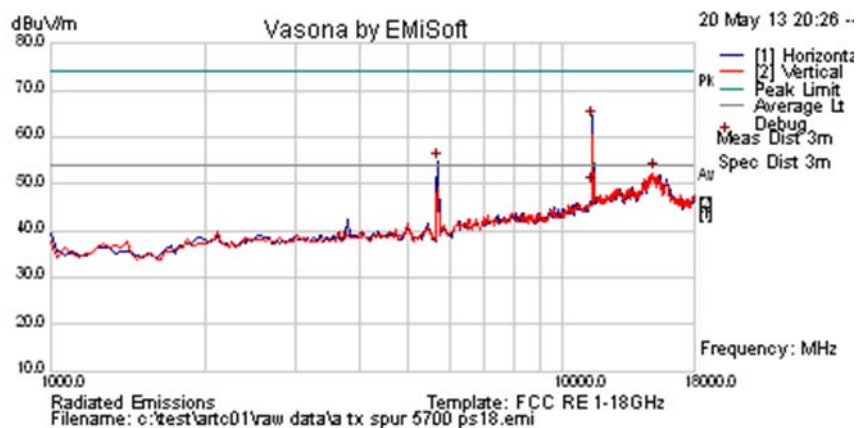
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
 NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 68 of 193

Test Freq.	5700 MHz	Engineer	JMH
Variant	802.11a; 6 Mbs	Temp (°C)	26
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	30
Power Setting	20.0	Press. (mBars)	998
Antenna	Integral	Duty Cycle (%)	100
Test Notes 1	4.5 dBi		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.40281	59.4	5.0	-9.6	54.8	Peak [Scan]	H						FUND
15002.004	45.9	8.5	-2.1	52.3	Peak [Scan]	V	100					Noise
11397.596	58.2	7.6	-2.3	63.6	Peak Max	H	134	84	74.0	-10.4	Pass	RB
11397.596	44.0	7.6	-2.3	49.4	Average Max	H	134	84	54.0	-4.6	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



6.1.2.2. Integral Antenna - Radiated Band-Edge

Peak Limit 74.0 dBμV, Peak Limit 54.0 dBμV

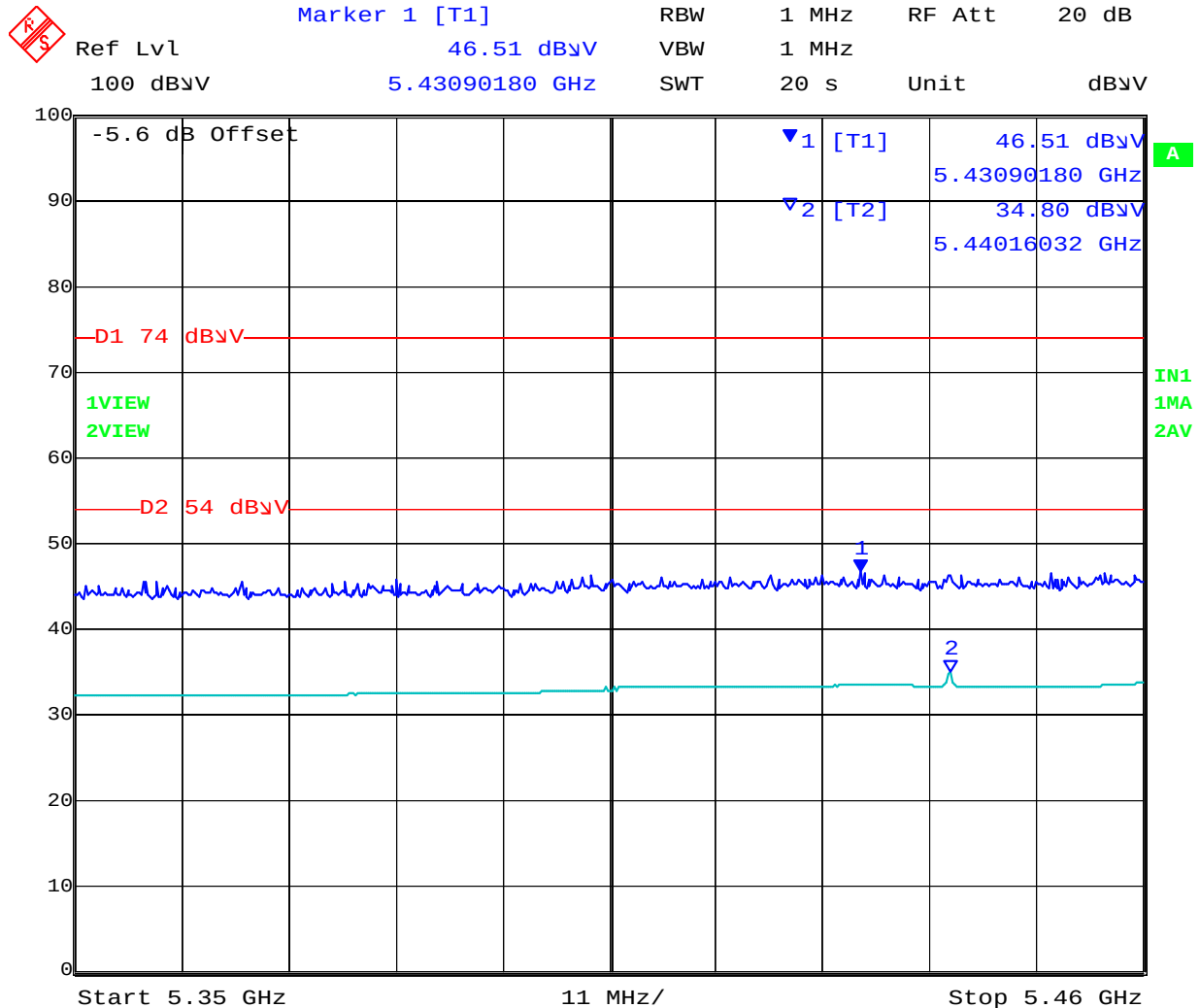
5350 MHz			
Operational Mode	dBμV		Power Setting
	Peak	Average	
a	46.51	34.80	20.0
n HT-20	46.51	34.54	20.0
n HT-40	47.17	34.80	20.0

5460 MHz			
Operational Mode	Peak	Average	Power Setting
a	45.65	33.06	20.0
n HT-20	45.95	33.38	20.0
n HT-40	46.37	33.38	20.0



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 70 of 193

802.11a Channel 5320 MHz 5350 – 5460 MHz Restricted Band Emissions



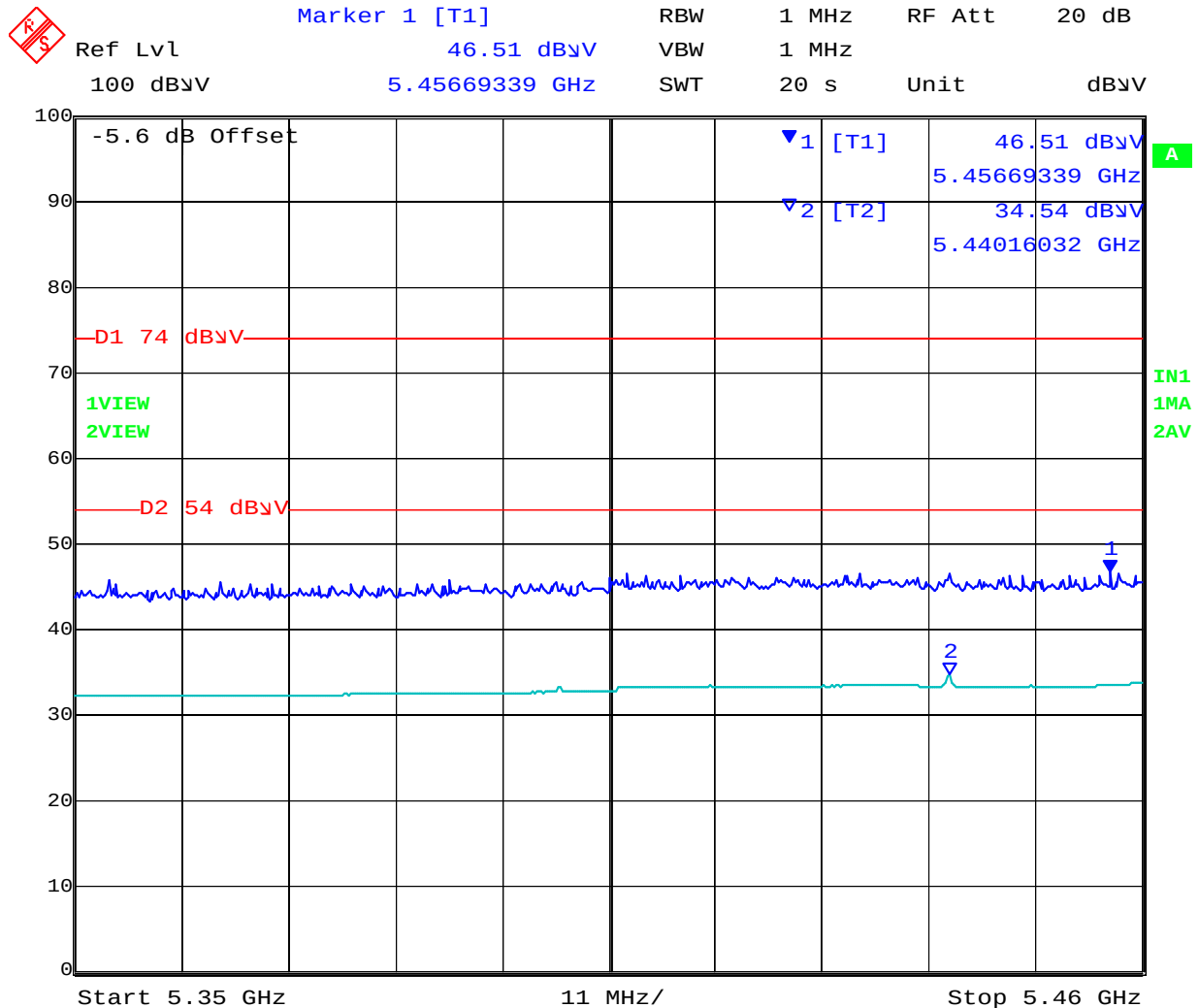
Date: 21.MAY.2013 08:55:49

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 71 of 193

802.11n HT-20 Channel 5320 MHz 5350 – 5460 MHz Restricted Band Emissions



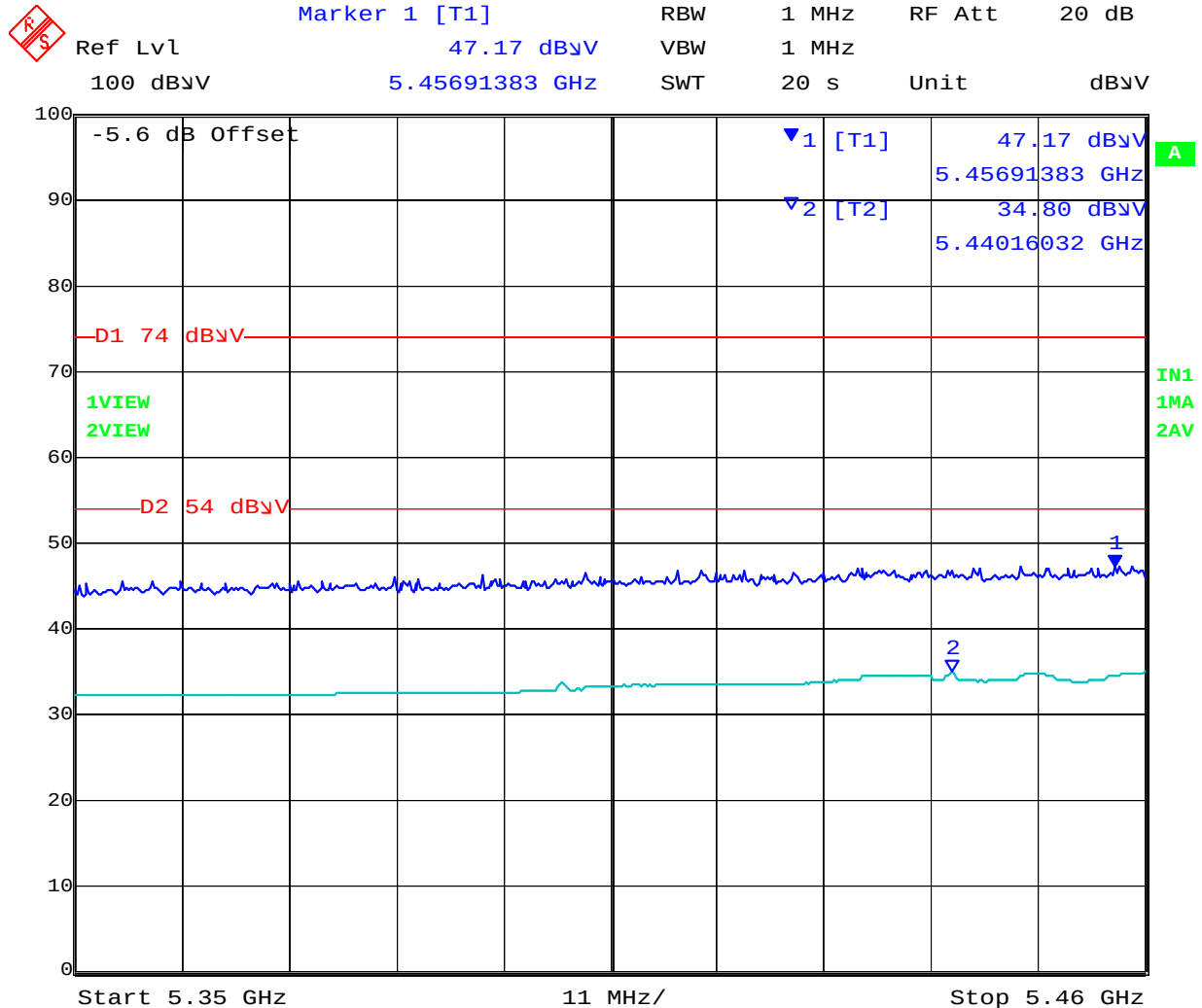
Date: 21.MAY.2013 08:53:03

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 72 of 193

802.11n HT-40 Channel 5310 MHz 5350 – 5460 MHz Restricted Band Emissions



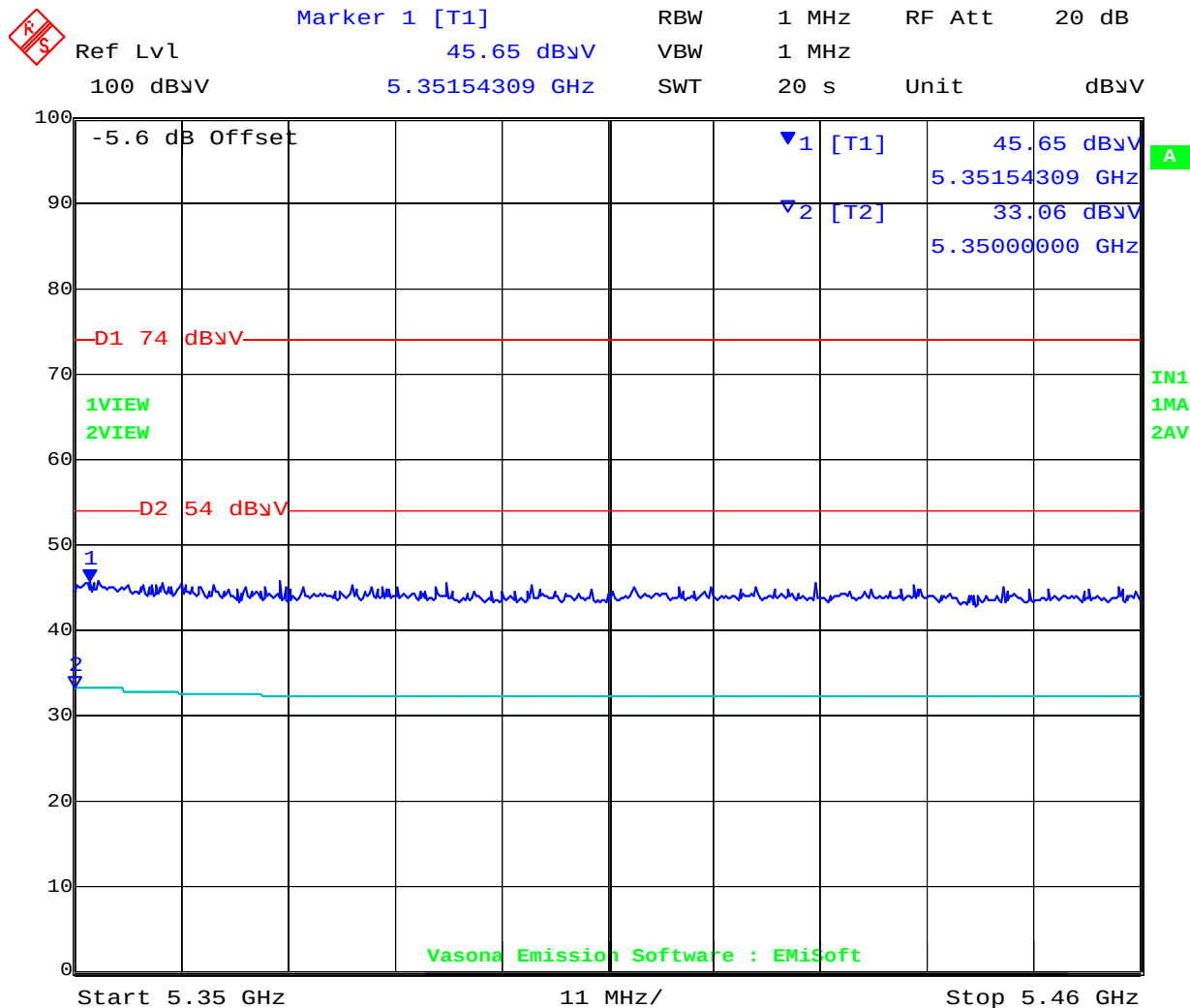
Date: 21.MAY.2013 08:47:32

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 73 of 193

802.11a Channel 5500 MHz 5350 – 5460 MHz Restricted Band Emissions



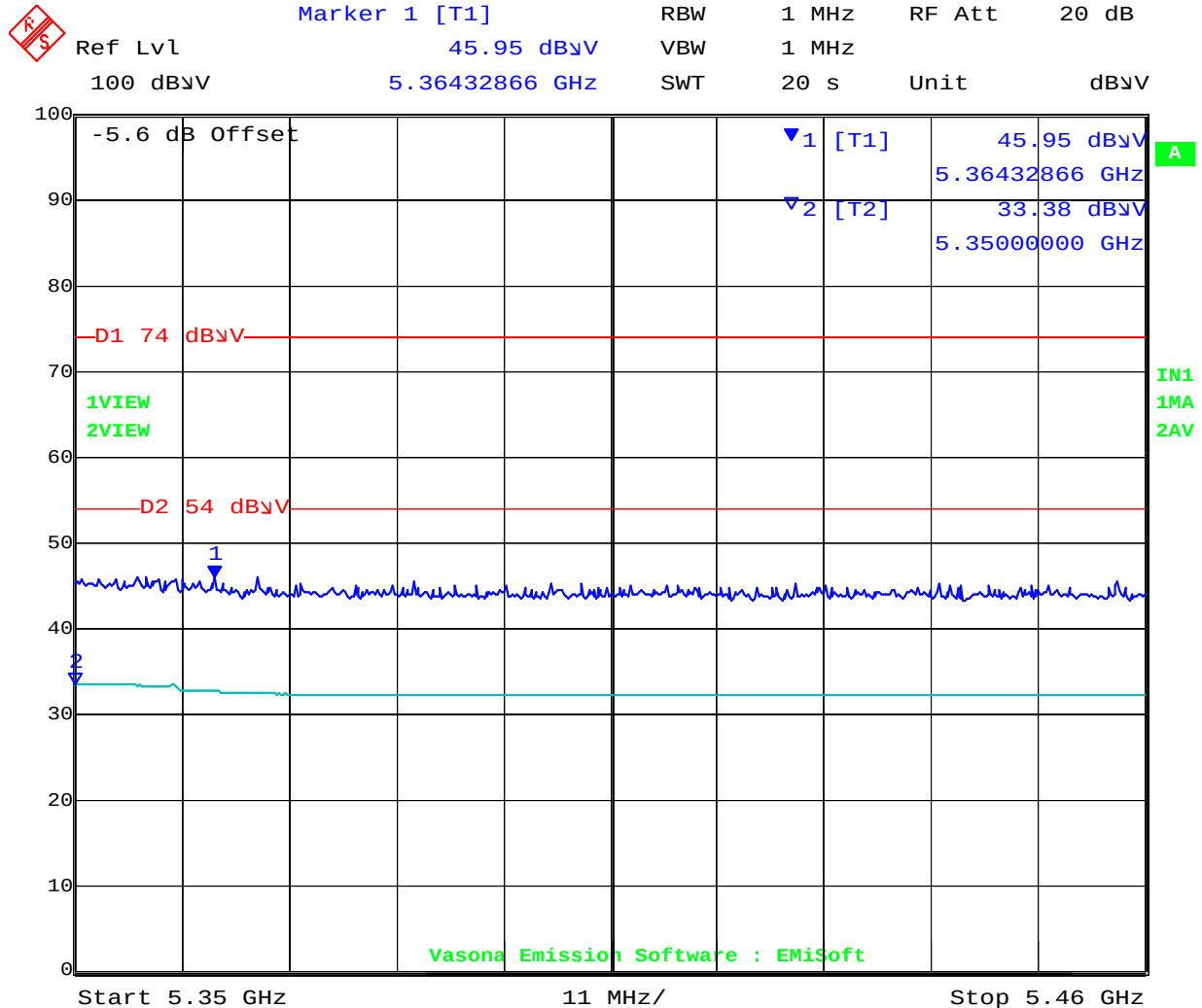
Date: 21.MAY.2013 09:17:51

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 74 of 193

802.11n HT-20 Channel 5500 MHz 5350 – 5460 MHz Restricted Band Emissions



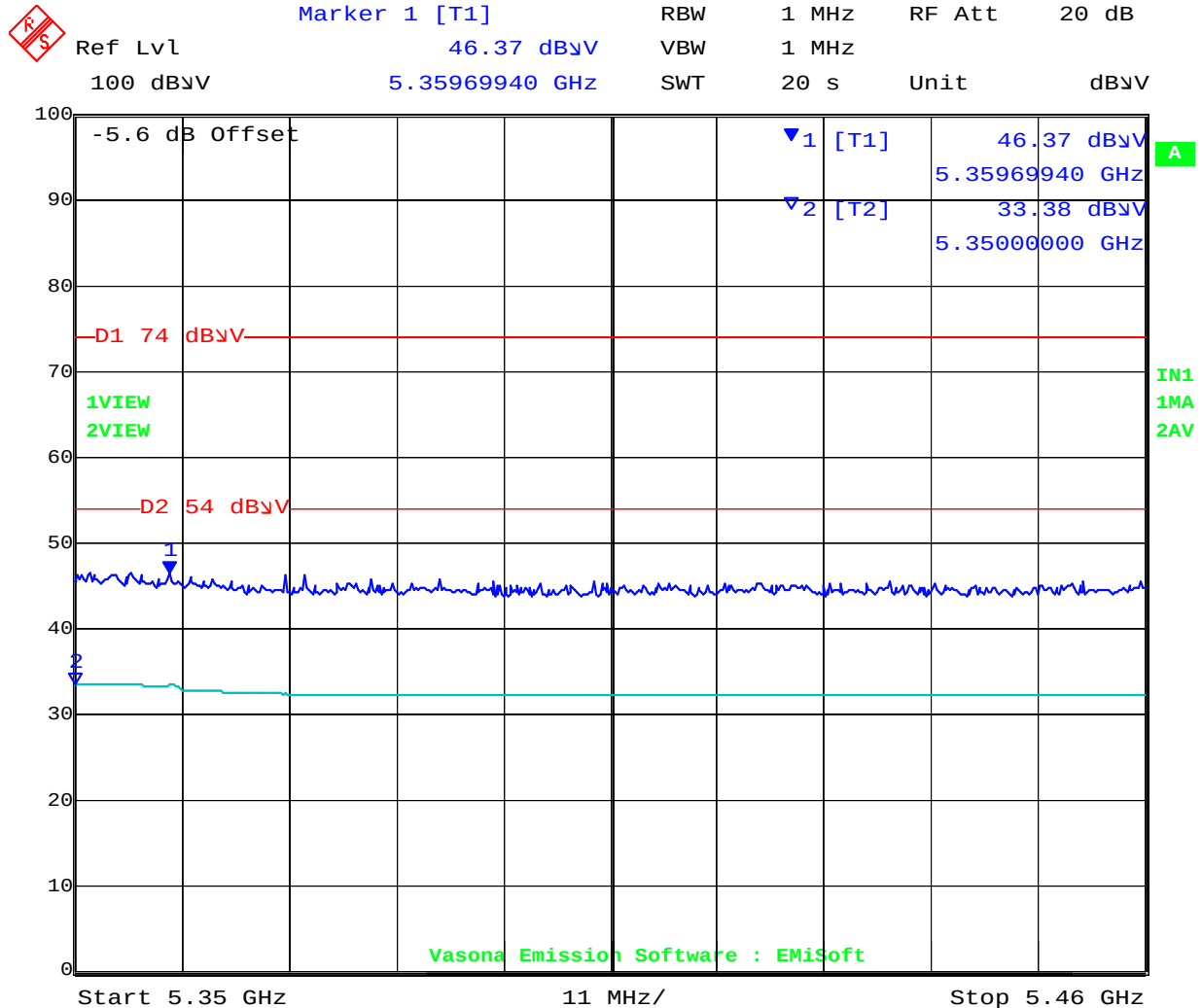
Date: 21.MAY.2013 09:19:34

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 75 of 193

802.11n HT-40 Channel 5510 MHz 5350 – 5460 MHz Restricted Band Emissions



Date: 21.MAY.2013 09:23:20

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



6.1.2.3. Digital Emissions (30M-1 GHz)

FCC, Part 15 Subpart C §15.205/ §15.209
Industry Canada RSS-210 §2.2

Test Procedure

Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. The anechoic chamber test set-up is identified in Section 6 Test Set-Up Photographs.

The EUT had two methods of powering on ac/dc converter and Power over Ethernet (POE). Both modes were tested for emissions below 1GHz.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. In this test facility, the Antenna Factor, Cable Loss, and Amplifier Gains are loaded into the Rohde & Schwarz Receiver and the corrected field strength can be read directly on the receiver.

$$FS = R + AF + CORR$$

where:

FS = Field Strength

R = Measured Receiver Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss

AG = Amplifier Gain

For example:

Given a Receiver input reading of 51.5dB μ V; Antenna Factor of 8.5dB; Cable Loss of 1.3dB; Falloff Factor of 0dB, an Amplifier Gain of 26dB and Notch Filter Loss of 1dB. The Field Strength of the measured emission is:

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3\text{dB}\mu\text{V/m}$$

Conversion between dB μ V/m (or dB μ V) and μ V/m (or μ V) are done as:

$$\text{Level (dB}\mu\text{V/m)} = 20 * \text{Log (level (}\mu\text{V/m))}$$

$$40 \text{ dB}\mu\text{V/m} = 100\mu\text{V/m}$$

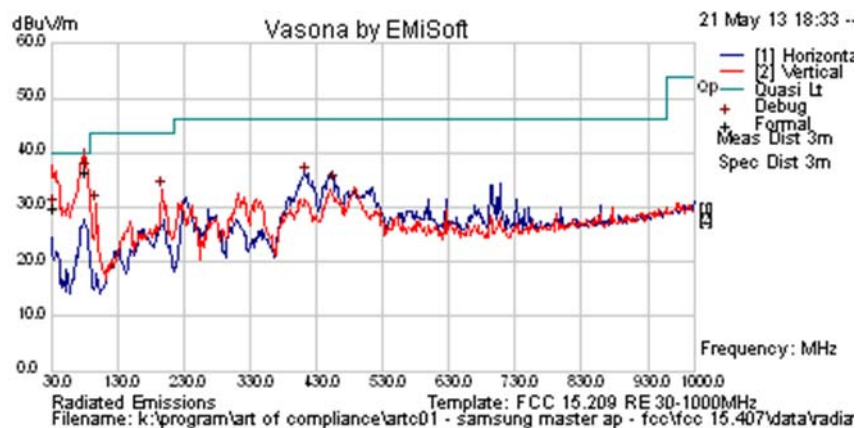
$$48 \text{ dB}\mu\text{V/m} = 250\mu\text{V/m}$$



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 77 of 193

ac/dc Power Supply

Test Freq.	5180	Engineer	JMH
Variant	Digital Emissions	Temp (°C)	27
Freq. Range	30 MHz - 1000 MHz	Rel. Hum.(%)	30
Power Setting	18	Press. (mBars)	999
Antenna	Integral		
Test Notes 1	with AC/DC PS		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
80.379	56.1	3.9	-23.5	36.5	Quasi Max	V	103	79	40	-3.5	Pass	
414.605	44.7	5.5	-14.3	35.8	Peak [Scan]	H	98	0	46	-10.2	Pass	
33.032	38.4	3.5	-12.1	29.8	Quasi Max	V	112	28	40	-10.2	Pass	
197.411	47.0	4.6	-18.6	33.0	Peak [Scan]	V	98	0	43.5	-10.5	Pass	
456.800	42.3	5.7	-13.7	34.3	Peak [Scan]	H	98	0	46	-11.7	Pass	
97.901	48.2	4.1	-21.9	30.4	Peak [Scan]	V	98	0	43.5	-13.1	Pass	

Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency
 NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

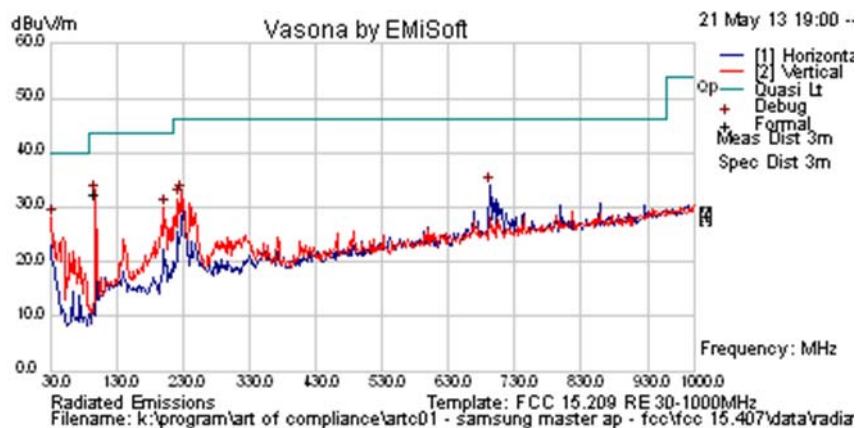
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 78 of 193

48 Vdc POE

Test Freq.	5180	Engineer	JMH
Variant	Digital Emissions	Temp (°C)	27
Freq. Range	30 MHz - 1000 MHz	Rel. Hum.(%)	33
Power Setting	18	Press. (mBars)	1000
Antenna	Integral		
Test Notes 1	POE 48V outside chamber		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
98.080	50.0	4.1	-21.8	32.320	Quasi Max	V	102	343	43.5	-11.2	Pass	
32.079	35.6	3.5	-11.3	27.8	Peak [Scan]	V	98	0	40.0	-12.2	Pass	
692.768	37.5	6.5	-10.3	33.7	Peak [Scan]	H	98	0	46.0	-12.3	Pass	
201.132	43.9	4.6	-18.5	30.0	Peak [Scan]	V	98	0	43.5	-13.5	Pass	
226.102	47.1	4.8	-19.6	32.3	Peak [Scan]	V	98	0	46.0	-13.7	Pass	
222.515	46.5	4.7	-19.7	31.5	Peak [Scan]	V	98	0	46.0	-14.5	Pass	
Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency												
NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band												

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 79 of 193

Specification

Limits

§15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

§15.205 (a) Except as shown in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table.

§15.209 (a) and RSS-Gen §2.2 Limit Matrix

Frequency(MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB
-------------------------	---------------

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

6.1.3. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

FCC, Part 15 Subpart C §15.207

Industry Canada RSS-Gen §7.2.2

Test Procedure

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

Measurement Results for AC Wireline Conducted Emissions (150 kHz – 30 MHz)

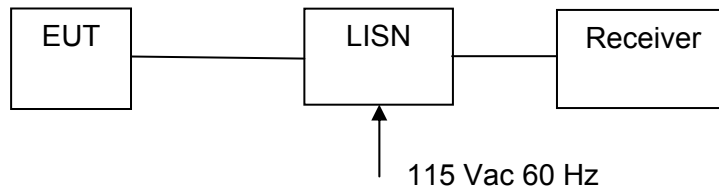
Ambient conditions.

Temperature: 17 to 23 °C

Relative humidity: 31 to 57 %

Pressure: 999 to 1012 mbar

Test Measurement Set up



Measurement set up for AC Wireline Conducted Emissions Test

Measurement Results for AC Wireline Conducted Emissions (150 kHz – 30 MHz)

Ambient conditions.

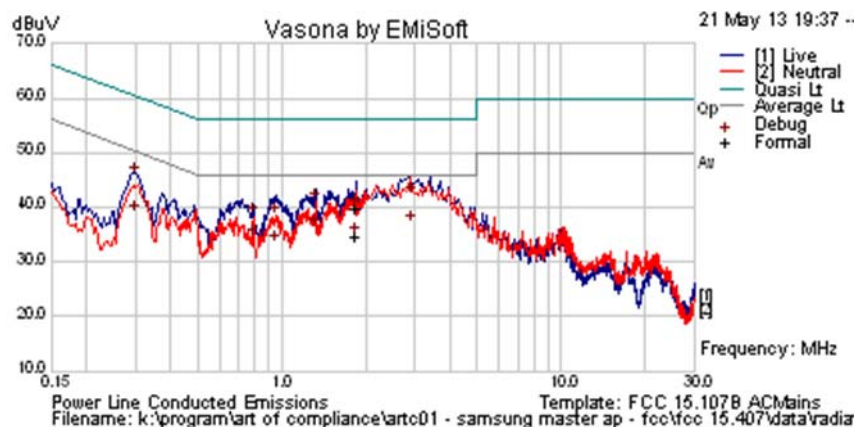
Temperature: 17 to 23 °C

Relative humidity: 31 to 57 %

Pressure: 999 to 1012 mbar

ac/dc Adaptor

Test Freq.	N/A	Engineer	JMH
Variant	AC Line Emissions	Temp (°C)	27
Freq. Range	0.150 MHz - 30 MHz	Rel. Hum.(%)	30
Power Setting	20	Press. (mBars)	999
Antenna	PIFA Integral		
Test Notes 1	110V 60 Hz		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.298	35.7	9.9	0.1	45.7	Quasi Peak	Live	60.29	-14.6	Pass	
0.298	28.6	9.9	0.1	38.6	Average	Live	50.29	-11.7	Pass	
0.794	24.3	10.0	0.1	34.4	Average	Live	46	-11.6	Pass	
0.794	28.5	10.0	0.1	38.5	Quasi Peak	Live	56	-17.5	Pass	
0.956	23.3	9.9	0.1	33.3	Average	Live	46	-12.7	Pass	
0.956	28.4	9.9	0.1	38.4	Quasi Peak	Live	56	-17.6	Pass	
1.321	30.9	10.0	0.1	41.0	Quasi Peak	Live	56	-15.0	Pass	
1.321	26.0	10.0	0.1	36.0	Average	Live	46	-10.0	Pass	
1.853	29.8	10.0	0.1	39.9	Quasi Peak	Live	56	-16.1	Pass	
1.853	24.6	10.0	0.1	34.7	Average	Live	46	-11.3	Pass	
2.908	26.8	10.1	0.2	37.0	Average	Neutral	46	-9.0	Pass	
2.908	31.9	10.1	0.2	42.2	Quasi Peak	Neutral	56	-13.8	Pass	
Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency										
NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band										

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

Specification

Limit

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator 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 $\mu\Omega$ line impedance stabilization network (LISN), see §15.207 (a) matrix below. 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.

RSS-Gen §7.2.2

The radio frequency voltage that is conducted back into the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table below. The tighter limit applies at the frequency range boundaries.

§15.207 (a) and **RSS-Gen §7.2.2** Limit Matrix

The lower limit applies at the boundary between 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 the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

Measurement uncertainty	± 2.64 dB
-------------------------	---------------

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-EMC-01 'Measurement of Conducted Emissions'	0158, 0184, 0287, 0190, 0293, 0307



6.1.4. Dynamic Frequency Selection (DFS)

FCC, Part 15 Subpart C §15.407(h)
FCC 06-96 Memorandum Opinion and Order
Industry Canada RSS-210 A9.4

6.1.4.1. Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna	

6.1.4.2. DFS Response requirement values

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 80% of the 99% power bandwidth See Note 3.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.



6.1.4.3. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.



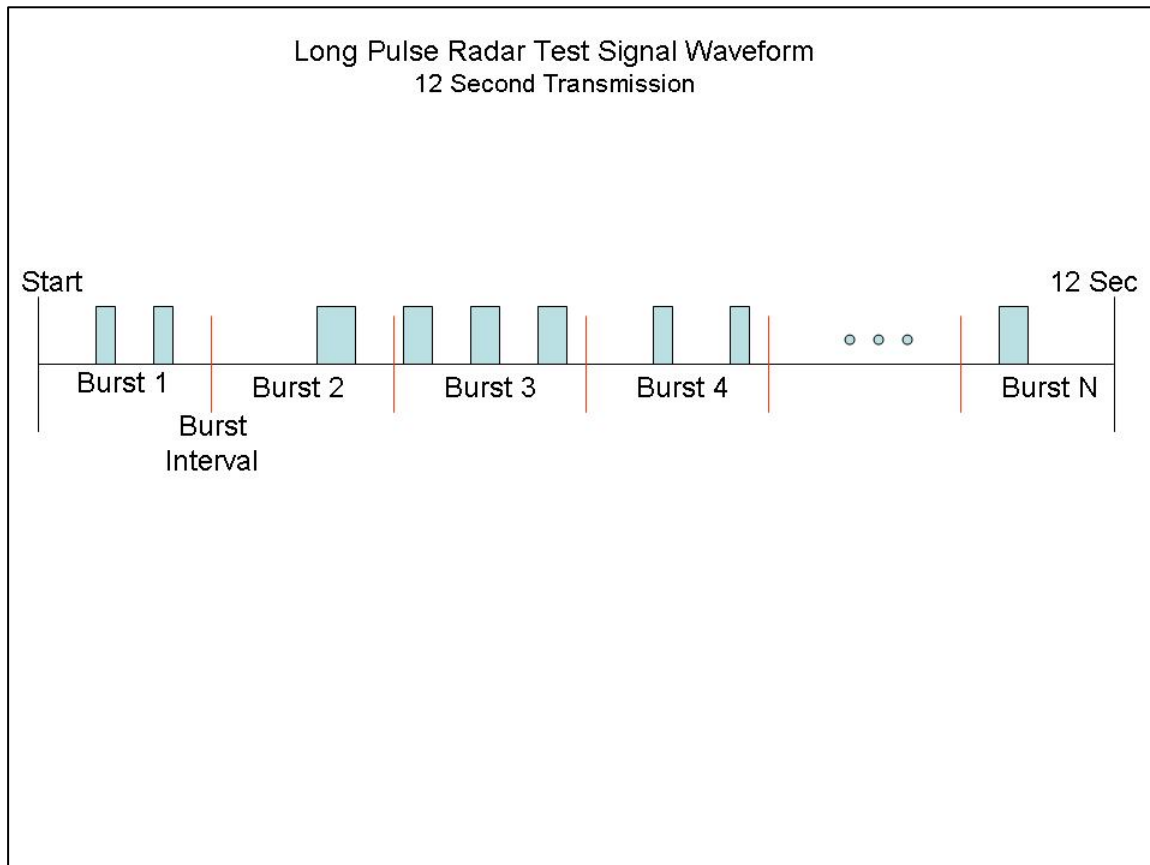
Each waveform is defined as follows:

- 1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 2) There are a total of 8 to 20 *Bursts* in the 12 second period, with the number of *Bursts* being randomly chosen. This number is *Burst Count*.
- 3) Each *Burst* consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each *Burst* within the 12 second sequence may have a different number of pulses.
- 4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a *Burst* will have the same pulse width. Pulses in different *Bursts* may have different pulse widths.
- 5) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a *Burst* will have the same chirp width. Pulses in different *Bursts* may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
- 6) If more than one pulse is present in a *Burst*, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a *Burst*, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
- 7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to *Burst_Count*. Each interval is of length $(12,000,000 / \textit{Burst_Count})$ microseconds. Each interval contains one *Burst*. The start time for the *Burst*, relative to the beginning of the interval, is between 1 and $[(12,000,000 / \textit{Burst_Count}) - (\textit{Total Burst Length}) + (\textit{One Random PRI Interval})]$ microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each *Burst* is chosen independently.

A representative example of a Long Pulse radar test waveform:

- 1) The total test signal length is 12 seconds.
- 2) 8 *Bursts* are randomly generated for the *Burst_Count*.
- 3) *Burst 1* has 2 randomly generated pulses.
- 4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
- 5) The PRI is randomly selected to be at 1213 microseconds.
- 6) *Bursts 2* through 8 are generated using steps 3 – 5.
- 7) Each *Burst* is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, *Burst 1* is randomly generated (1 to 1,500,000 minus the total *Burst 1* length + 1 random PRI interval) at the 325,001 microsecond step. *Bursts 2* through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. *Burst 2* falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse radar Test Waveform.



6.1.4.4. Frequency Hopping Radar Test Waveform

Frequency Hopping Radar Test Waveform

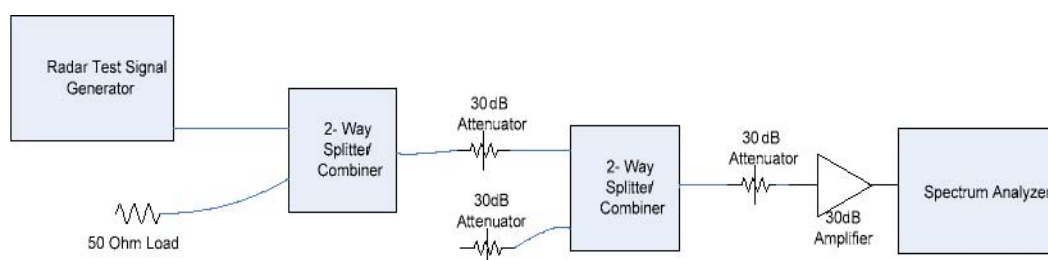
Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

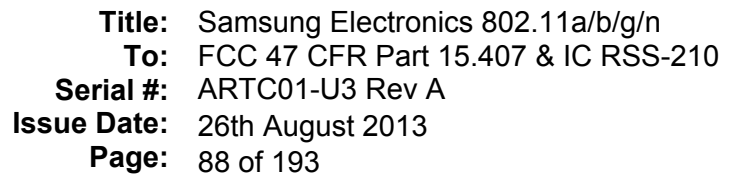
6.1.4.5. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm (Ref Section 5.1). The 30dB amplifier gain was entered as an amplitude offset on the spectrum analyzer.



Conducted Calibration Setup



Center Frequency 5,580MHz 802.11a

Ref Lvl
20 dBm

Delta 1 [T1]
-41.98 dB
15.07014028 MHz

RBW 100 kHz
VBW 300 kHz
SWT 20 s

RF Att 10 dB
Unit dBm

30 dB Offset

▼1 [T1] 5.13 dBm
5.58490982 GHz

▲1 [T1] -41.98 dB
15.07014028 MHz

D1 5.13 dBm

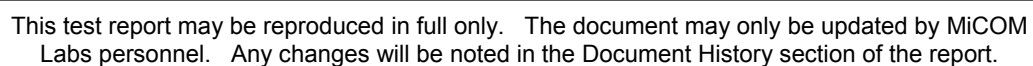
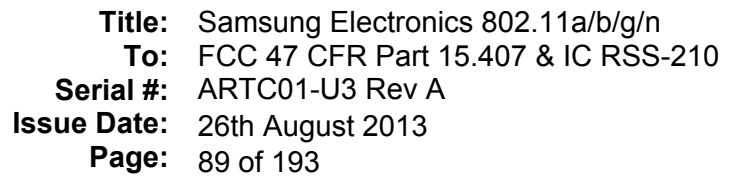
1VIE D2 -14.87 dBm

IN1 1MA

F1

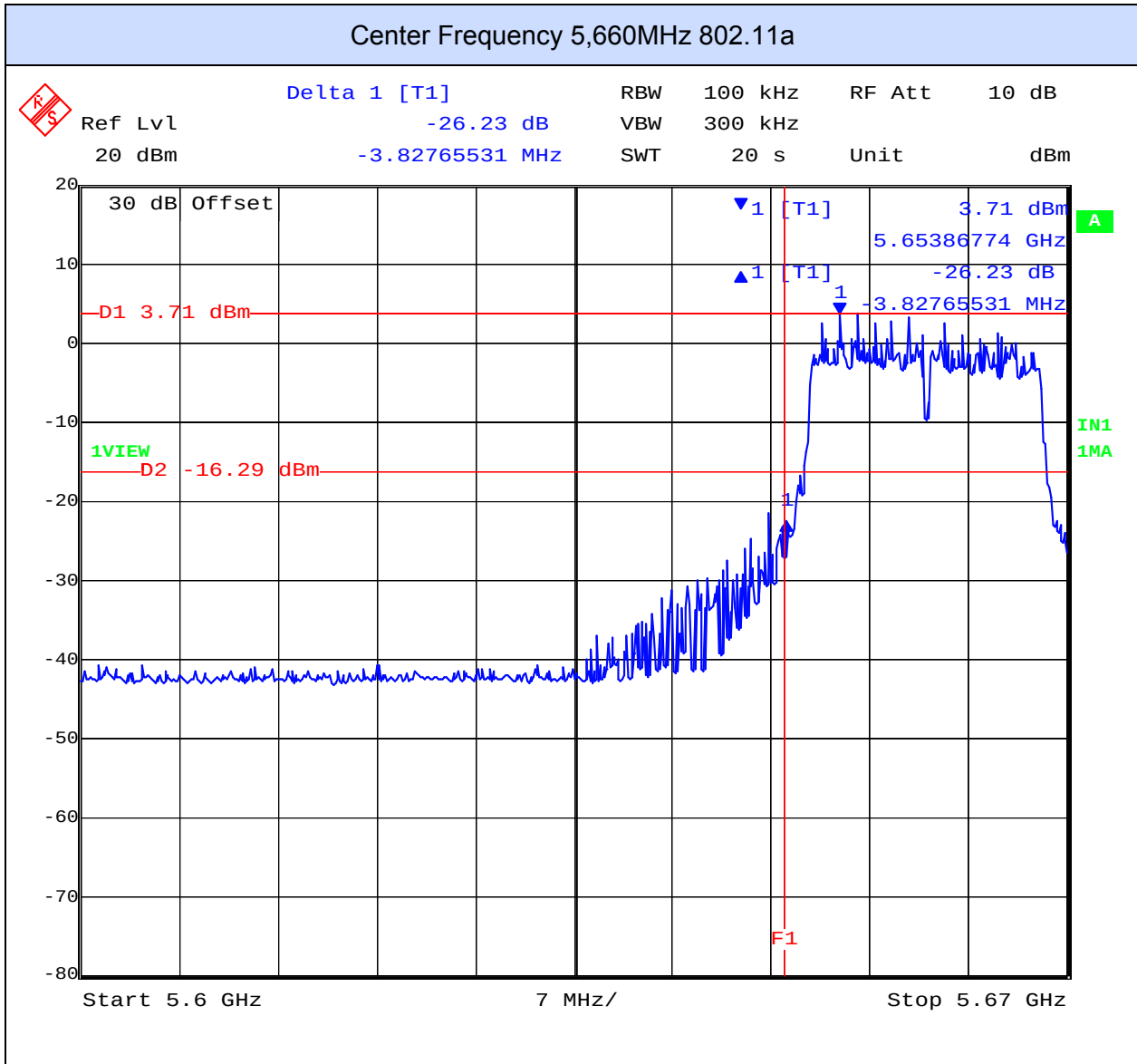
Start 5.57 GHz 8 MHz/ Stop 5.65 GHz

MiCOM Labs, 440 Boulder Court, Suite 200, Pleasanton, CA 94566 USA, Phone: 925.462.0304, Fax: 925.462.0306, www.micomlabs.com





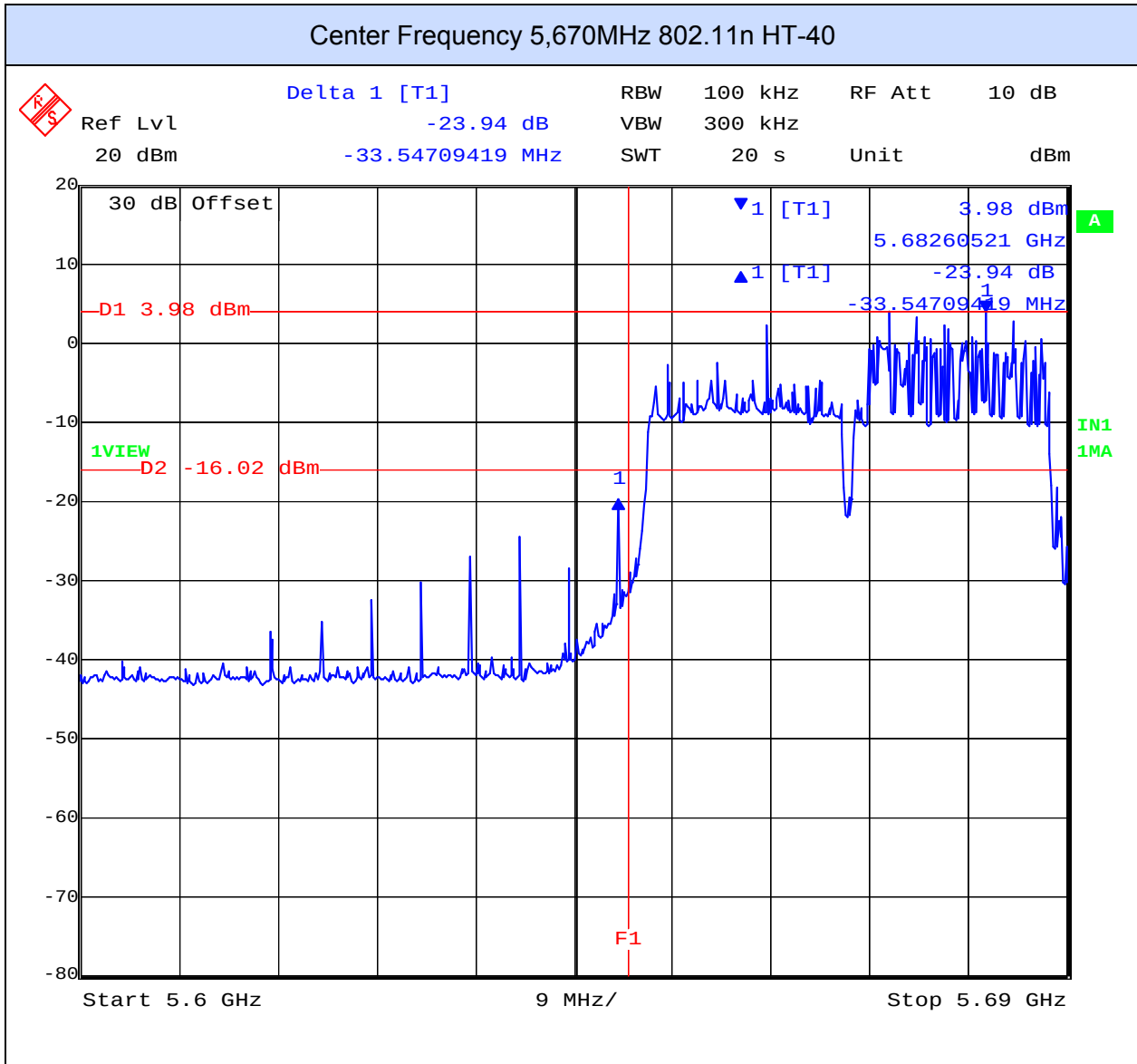
Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 90 of 193



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 91 of 193

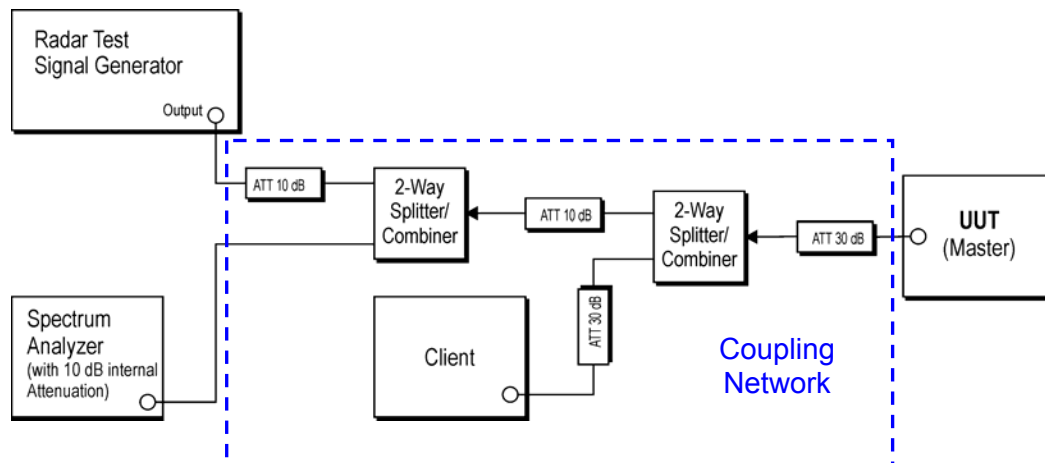


This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

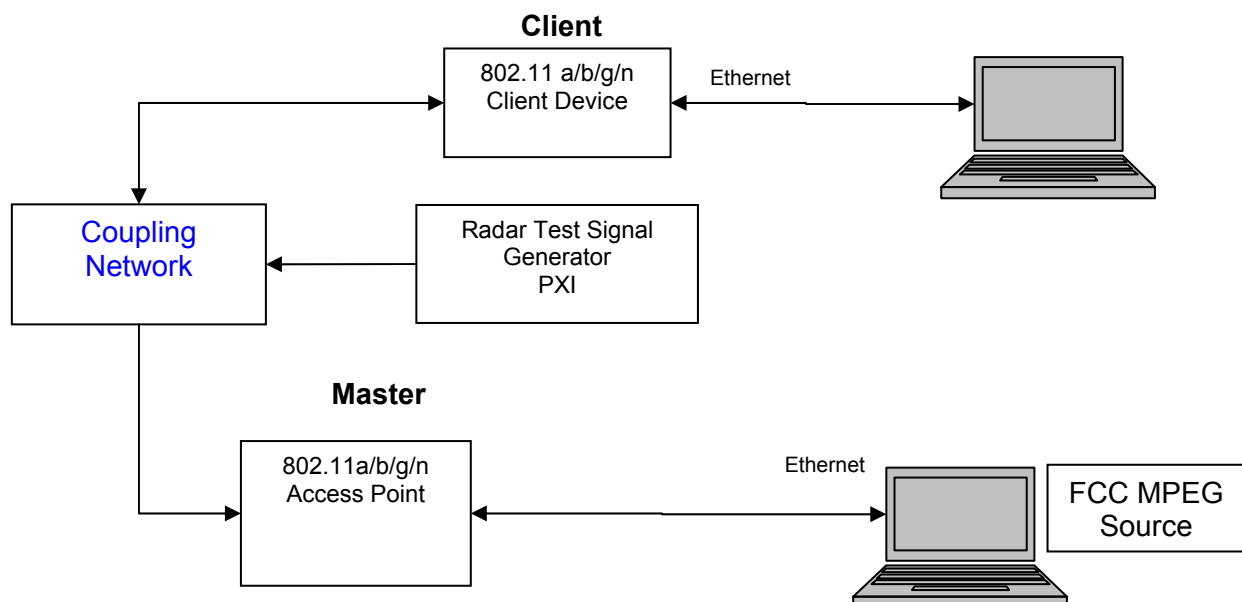
6.1.4.7. Test Set Up:

Block Diagram(s) of Test Setup

Setup for Conducted Measurements where the EUT is the Master with injection of Radar Test Waveforms at the Master.



Support Equipment Configuration





The EUT is a Master Device with radar detection.

Applicability of DFS Requirements Prior to Use of a Channel

(Ref Table 1 of FCC 06-96)

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>Uniform Spreading</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes

Applicability of DFS requirements during normal operation

(Ref Table 2 of FCC 06-96)

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Closing Transmission Time</i>	Yes	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 94 of 193

For the frequency band 5,470 – 5,725 MHz, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm. The EUT was tested in HT-40 mode.

Declared minimum antenna gain 0 dBi. ;

Radar receive signal level = -62 dBm + minimum antenna gain + 1 dB

$$= -62 + 0 + 1$$

Radar receive signal level = -61 dBm

Measurement Results - Dynamic Frequency Selection (DFS)

Ambient conditions.

Temperature: 17 to 23 °C Relative humidity: 31 to 57% Pressure: 999 to 1012 mbar

Radio parameters.

Test methodology: Conducted

Device Type: Master

Transmit Power: Maximum

Operational Details - Dynamic Frequency Selection (DFS)

Operational Modes: 802.11a & 802.11n HT-40

Data Rates: 18 Mbit/s 802.11a / 3 MCS 802.11n

**Note* No video pixilation was observed during the video stream at these rates. Video frames per second were noted to be at 30fps.*

Video Streaming Method - Dynamic Frequency Selection (DFS)

Using the VideoLan player a video stream was setup on the master laptop with the destination being the client laptop. The video profile chosen for the video stream is "MPEG-2 + MPGA (TS)". On the client laptop the VideoLan player was setup to listen to an incoming video stream from the master device.

The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link <http://ntiacsd.ntia.doc.gov/dfs/>) is used during this video stream.



6.1.5. Dynamic Frequency Selection (DFS) Test Results

6.1.5.1. UNII Detection Bandwidth:

All UNII channels for this device have identical channel bandwidths and DFS testing was completed on channel 5,500 MHz (802.11a) and 5510MHz (HT-40).

The generating equipment is configured as shown in the Conducted Test Setup above. A single Burst of the short pulse radar Type 1 through 6 was produced at 5,500 MHz (802.11a) and 5,510 MHz (802.11n HT-40) at a level of -61 dBm (Ref Section 5.1). The EUT is set up as a standalone device (no associated Client and no traffic).

A single radar Burst is generated for a minimum of 10 trials, and the response of the EUT is noted. The EUT must detect the Radar Waveform 90% or more of the time.

The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H .

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as F_L .

The U-NII Detection Bandwidth is calculated as follows:

$$\text{U-NII Detection Bandwidth} = F_H - F_L$$

The U-NII Detection Bandwidth must be at least 80% of the EUT transmitter 99% power
Table of results are continued on the next page.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 96 of 193

EUT Frequency= 5,500 MHz 802.11a (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
-20											%
-19											%
-18											%
-17											%
-16											%
-15											%
-14											%
-13											%
-12											%
-11											<90%
-10											100%
-9											90%
-8	0	0									100%
-7	√	√	√	√	√	√	√	√	√	√	100%
-6	√	√	√	√	√	√	√	√	√	√	100%
-5	√	√	√	√	√	√	√	√	√	√	100%
-4	√	√	√	√	√	√	√	√	√	√	90%
-3	√	√	√	√	√	√	√	√	√	√	100%
-2	√	√	√	√	√	√	√	√	√	√	100%
-1	√	√	√	√	√	√	√	√	√	√	100%
F ₀	√	√	√	√	√	√	√	√	√	√	100%
+1	√	√	√	√	√	√	√	√	√	√	100%
+2	√	√	√	√	√	√	√	√	√	√	90%
+3	√	√	√	√	√	√	√	√	√	√	100%
+4	√	√	√	√	√	√	√	√	√	√	100%
+5	√	√	√	√	√	√	√	√	√	√	100%
+6	√	√	√	√	√	√	√	√	√	√	100%
+7	√	√	√	√	√	√	√	√	√	√	100%
+8	0	0									100%
+9											100%
+10											100%
+11											<90%
+12											%
+13											%
+14											%
+15											%
+16											%
+17											%
Detection Bandwidth = F _H -F _L = 5507-5493 = 14 MHz											
EUT 99% Bandwidth = 18.8 MHz (ref. bandwidth channel 5500 MHz)											
18.8 MHz *80% = 14.4 MHz											

For each frequency step the minimum percentage detection is 90%

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 97 of 193

EUT Frequency= 5,510 MHz 802.11n HT-40 (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
-21											%
-20											%
-19											%
-18											%
-17	0	0									<90%
-16	√	√	√	√	√	√	√	√	√	√	100%
-15	√	√	√	√	√	√	√	√	√	√	100%
-14	√	√	√	√	√	√	√	√	√	√	100%
-13	√	√	√	√	√	√	√	√	√	√	100%
-12	√	√	√	√	√	√	√	√	√	√	100%
-11	√	√	√	√	√	√	√	√	√	√	100%
-10	√	√	√	√	√	√	√	√	√	√	100%
-9	√	√	√	√	√	√	√	√	√	√	100%
-8	√	√	√	√	√	√	√	√	√	√	100%
-7	√	√	√	√	√	√	√	√	√	√	100%
-6	√	√	√	√	√	√	√	√	√	√	100%
-5	√	√	√	√	√	√	√	√	√	√	100%
-4	√	√	√	√	√	√	√	√	√	√	100%
-3	√	√	√	√	√	√	√	√	√	√	100%
-2	√	√	√	√	√	√	√	√	√	√	100%
-1	√	√	√	√	√	√	√	√	√	√	100%
F ₀	√	√	√	√	√	√	√	√	√	√	100%

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 98 of 193

EUT Frequency= 5,510 MHz 802.11n HT-40 (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
F ₀	v	v	v	v	v	v	v	v	v	v	100%
+1	v	v	v	v	v	v	v	v	v	v	100%
+2	v	v	v	v	v	v	v	v	v	v	100%
+3	v	v	v	v	v	v	v	v	v	v	100%
+4	v	v	v	v	v	v	v	v	v	v	100%
+5	v	v	v	v	v	v	v	v	v	v	100%
+6	v	v	v	v	v	v	v	v	v	v	100%
+7	v	v	v	v	v	v	v	v	v	v	100%
+8	v	v	v	v	v	v	v	v	v	v	100%
+9	v	v	v	v	v	v	v	v	v	v	100%
+10	v	v	v	v	v	v	v	v	v	v	100%
+11	v	v	v	v	v	v	v	v	v	v	100%
+12	v	v	v	v	v	v	v	v	v	v	100%
+13	v	v	v	v	v	v	v	v	v	v	100%
+14	v	v	v	v	v	v	v	v	v	v	100%
+15	v	v	v	v	v	v	v	v	v	v	100%
+16	v	v	v	v	0	v	v	v	v	v	90%
+17	v	v	0	v	0						<90%
+18											%
+19											%
+20											%
+21											%
Detection Bandwidth = F _H -F _L = 5526-5494 = 32 MHz											
EUT 99% Bandwidth = 37.4 MHz (ref. bandwidth channel 5510 MHz)											
36.472 MHz *80% = 29.92 MHz											

For each frequency step the minimum percentage detection is 90%

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



6.1.5.2. Initial Channel Availability Check Time

This test verifies that the EUT does not emit pulse, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms.

The U-NII device is powered on and be instructed to operate at 5,500MHz 802.11a and 5,510MHz 802.11n HT-40. At the same time the EUT is powered on, the spectrum analyzer is set for zero span with a 1 MHz resolution bandwidth at 5,500& 5,510 MHz with a 260 second sweep time. The analyzer's sweep will be started the same time power is applied to the U-NII device.

The EUT should not transmit any pulse or data transmissions until at least 1 minute after the completion of the power-on cycle.

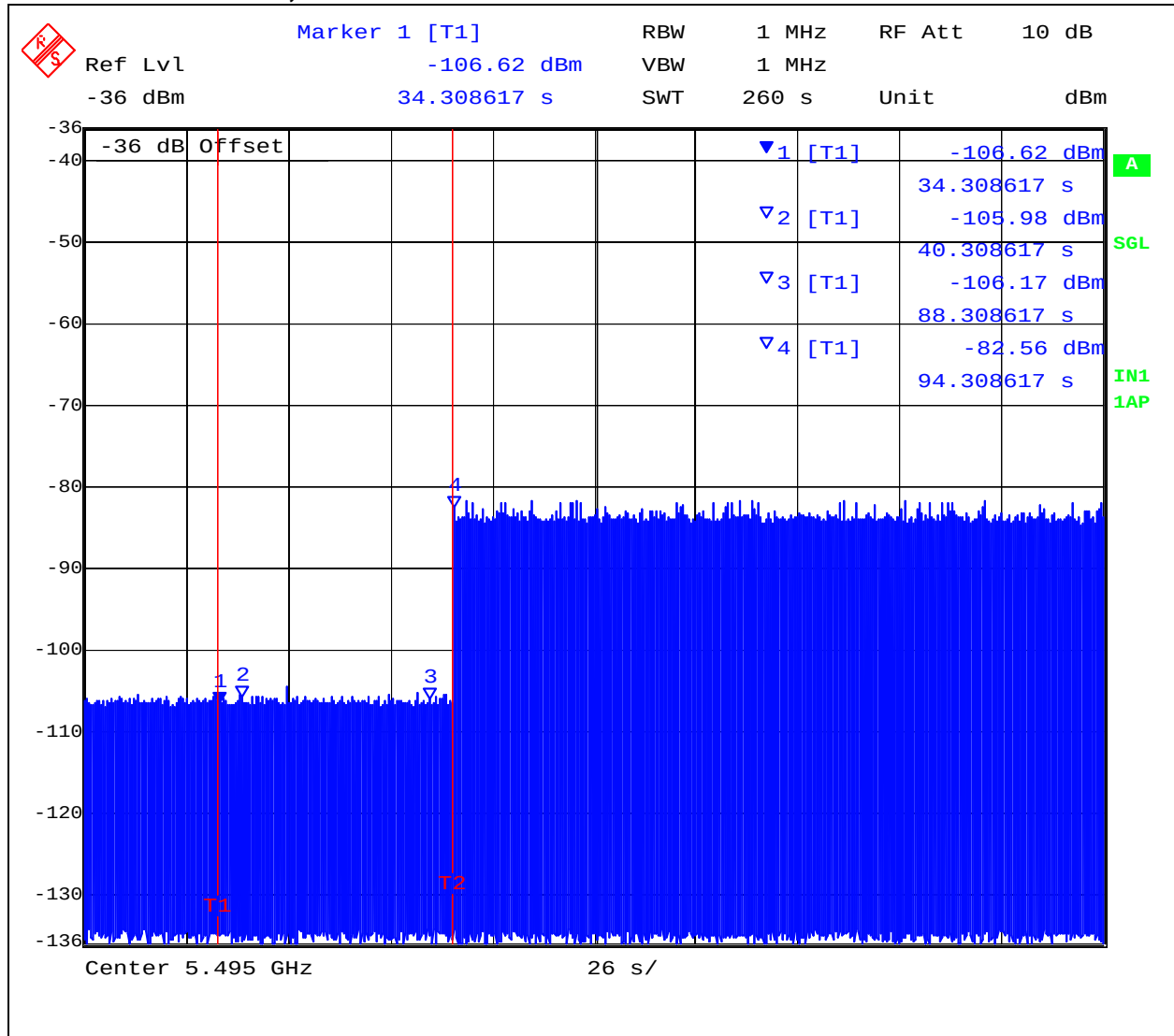
The first red marker line shown on the following plot denotes the instant when the EUT starts its power-up sequence i.e. T_0 (as defined within the FCC's MO&O 06-96 Normative Reference 2). The power-up reference T_0 is determined by the time it takes for the EUT to start "beaconing" i.e. initial beacon – 60 secs = end of power-up.

The Channel Availability Check Time commences at instant T_0 and will end no sooner than $T_0 + 60$ seconds.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 100 of 193

EUT power up and Initial Channel Availability Check Time
5,500MHz 802.11a Power On = 94.30 Seconds

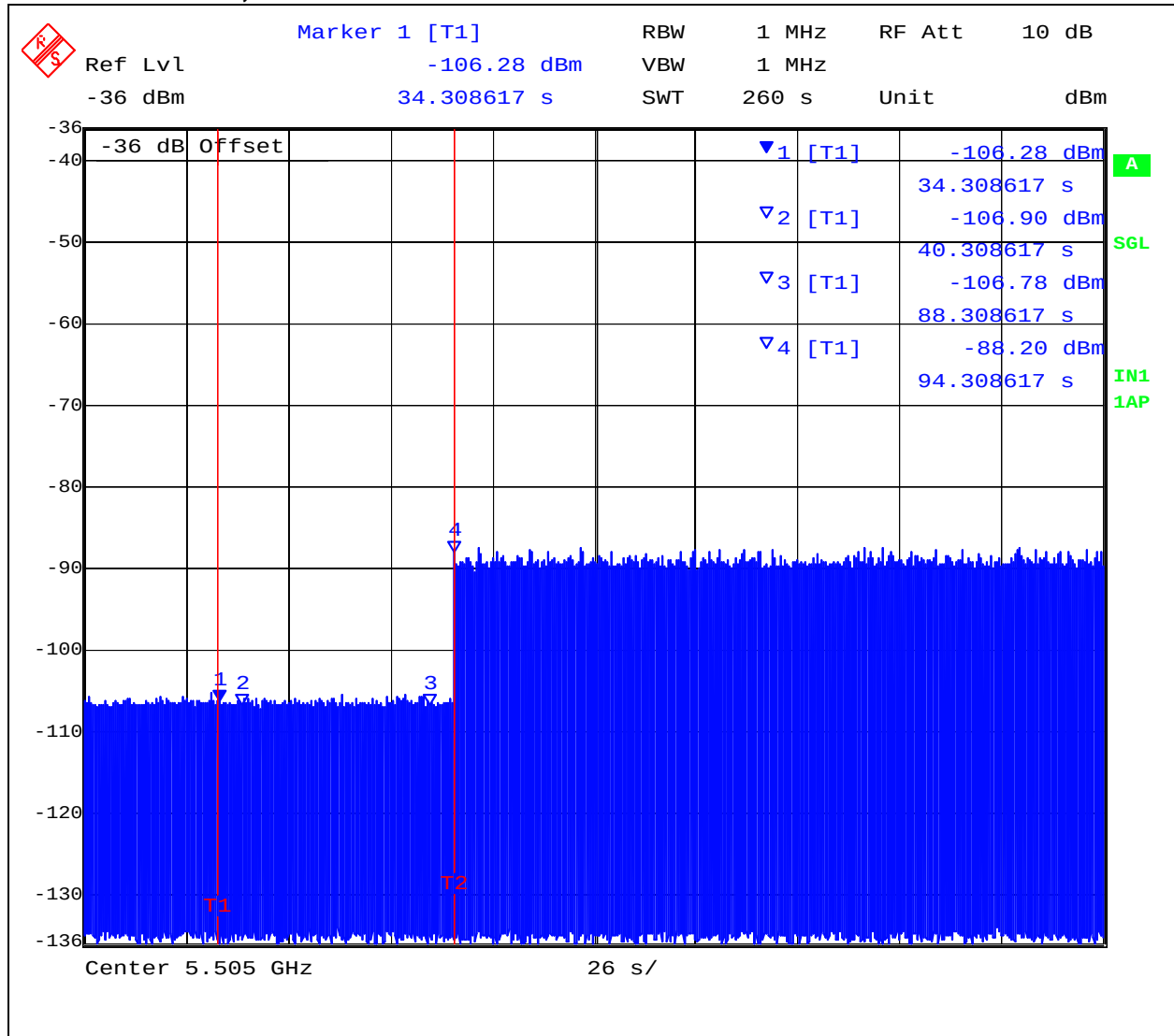


This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 101 of 193

EUT power up and Initial Channel Availability Check Time
5,510MHz 802.11n HT-40 Power On = 94.30 Seconds



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



6.1.5.3. Radar Burst at the Beginning of the Channel Availability Check Time:

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold +6 dB (-62 dBm Ref Section 6.1.7) occurs at the beginning of the Channel Availability Check Time.

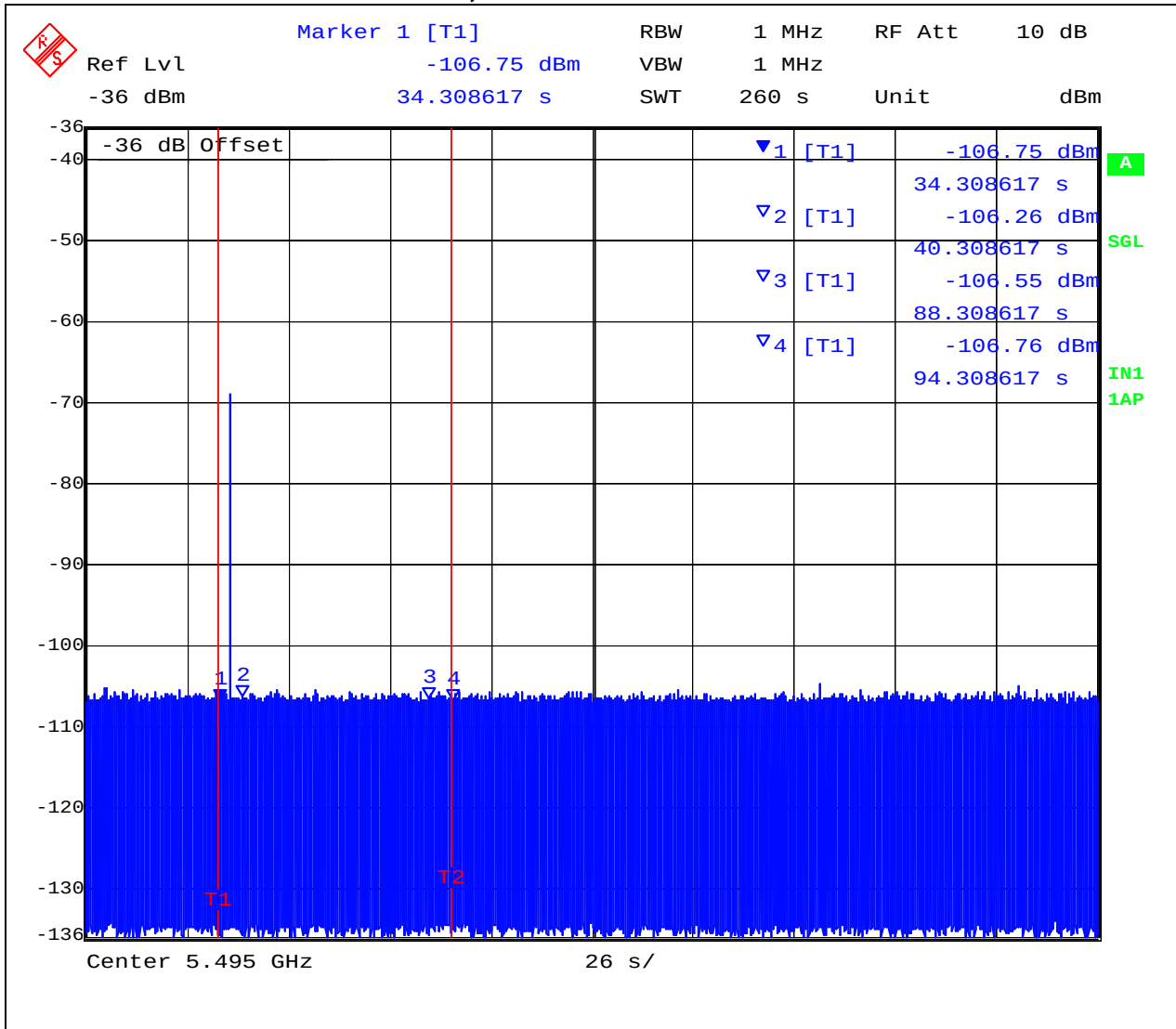
A single Burst of short pulse of radar Type 1 will commence within a 6 second window starting at T_0 (first red marker line on the following plot).

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5,500MHz 802.11a & 5,510MHz 802.11n HT-40 will continue for 2.5 minutes after the radar burst has been generated.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 103 of 193

Channel Availability Check Time at the start T0 + 6 seconds Check Time
5,500MHz 802.11a

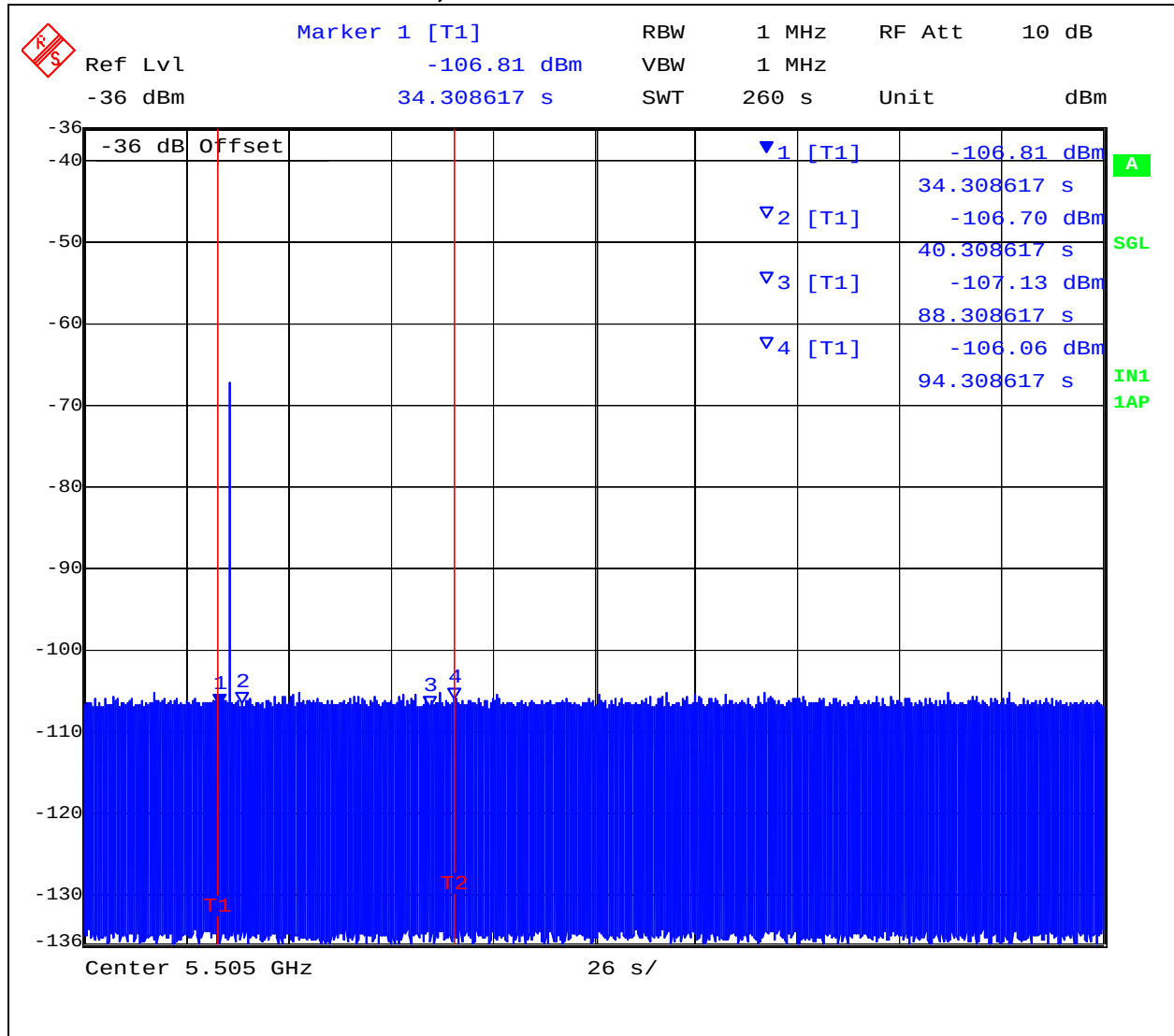


This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 104 of 193

Channel Availability Check Time at the start T0 + 6 seconds Check Time
5,510MHz 802.11n HT-40



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 105 of 193

6.1.5.4. Radar Burst at the End of the Channel Availability Check Time:

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold occurs at the end of the Channel Availability Check Time.

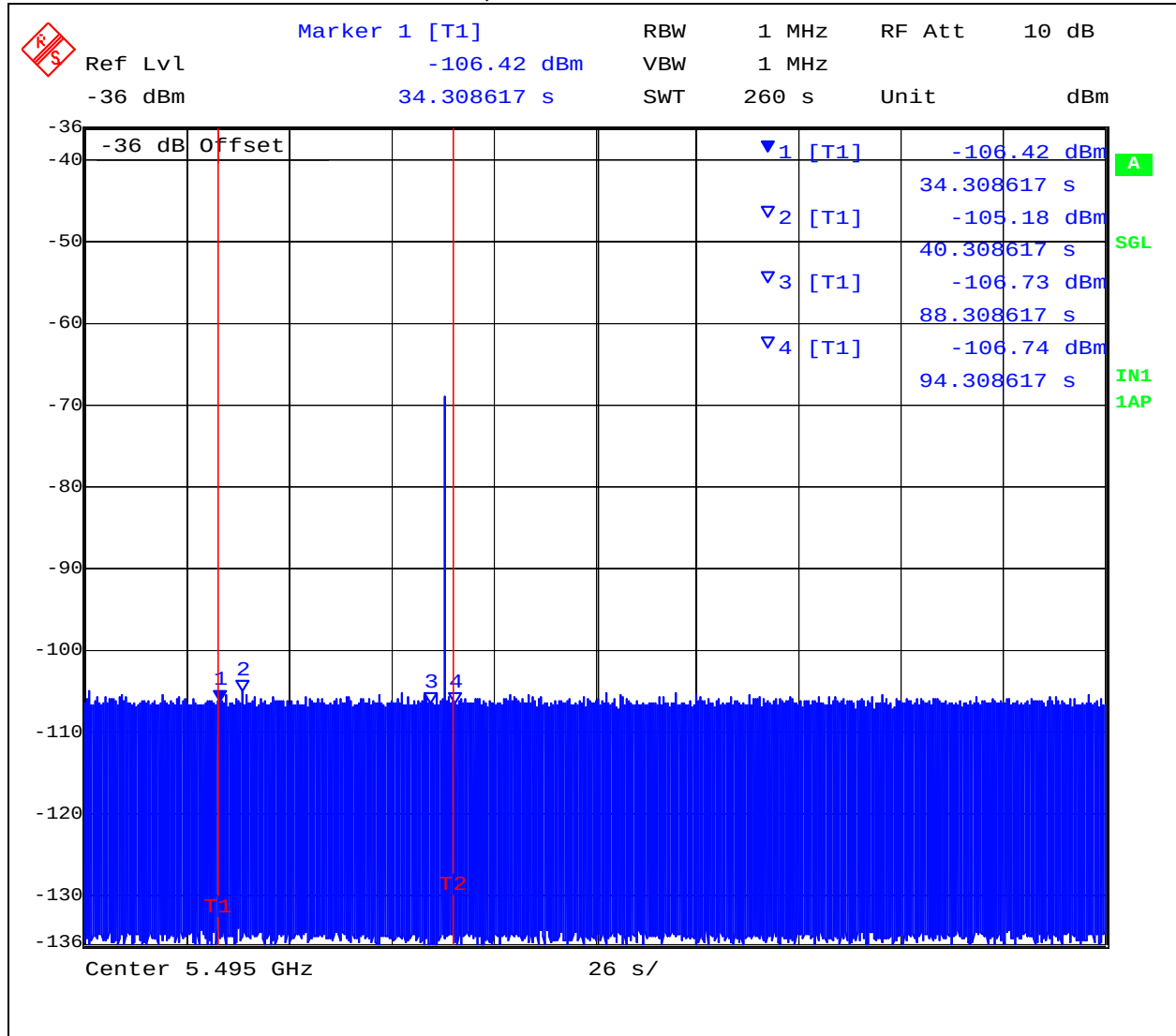
A single Burst of short pulse of radar type 1 will commence within a 6 second window starting at $T_0 + 54$ seconds. The window will commence at marker 2 and end at the red frequency line T_2 .

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5,500MHz 802.11a & 5,510MHz 802.11n HT-40 will continue for 2.5 minutes after the radar burst has been generated.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 106 of 193

Channel Availability Check Time at T0 + 54 seconds Check Time
5,500MHz 802.11a

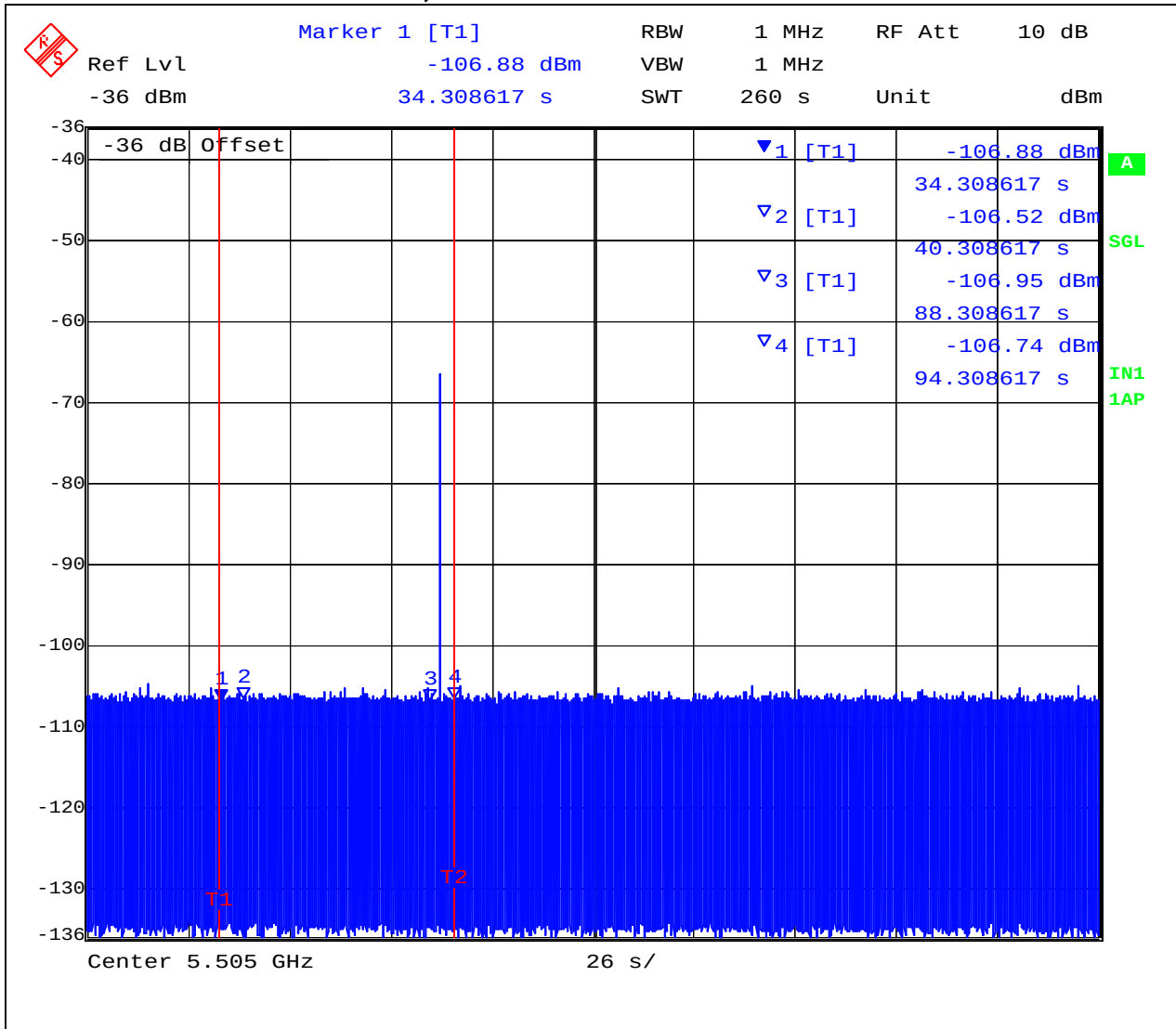


This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 107 of 193

Channel Availability Check Time at T0 + 54 seconds Check Time
5,510MHz 802.11n HT-40



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 108 of 193

6.1.5.5. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

FCC §15.407(h)(2)(iii)

The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the EUT (Master). The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link <http://ntiacsd.ntia.doc.gov/dfs/>) is streamed from the master device (AP) to the client.

Channel Closing Transmission Time - Measurement

Channel Closing Transmission Time starts immediately after the last radar pulse is transmitted.

Therefore, pulses seen after the last radar pulse are totaled to provide an aggregate total of transmissions in order to determine whether the EUT is compliant with the Channel Closing Transmission Time requirements as described in MO&O FCC 06-96.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 109 of 193

802.11a Channel Closing Time

Channel Closing Time 5500 MHz (802.11a)=0.419 mSecs (limit 260 mSecs)

Channel Move Time 5,500MHz (802.11a) = 0.874 Secs (limit 10 Secs)

Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - 0 to 10 seconds



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 110 of 193

802.11n HT-40 Channel Closing Time

Channel Closing Transmission Time 5,510 MHz (802.11n HT-40) = 0.417 mSecs
(limit 260 mSecs)

Channel Move Time 5,510 MHz (802.11n HT-40) = 0.77425 Secs (limit 10 Secs)

Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - 0 to 10 seconds



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

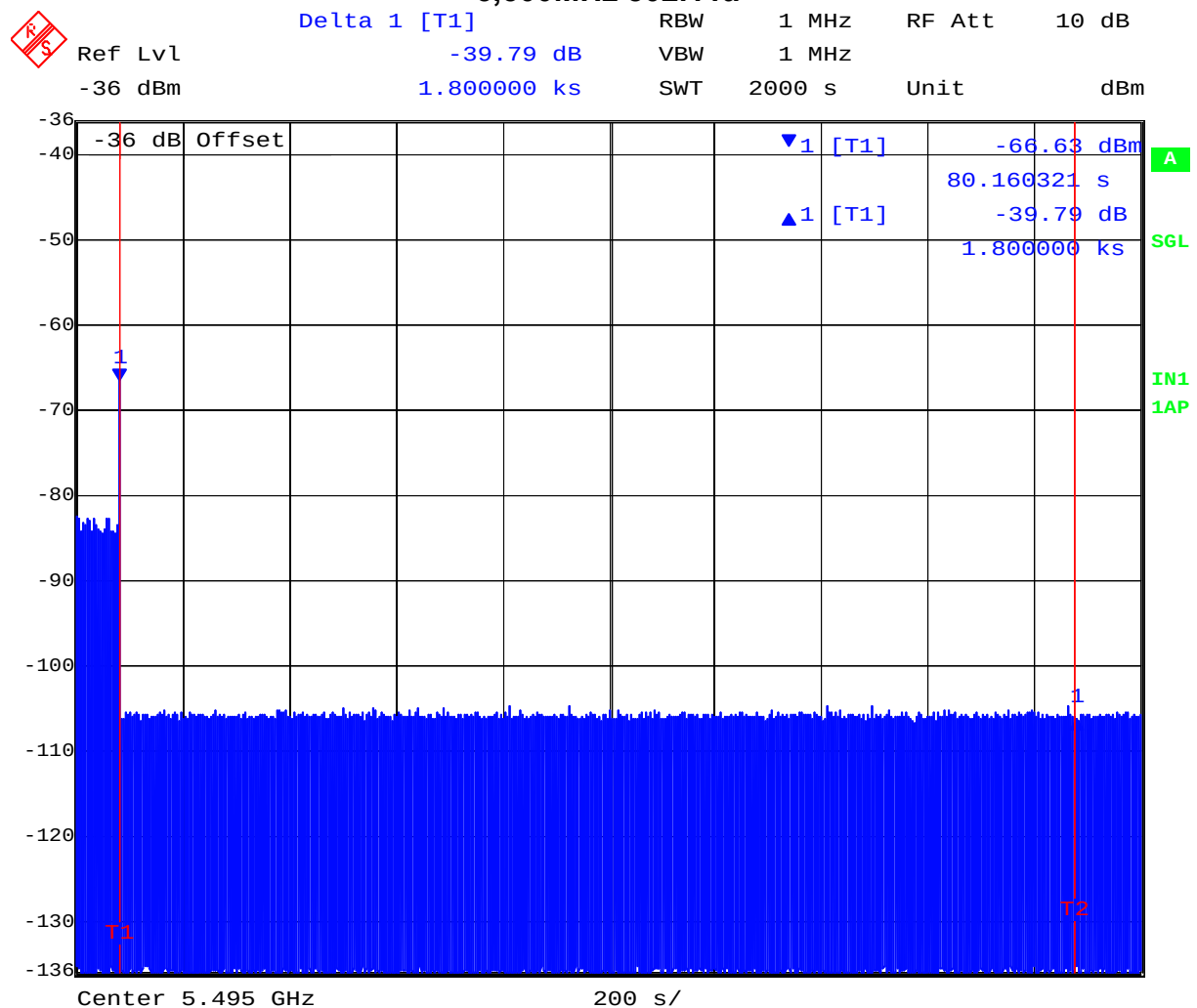


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 111 of 193

30 Minute Non-Occupancy Period

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel.

30 Minute Non-Occupancy Period Type 1 Radar 5,500MHz 802.11a



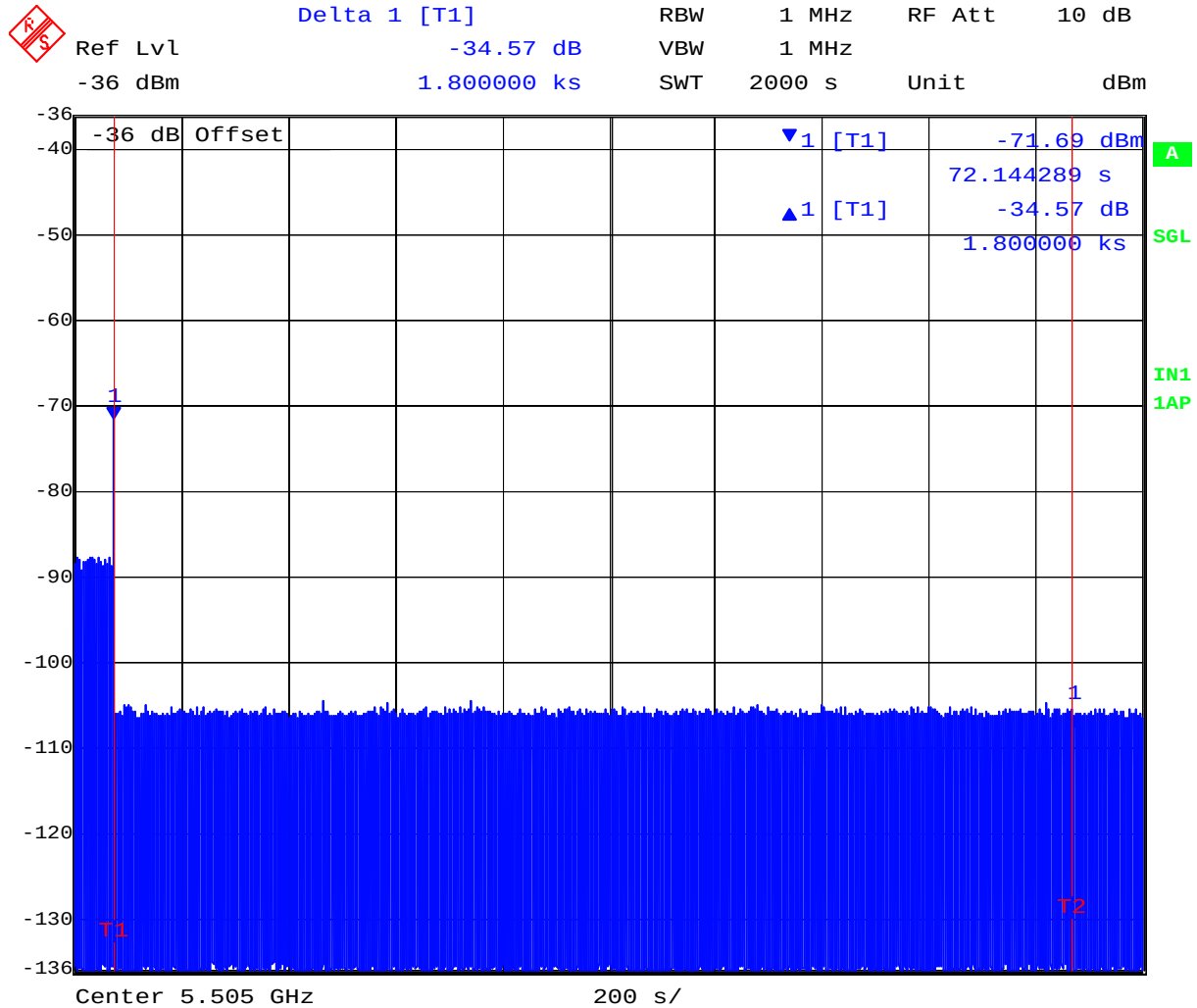
Date: 21.MAY.2013 16:53:18

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 112 of 193

30 Minute Non-Occupancy Period Type 1 Radar 5,510 MHz802.11n HT-40



Date: 23.MAY.2013 18:24:31

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 113 of 193

6.1.5.6. Statistical Performance Check

The steps below define the procedure to determine the minimum percentage of detection when a radar burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5,500MHz 802.11a and 5,510MHz 802.11n HT-40.

The Radar Waveform generator sends the individual waveform for each of the radar types 1-6. Statistical data will be gathered to determine the ability of the device to detect the radar test waveforms. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs. The percentage of successful detection is calculated by:

$$\text{Total \# of detections} \div \text{Total \# of Trials} \times 100 = \text{Probability of Detection}$$

The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in the Radar Test Waveforms section.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 114 of 193

Verification of Detection 5,500MHz 802.11a BW 20 MHz
Radar Level -62 dBm Off-set 5MHz

Trial #	Detection = √, No Detection = 0					
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
1	√	√	√	√	√	√
2	√	√	√	√	√	√
3	√	√	√	√	√	0
4	√	√	√	√	√	√
5	√	√	√	√	√	√
6	√	√	√	√	√	√
7	√	√	0	√	√	√
8	√	√	0	√	√	√
9	√	√	√	√	√	0
10	√	√	√	√	√	√
11	√	√	√	√	√	√
12	√	√	√	√	√	√
13	√	√	√	√	√	√
14	√	√	√	√	√	√
15	√	√	√	√	√	√
16	√	√	√	√	√	√
17	√	√	√	√	√	√
18	√	√	√	√	√	0
19	√	√	√	√	√	√
20	√	√	√	√	√	0
21	√	√	√	√	√	√
22	√	√	√	√	√	√
23	√	√	√	√	√	√
24	√	√	√	√	√	0
25	√	√	√	√	√	√
26	√	√	√	√	√	√
27	√	√	√	√	√	0
28	√	√	√	√	√	√
29	√	0	√	√	√	√
30	√	√	√	√	√	√
Detection Percentage	100% (>60%)	96.6% (>60%)	93.3% (>60%)	100% (>60%)	100% (>80%)	80% (>70%)

In addition an average minimum percentage of successful detection across all four Short pulse radar test waveforms is required and calculated as follows;

$$(P_{d1} + P_{d2} + P_{d3} + P_{d4}) / 4 = (100\% + 96.6\% + 93.3\% + 100\%) / 4 = 97.4\% (> 80\%)$$

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 115 of 193

Verification of Detection 5,510MHz 802.11n HT-40

Radar Level -62 dBm Off-set 5MHz

Trial #	Detection = √, No Detection = 0					
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
1	√	√	√	√	√	√
2	√	√	√	√	√	√
3	√	√	√	√	√	√
4	√	√	√	√	√	√
5	√	√	√	√	√	√
6	√	√	√	√	√	√
7	√	√	0	√	√	√
8	√	√	√	√	√	√
9	√	√	√	√	√	√
10	√	√	√	√	√	√
11	√	√	√	√	√	√
12	√	√	√	√	√	√
13	√	√	√	√	√	√
14	√	√	√	√	√	√
15	√	√	√	√	√	√
16	√	√	√	√	√	√
17	√	√	√	√	√	√
18	√	√	√	√	√	√
19	√	√	√	√	√	√
20	√	√	√	√	√	√
21	√	√	√	√	√	√
22	√	√	√	√	√	√
23	√	√	√	√	√	√
24	√	√	√	√	√	√
25	√	√	√	√	√	√
26	√	√	√	√	√	√
27	√	√	√	√	√	√
28	√	√	√	√	√	√
29	√	√	√	√	√	√
30	√	√	√	√	√	√
Detection Percentage	100% (>60%)	100% (>60%)	96.6% (>60%)	100% (>60%)	100% (>80%)	100% (>70%)

In addition an average minimum percentage of successful detection across all four Short pulse radar test waveforms is required and calculated as follows;

$$(P_{d1} + P_{d2} + P_{d3} + P_{d4}) / 4 = (100\% + 100\% + 96.6\% + 100\%) / 4 = 99.1\% (> 80\%)$$

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 116 of 193

Measurement Uncertainty Time/Power

Measurement uncertainty	
- Time	4%
- Power	1.33dB

Traceability

Test Equipment Used

0072, 0083, 0098, 0116, 0132, 0158, 0313, 0314, 0193, 0223, 0252, 0253, 0251, 0256, 0328, 0329

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 117 of 193

7. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0070	Power Meter	Hewlett Packard	437B	3125U11552	28 th Nov 13
0117	Power Sensor	Hewlett Packard	8487D	3318A00371	15 th Nov 13
0223	Power Meter	Hewlett Packard	EPM-442A	US37480256	15 th Nov 13
0374	Power Sensor	Hewlett Packard	8485A	3318A19694	29 th Nov 13
0158	Barometer /Thermometer	Control Co.	4196	E2846	8 th Dec 13
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2 nd Dec 13
0287	EMI Receiver	Rhode & Schwartz	ESIB40	100201	16 th Nov 13
0338	30 - 3000 MHz Antenna	Sunol	JB3	A052907	8 th Nov 13
0335	1-18 GHz Horn Antenna	EMCO	3117	00066580	7 th Nov 13
0252	SMA Cable	Megaphase	Sucoflex 104	None	N/A
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001	N/A
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002	N/A
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001	N/A
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001	N/A
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623	N/A
	EMC Test Software	EMISoft	Vasona	5.0051	N/A
	RF Conducted Test Software	National Instruments	Labview	Version 8.2	N/A
	RF Conducted Test Software	MiCOM Labs ATS		Version 1.5	N/A

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 118 of 193

APPENDIX

A. SUPPORTING INFORMATION

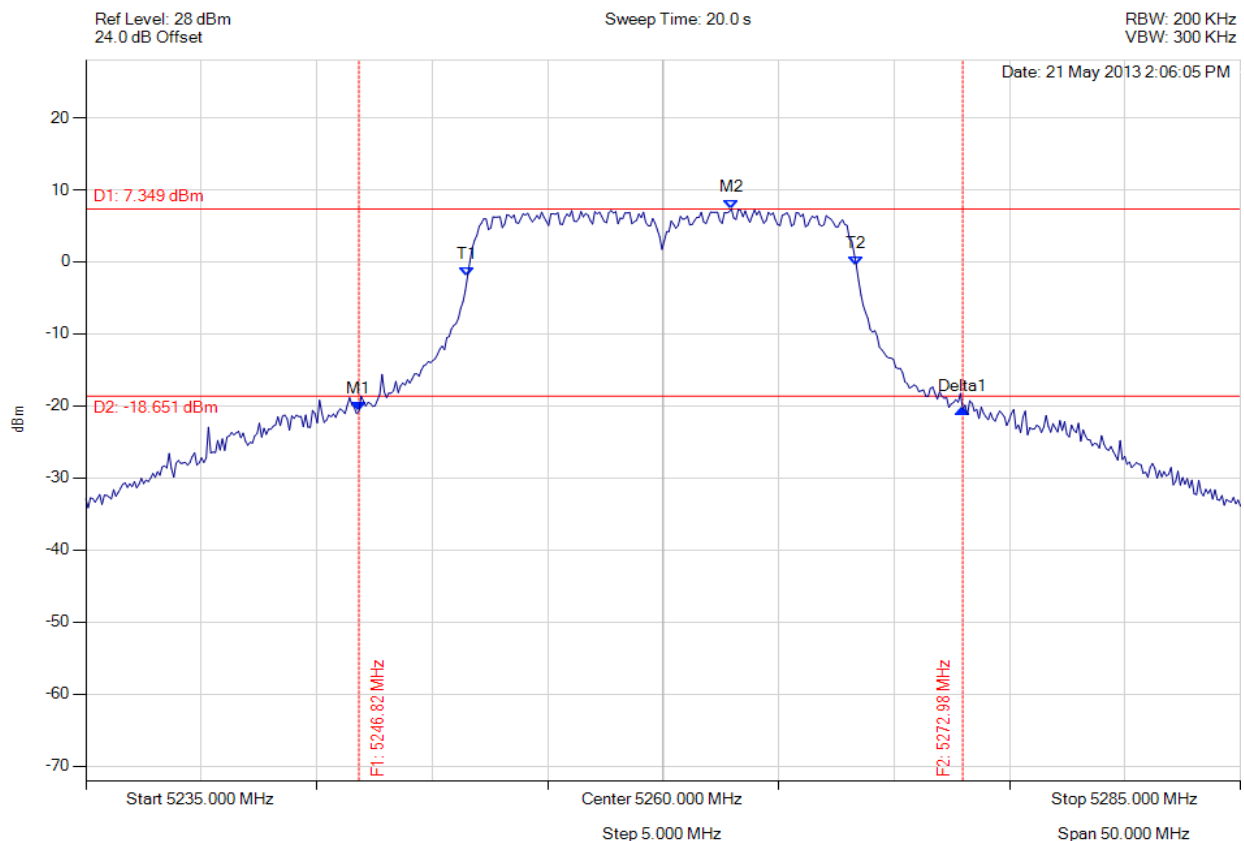
A.1. CONDUCTED TEST PLOTS

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

A.1.1. 26 dB & 99% Bandwidth

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5246.824 MHz : -20.743 dBm M2 : 5262.956 MHz : 7.349 dBm Delta1 : 26.152 MHz : 0.301 dB T1 : 5251.533 MHz : -1.977 dBm T2 : 5268.367 MHz : -0.542 dBm OBW : 16.834 MHz	Measured 26 dB Bandwidth: 26.152 MHz Measured 99% Bandwidth: 16.834 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

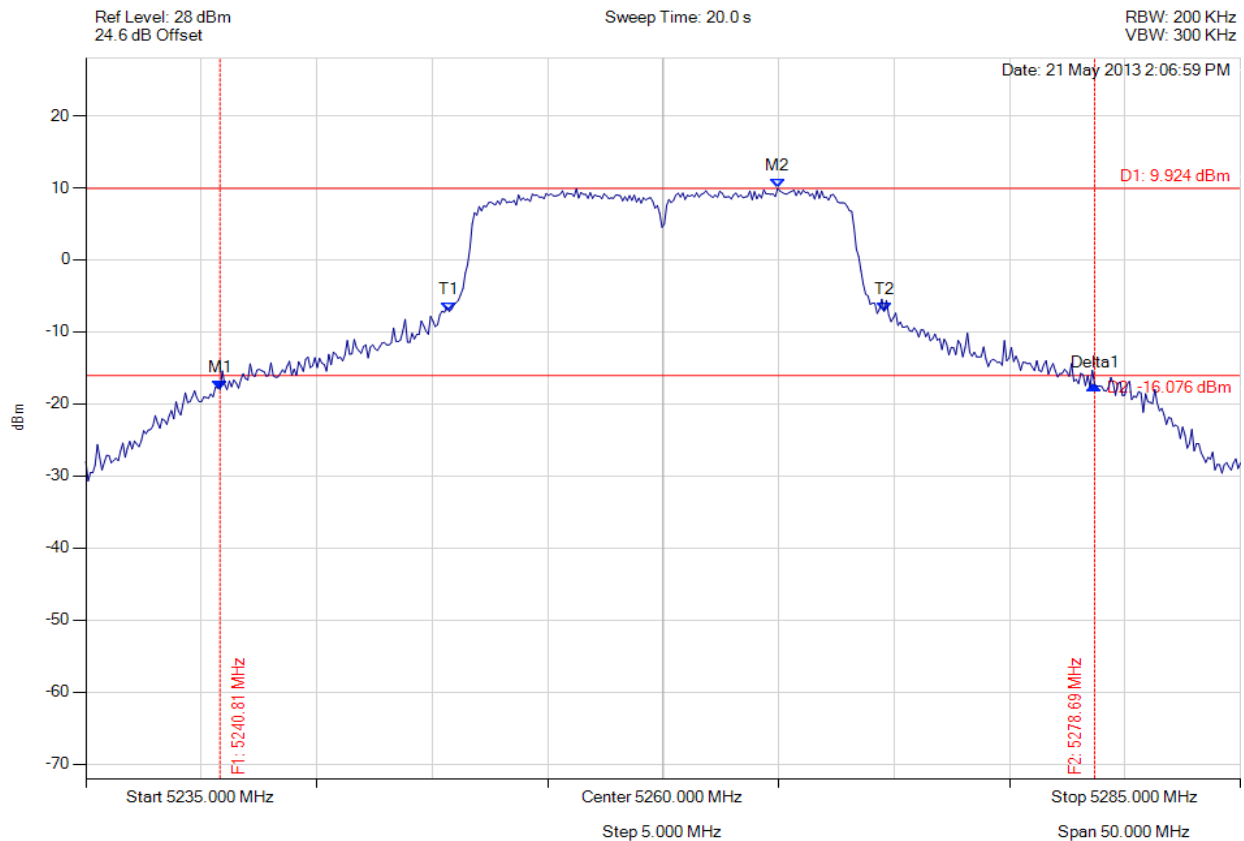


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 120 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5260.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



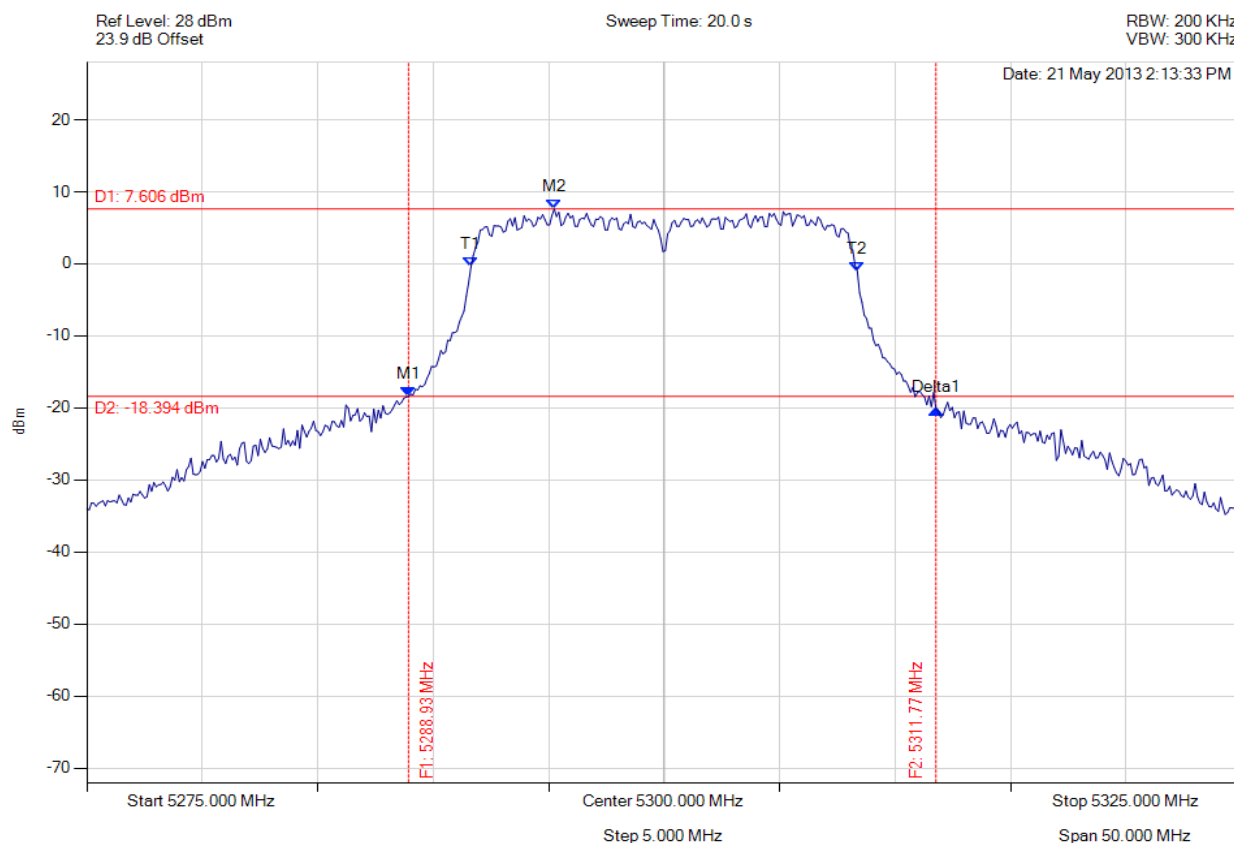
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5240.812 MHz : -18.007 dBm M2 : 5264.960 MHz : 9.924 dBm Delta1 : 37.876 MHz : 0.616 dB T1 : 5250.731 MHz : -7.178 dBm T2 : 5269.569 MHz : -7.145 dBm OBW : 18.838 MHz	Measured 26 dB Bandwidth: 37.876 MHz Measured 99% Bandwidth: 18.838 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5288.928 MHz : -18.412 dBm M2 : 5295.240 MHz : 7.606 dBm Delta1 : 22.846 MHz : -1.788 dB T1 : 5291.633 MHz : -0.436 dBm T2 : 5308.367 MHz : -1.091 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 22.846 MHz Measured 99% Bandwidth: 16.733 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

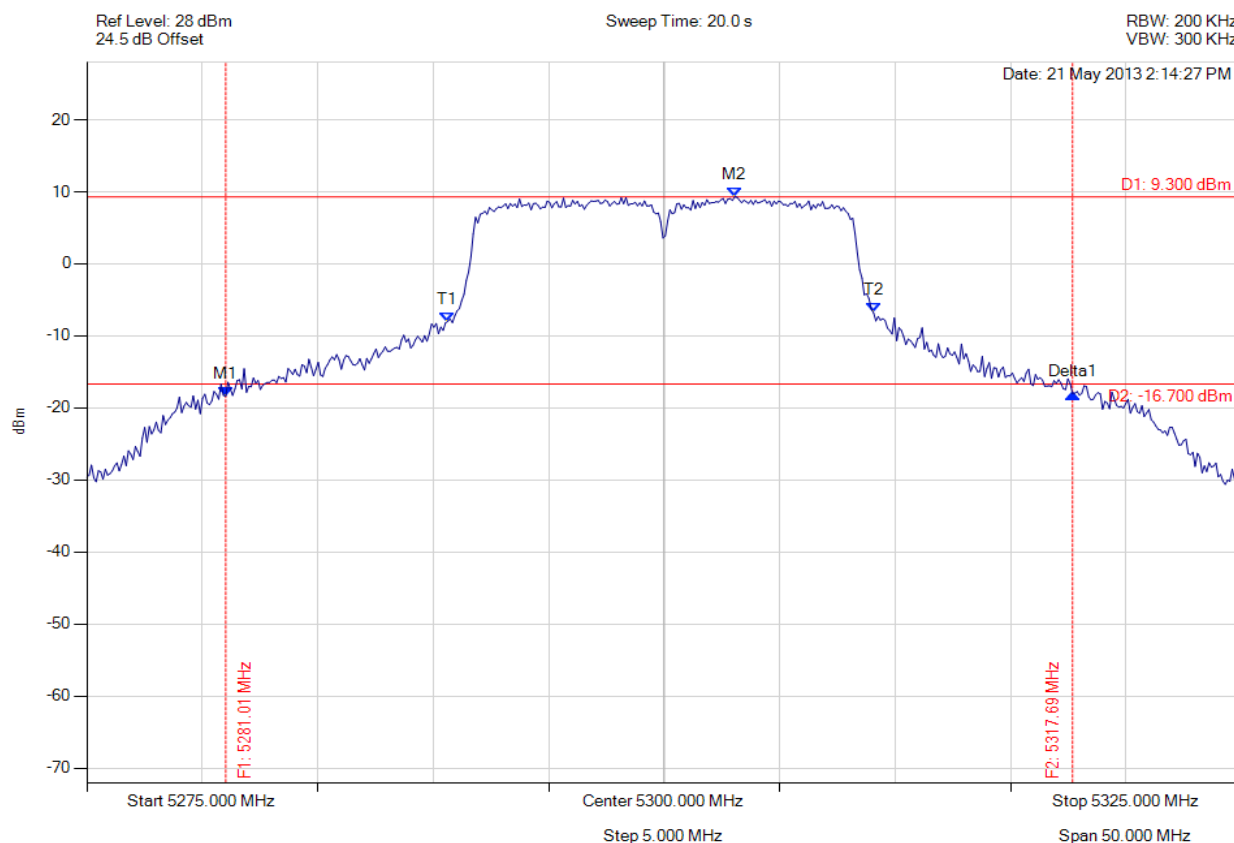


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 122 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5281.012 MHz : -18.376 dBm M2 : 5303.056 MHz : 9.300 dBm Delta1 : 36.673 MHz : 0.376 dB T1 : 5290.631 MHz : -7.973 dBm T2 : 5309.068 MHz : -6.775 dBm OBW : 18.437 MHz	Measured 26 dB Bandwidth: 36.673 MHz Measured 99% Bandwidth: 18.437 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

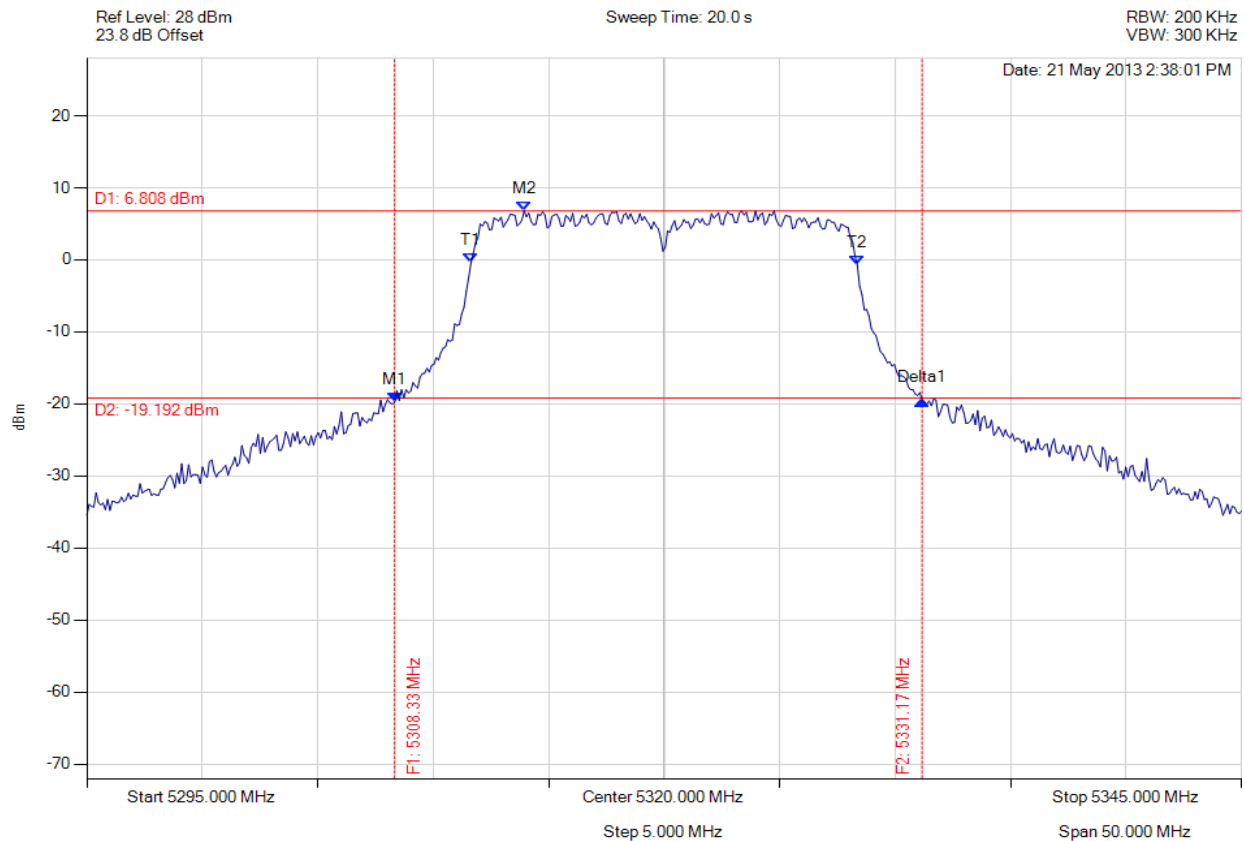


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 123 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5320.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5308.327 MHz : -19.771 dBm M2 : 5313.938 MHz : 6.808 dBm Delta1 : 22.846 MHz : 0.299 dB T1 : 5311.633 MHz : -0.426 dBm T2 : 5328.367 MHz : -0.747 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 22.846 MHz Measured 99% Bandwidth: 16.733 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

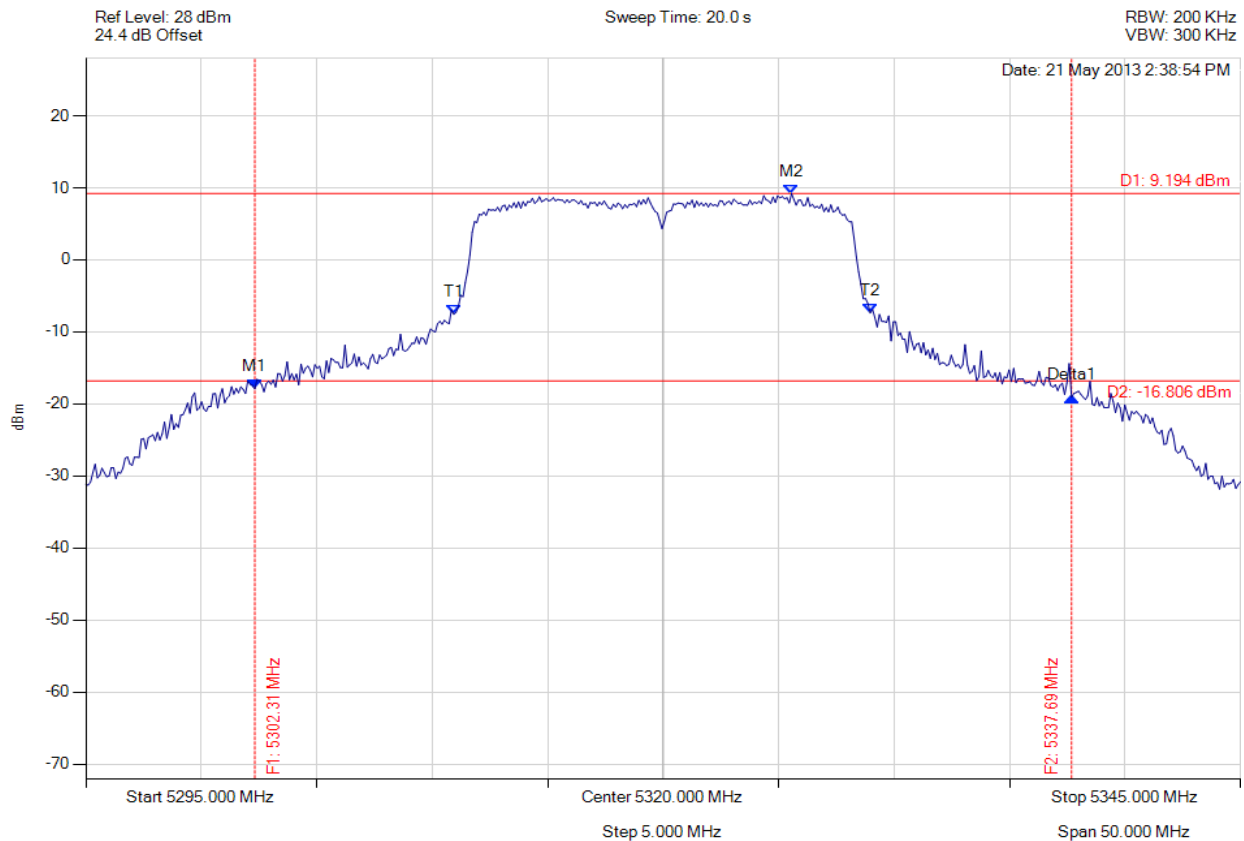


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 124 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5320.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.315 MHz : -17.916 dBm M2 : 5325.561 MHz : 9.194 dBm Delta1 : 35.371 MHz : -1.147 dB T1 : 5310.932 MHz : -7.558 dBm T2 : 5328.968 MHz : -7.385 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 35.371 MHz Measured 99% Bandwidth: 18.036 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

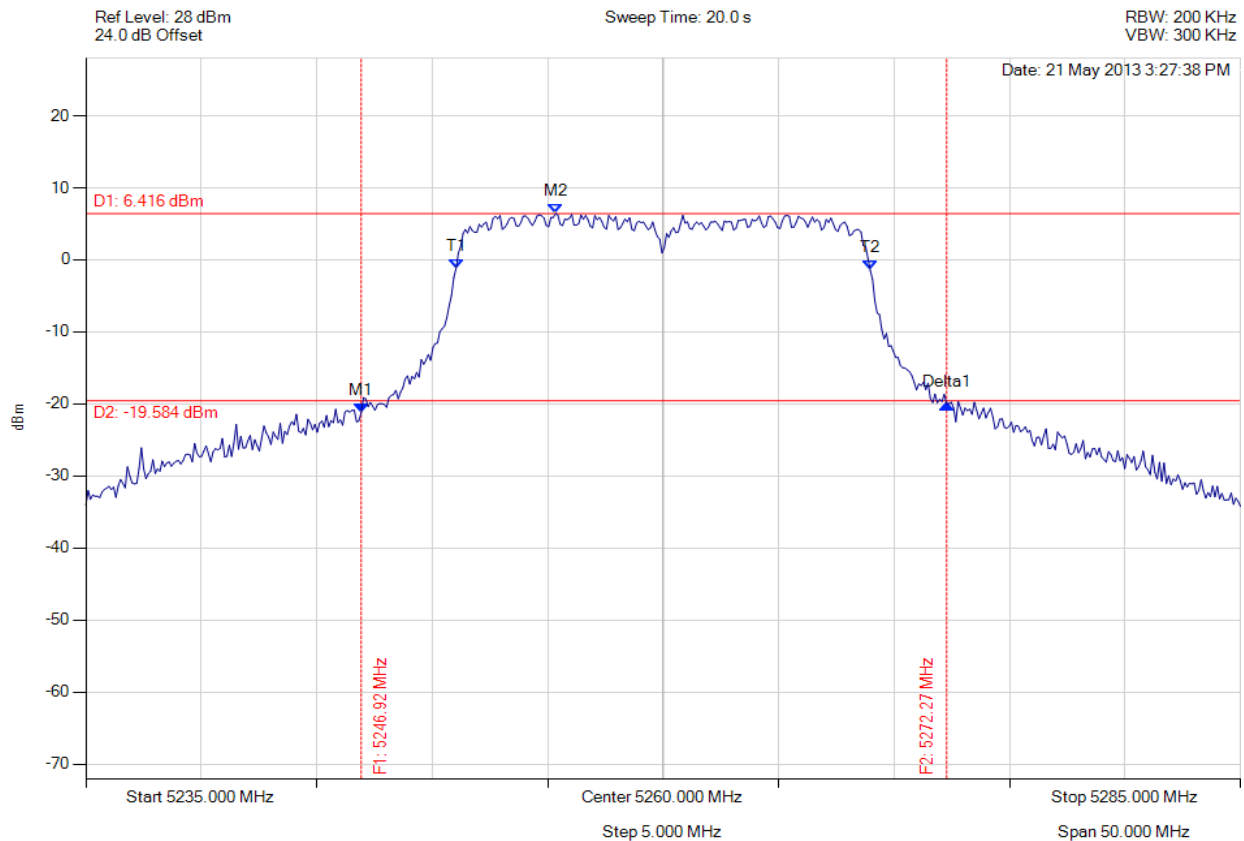


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 125 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5246.924 MHz : -21.227 dBm M2 : 5255.341 MHz : 6.416 dBm Delta1 : 25.351 MHz : 1.226 dB T1 : 5251.032 MHz : -1.184 dBm T2 : 5268.968 MHz : -1.443 dBm OBW : 17.936 MHz	Measured 26 dB Bandwidth: 25.351 MHz Measured 99% Bandwidth: 17.936 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

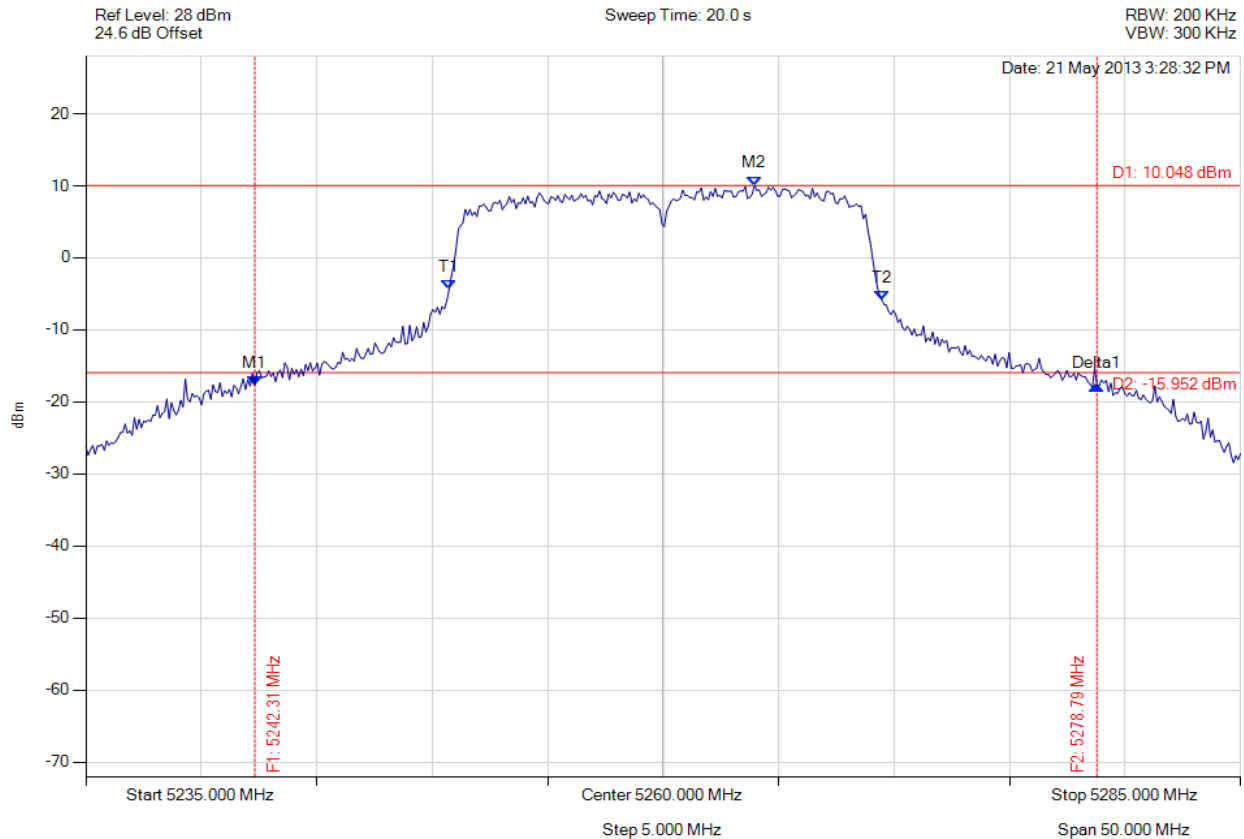


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 126 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5242.315 MHz : -17.651 dBm M2 : 5263.958 MHz : 10.048 dBm Delta1 : 36.473 MHz : -0.089 dB T1 : 5250.731 MHz : -4.373 dBm T2 : 5269.469 MHz : -5.801 dBm OBW : 18.737 MHz	Measured 26 dB Bandwidth: 36.473 MHz Measured 99% Bandwidth: 18.737 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

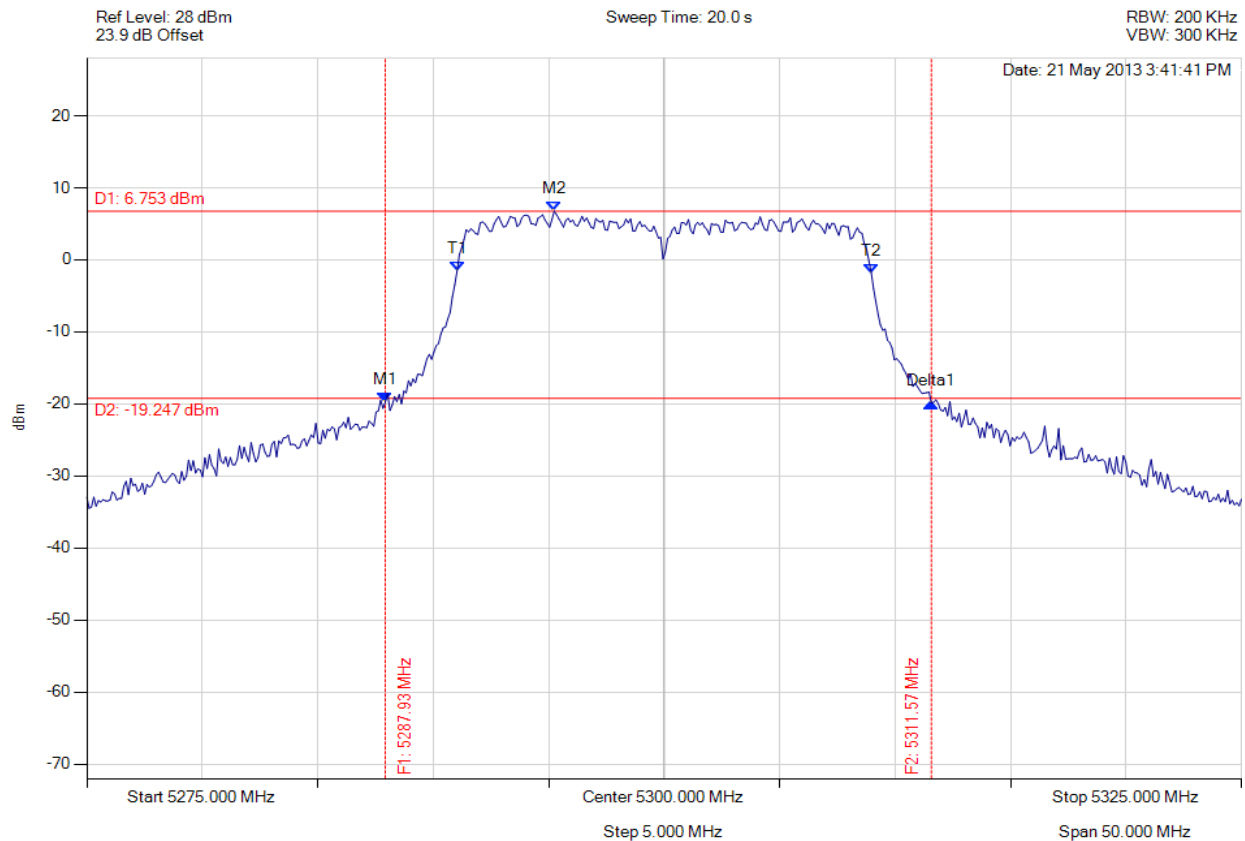


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 127 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5287.926 MHz : -19.740 dBm M2 : 5295.240 MHz : 6.753 dBm Delta1 : 23.647 MHz : -0.189 dB T1 : 5291.032 MHz : -1.565 dBm T2 : 5308.968 MHz : -1.798 dBm OBW : 17.936 MHz	Measured 26 dB Bandwidth: 23.647 MHz Measured 99% Bandwidth: 17.936 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

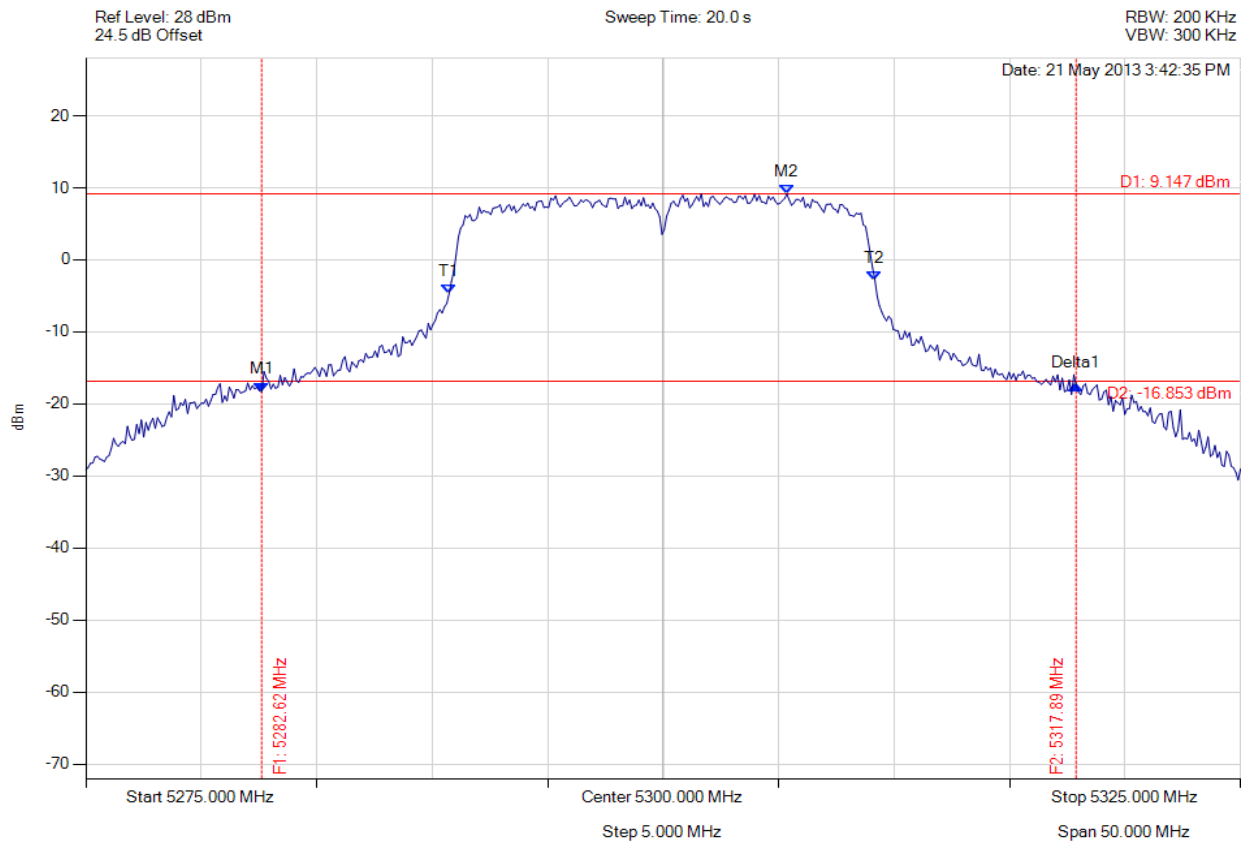


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 128 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5282.615 MHz : -18.296 dBm M2 : 5305.361 MHz : 9.147 dBm Delta1 : 35.271 MHz : 0.887 dB T1 : 5290.731 MHz : -4.666 dBm T2 : 5309.168 MHz : -2.821 dBm OBW : 18.437 MHz	Measured 26 dB Bandwidth: 35.271 MHz Measured 99% Bandwidth: 18.437 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

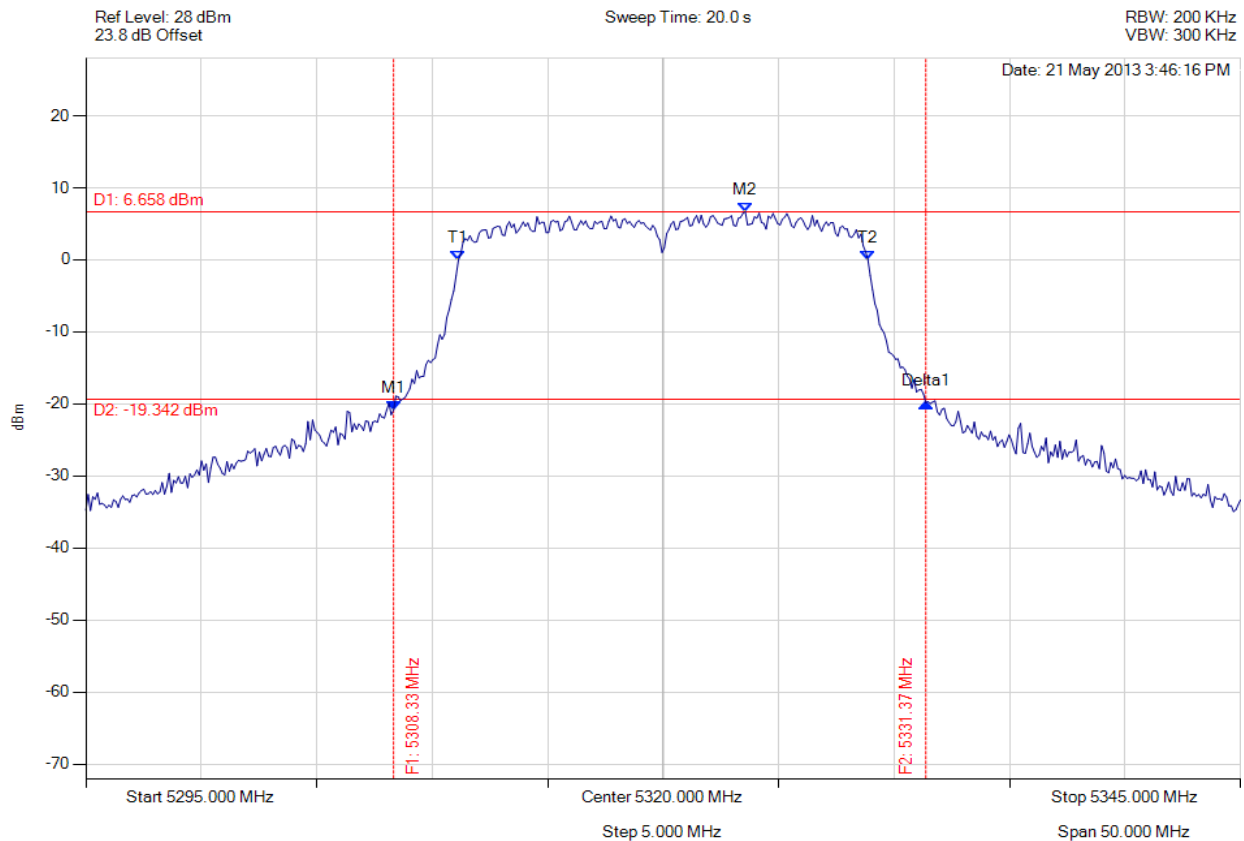


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 129 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5308.327 MHz : -20.834 dBm M2 : 5323.557 MHz : 6.658 dBm Delta1 : 23.046 MHz : 0.999 dB T1 : 5311.132 MHz : -0.039 dBm T2 : 5328.868 MHz : 0.028 dBm OBW : 17.735 MHz	Measured 26 dB Bandwidth: 23.046 MHz Measured 99% Bandwidth: 17.735 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

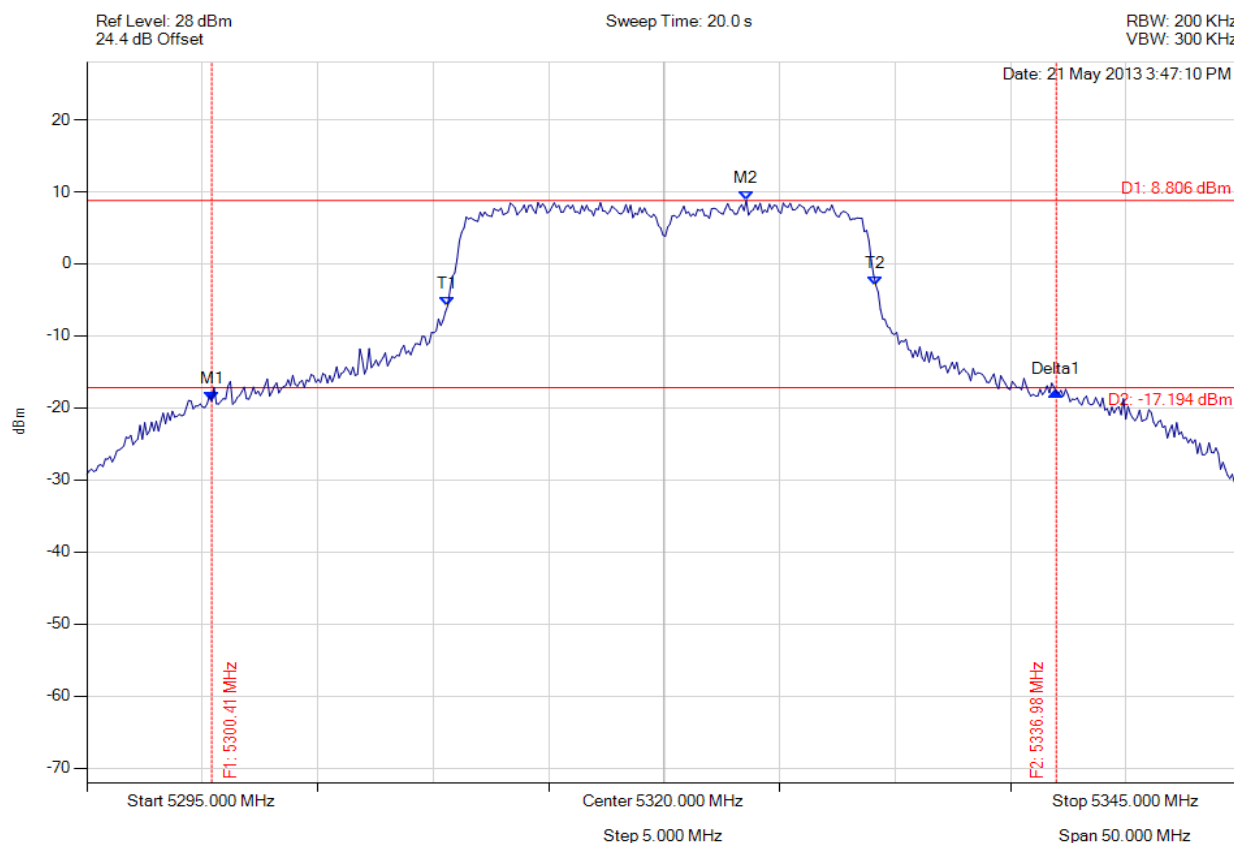


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 130 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5300.411 MHz : -19.095 dBm M2 : 5323.557 MHz : 8.806 dBm Delta1 : 36.573 MHz : 1.316 dB T1 : 5310.631 MHz : -5.817 dBm T2 : 5329.168 MHz : -3.004 dBm OBW : 18.537 MHz	Measured 26 dB Bandwidth: 36.573 MHz Measured 99% Bandwidth: 18.537 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

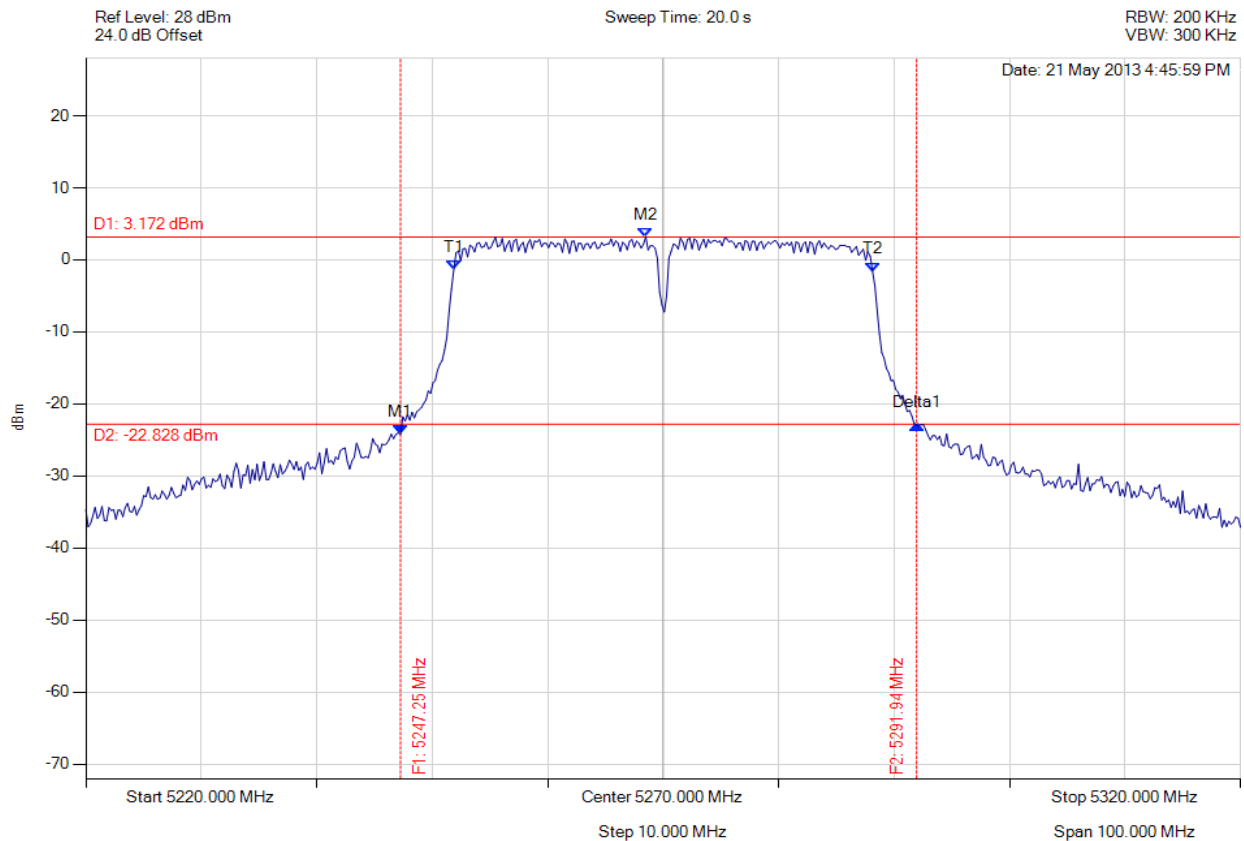


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 131 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5247.255 MHz : -24.218 dBm M2 : 5268.497 MHz : 3.172 dBm Delta1 : 44.689 MHz : 1.289 dB T1 : 5251.864 MHz : -1.367 dBm T2 : 5288.136 MHz : -1.619 dBm OBW : 36.273 MHz	Measured 26 dB Bandwidth: 44.689 MHz Measured 99% Bandwidth: 36.273 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

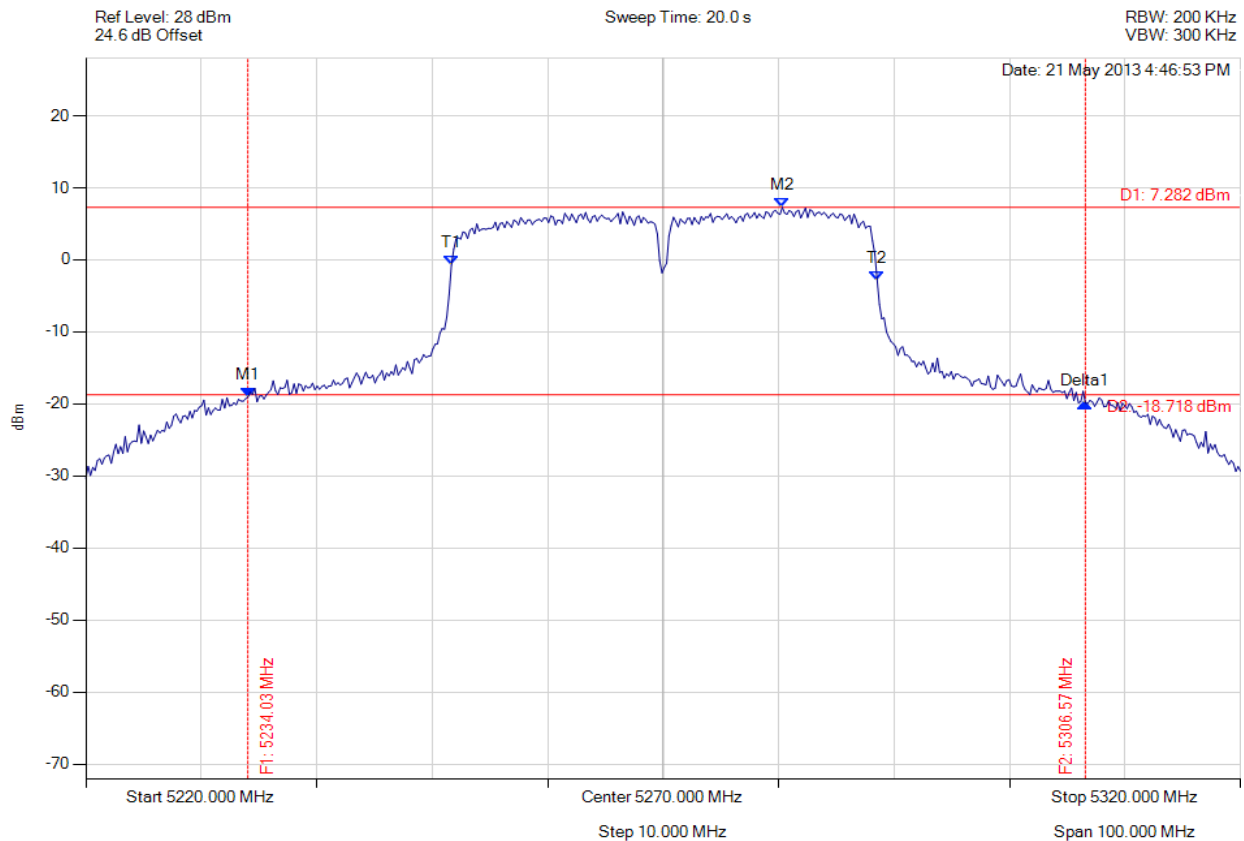


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 132 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5234.028 MHz : -19.063 dBm M2 : 5280.321 MHz : 7.282 dBm Delta1 : 72.545 MHz : -0.842 dB T1 : 5251.663 MHz : -0.735 dBm T2 : 5288.537 MHz : -2.860 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 72.545 MHz Measured 99% Bandwidth: 36.874 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

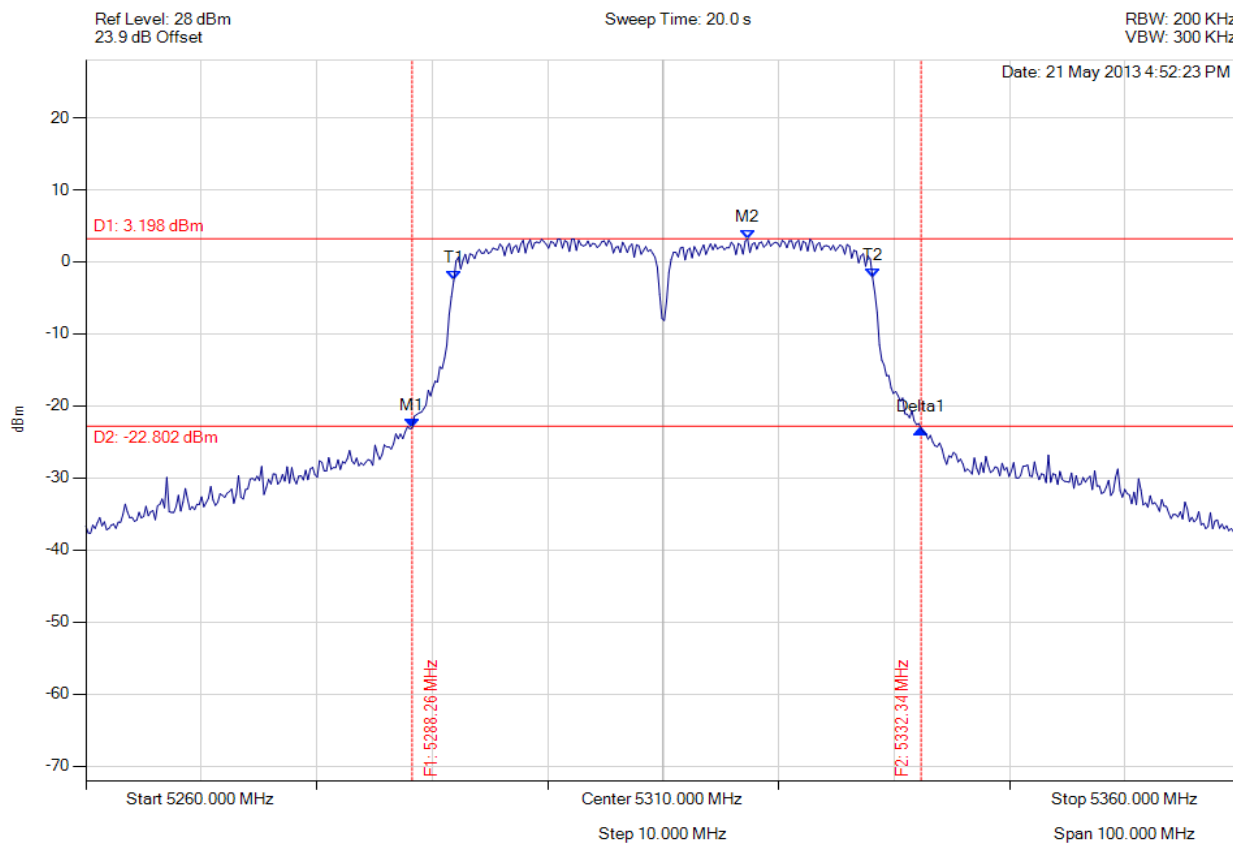


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 133 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5288.257 MHz : -23.086 dBm M2 : 5317.315 MHz : 3.198 dBm Delta1 : 44.088 MHz : -0.085 dB T1 : 5291.864 MHz : -2.614 dBm T2 : 5328.136 MHz : -2.144 dBm OBW : 36.273 MHz	Measured 26 dB Bandwidth: 44.088 MHz Measured 99% Bandwidth: 36.273 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

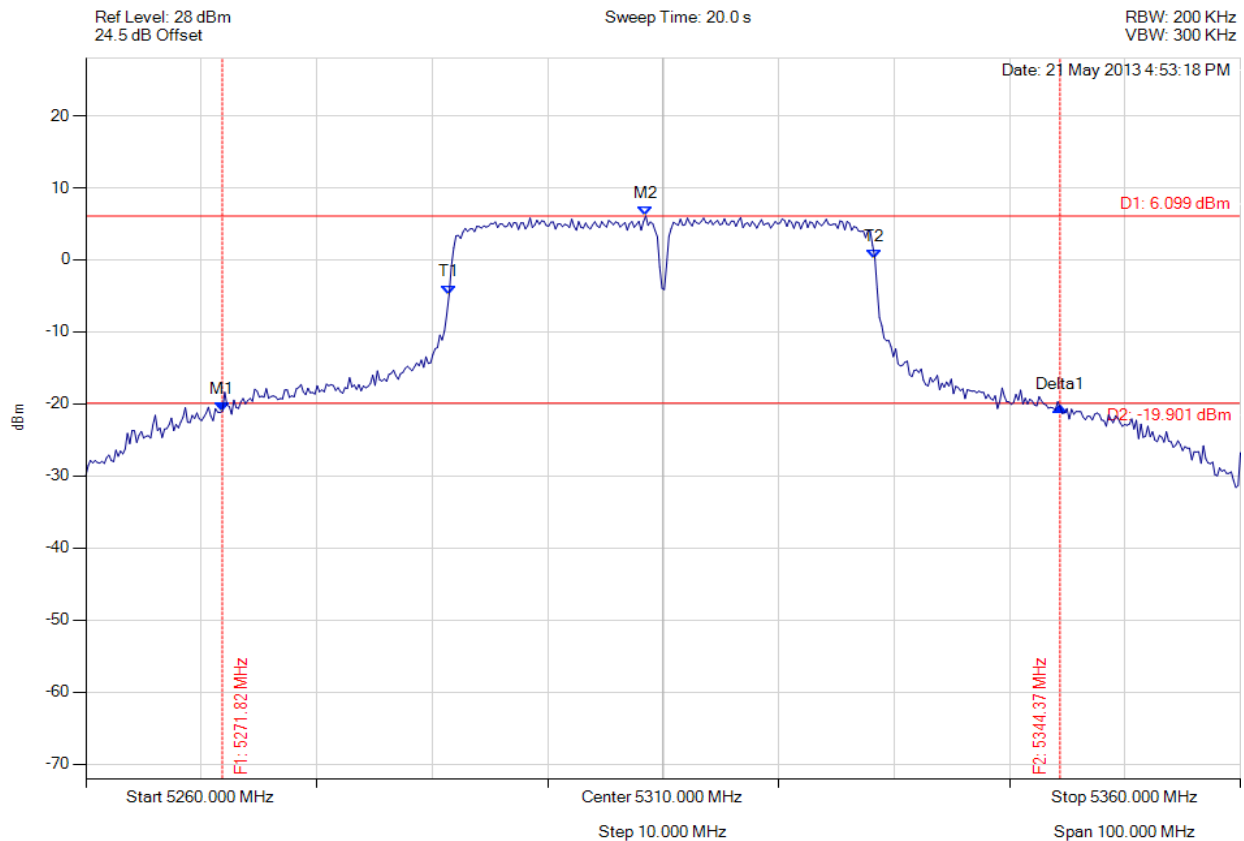


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 134 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5271.824 MHz : -21.025 dBm M2 : 5308.497 MHz : 6.099 dBm Delta1 : 72.545 MHz : 0.663 dB T1 : 5291.463 MHz : -4.794 dBm T2 : 5328.337 MHz : 0.180 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 72.545 MHz Measured 99% Bandwidth: 36.874 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

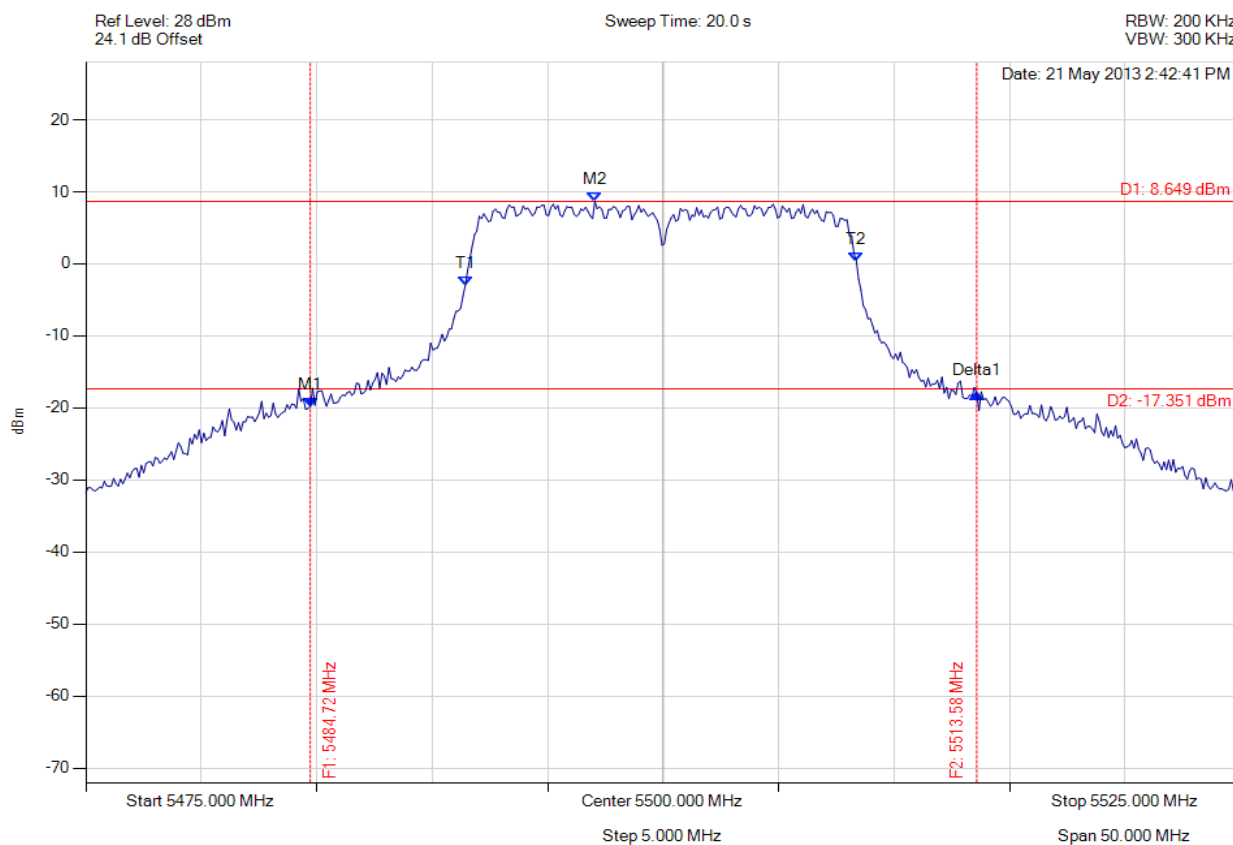


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 135 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5484.719 MHz : -19.832 dBm M2 : 5497.044 MHz : 8.649 dBm Delta1 : 28.858 MHz : 1.863 dB T1 : 5491.433 MHz : -2.974 dBm T2 : 5508.367 MHz : 0.370 dBm OBW : 16.934 MHz	Measured 26 dB Bandwidth: 28.858 MHz Measured 99% Bandwidth: 16.934 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

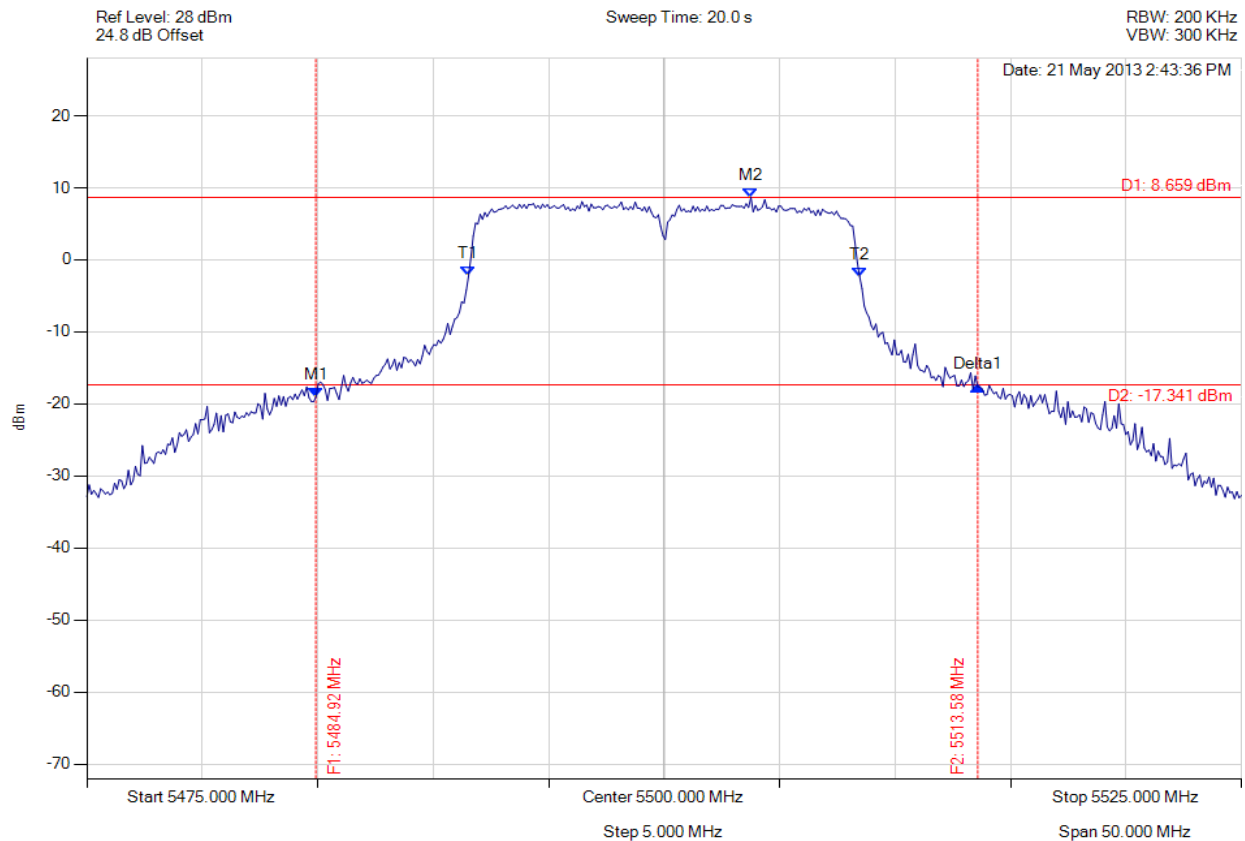


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 136 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5484.920 MHz : -19.063 dBm M2 : 5503.758 MHz : 8.659 dBm Delta1 : 28.657 MHz : 1.458 dB T1 : 5491.533 MHz : -2.199 dBm T2 : 5508.467 MHz : -2.341 dBm OBW : 16.934 MHz	Measured 26 dB Bandwidth: 28.657 MHz Measured 99% Bandwidth: 16.934 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

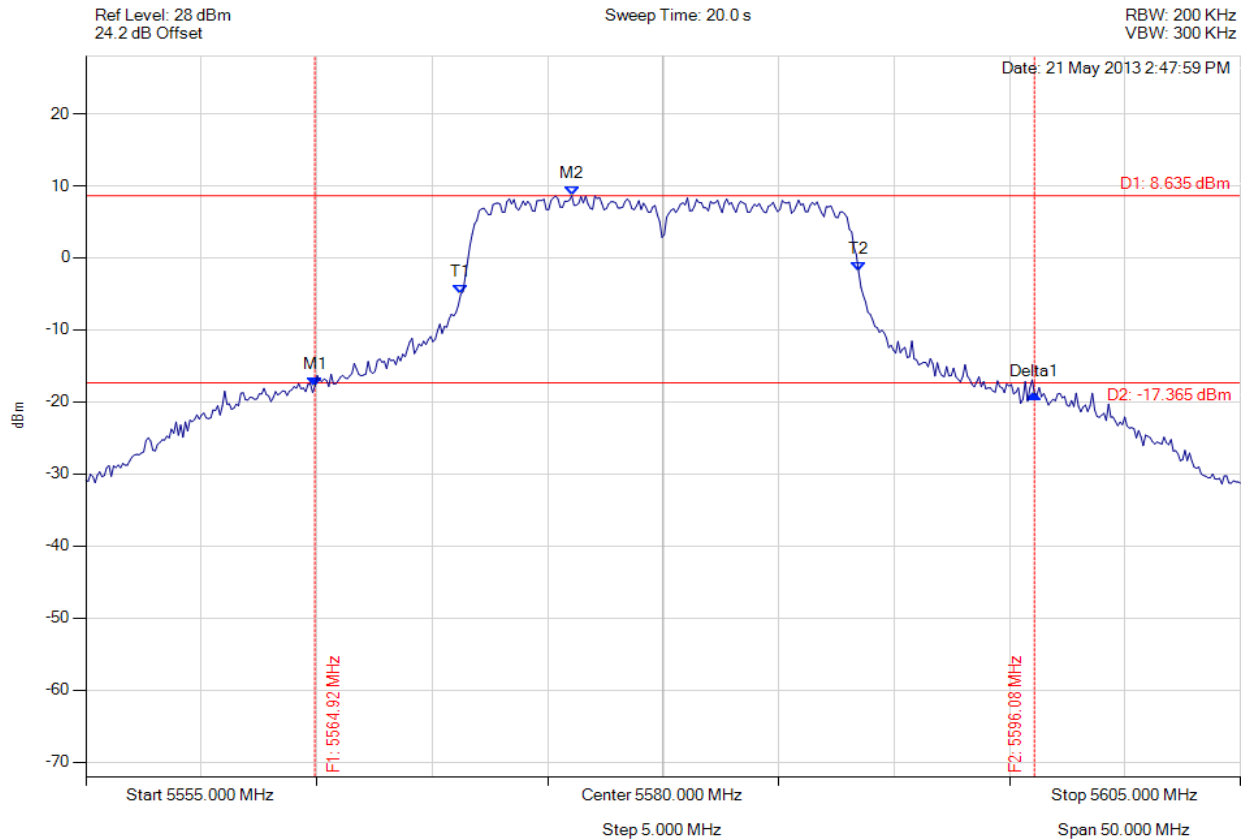


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 137 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5564.920 MHz : -17.873 dBm M2 : 5576.042 MHz : 8.635 dBm Delta1 : 31.162 MHz : -0.966 dB T1 : 5571.232 MHz : -5.065 dBm T2 : 5588.467 MHz : -1.929 dBm OBW : 17.234 MHz	Measured 26 dB Bandwidth: 31.162 MHz Measured 99% Bandwidth: 17.234 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

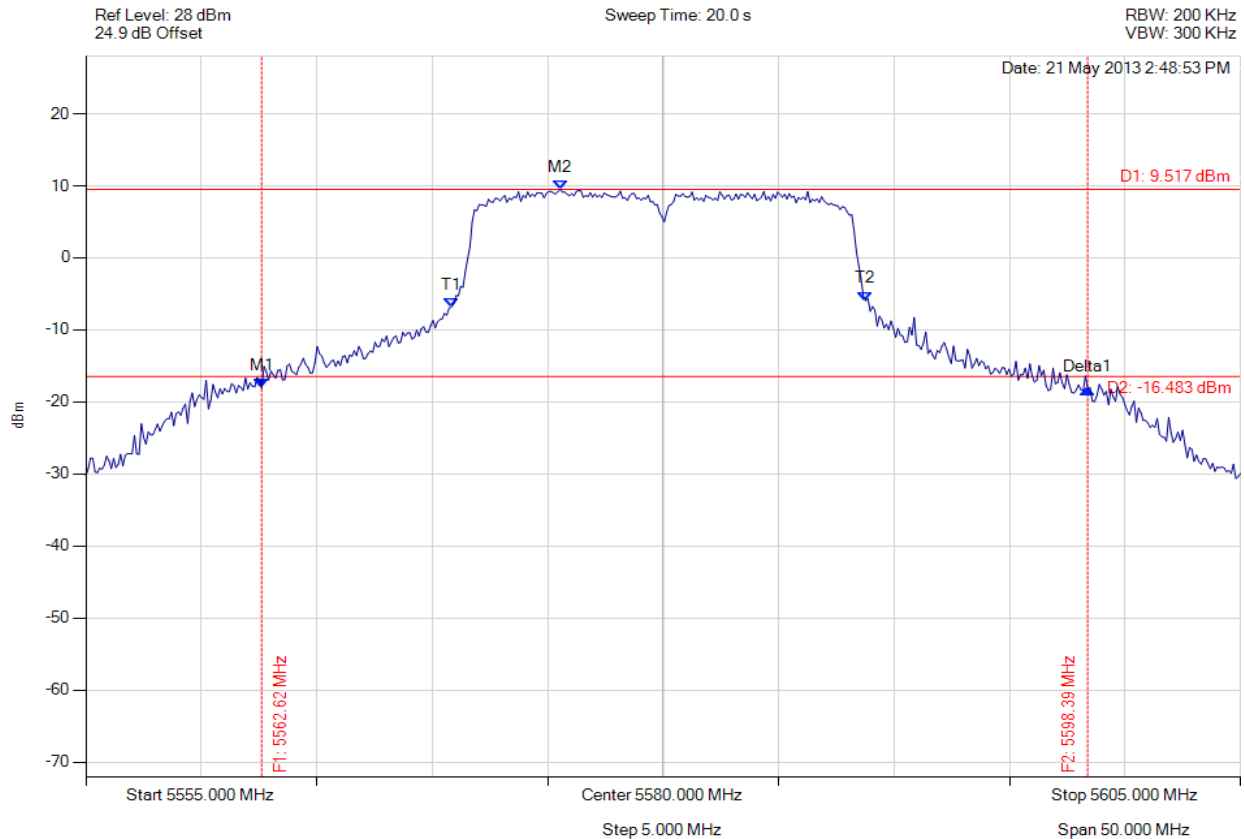


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 138 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5562.615 MHz : -18.085 dBm M2 : 5575.541 MHz : 9.517 dBm Delta1 : 35.772 MHz : -0.112 dB T1 : 5570.832 MHz : -6.814 dBm T2 : 5588.768 MHz : -5.962 dBm OBW : 17.936 MHz	Measured 26 dB Bandwidth: 35.772 MHz Measured 99% Bandwidth: 17.936 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

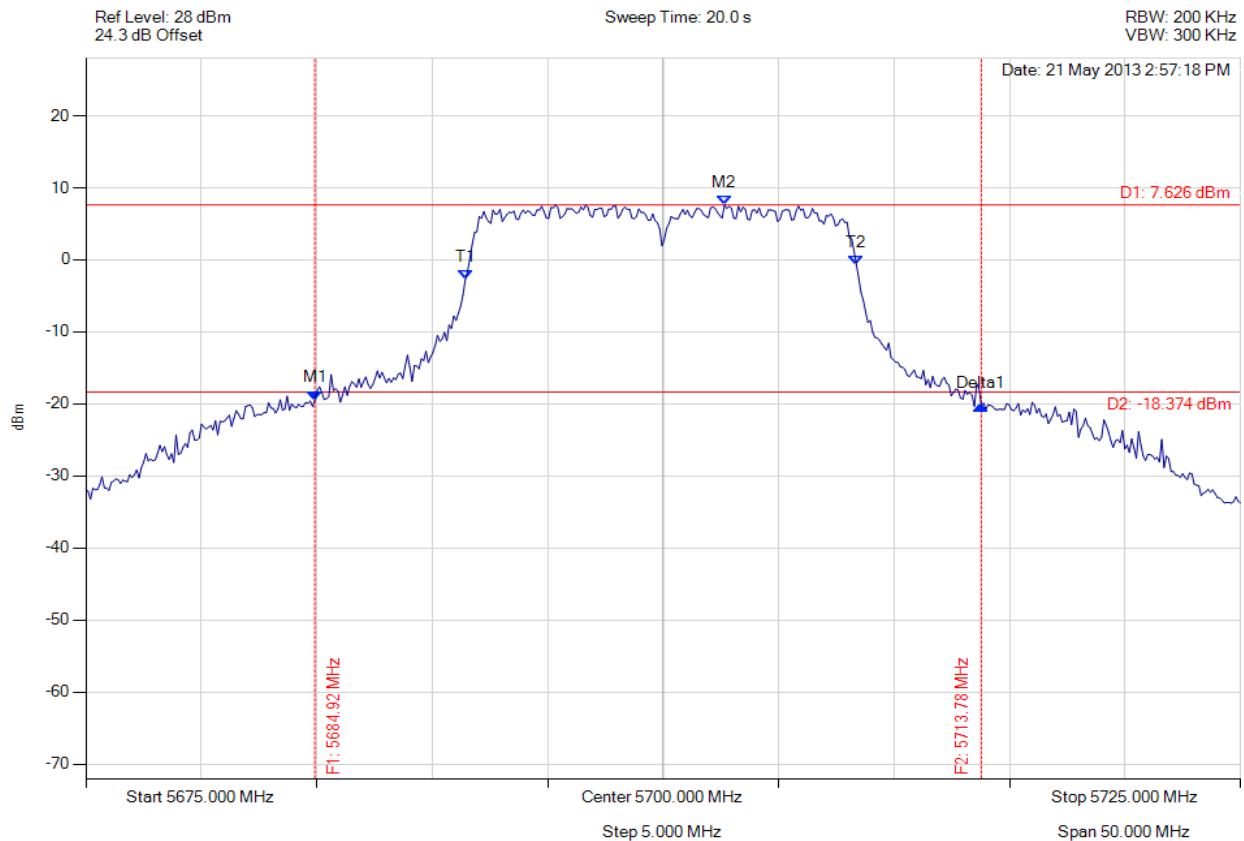


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 139 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5700.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5684.920 MHz : -19.464 dBm M2 : 5702.655 MHz : 7.626 dBm Delta1 : 28.858 MHz : -0.694 dB T1 : 5691.433 MHz : -2.734 dBm T2 : 5708.367 MHz : -0.690 dBm OBW : 16.934 MHz	Measured 26 dB Bandwidth: 28.858 MHz Measured 99% Bandwidth: 16.934 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

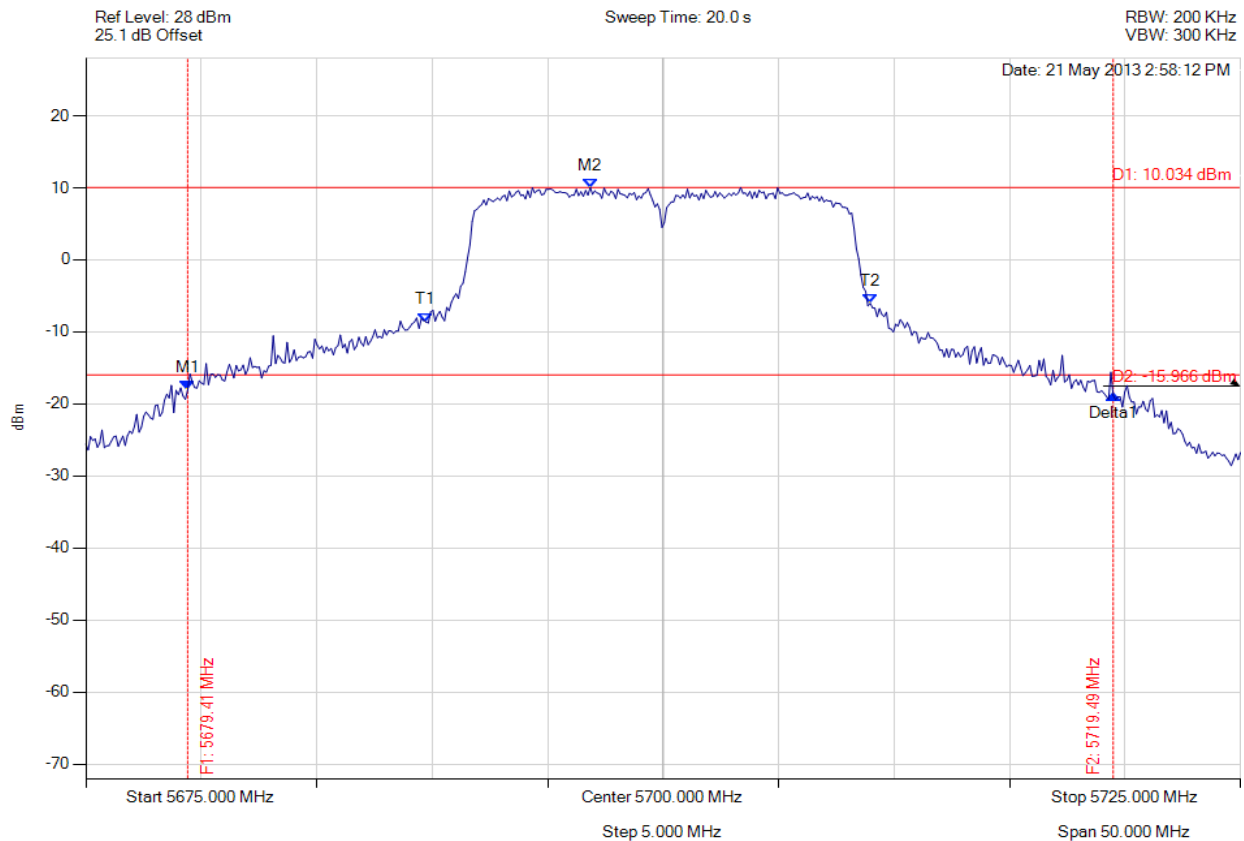


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 140 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5700.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5679.409 MHz : -18.111 dBm M2 : 5696.844 MHz : 10.034 dBm Delta1 : 40.080 MHz : -0.681 dB T1 : 5689.729 MHz : -8.634 dBm T2 : 5708.968 MHz : -6.053 dBm OBW : 19.238 MHz	Measured 26 dB Bandwidth: 40.080 MHz Measured 99% Bandwidth: 19.238 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

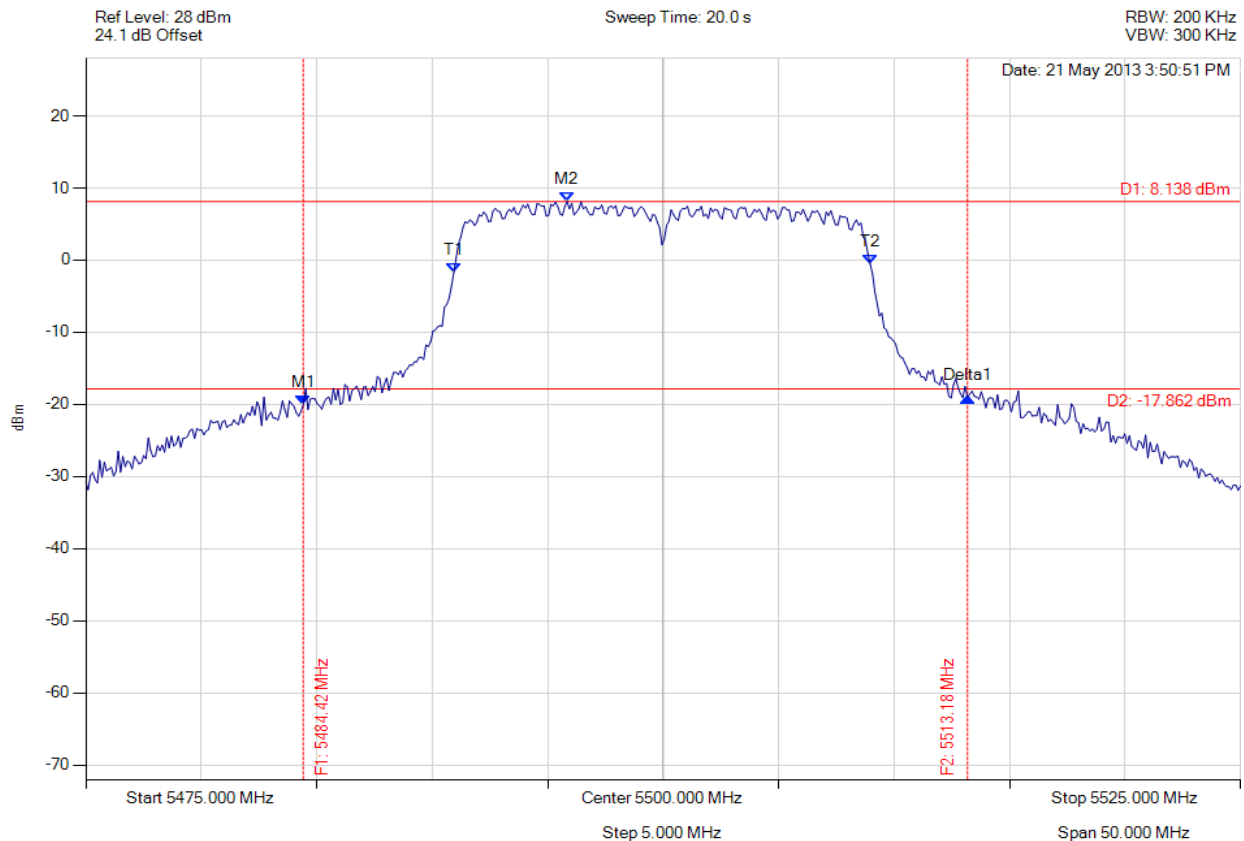


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 141 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5484.419 MHz : -20.031 dBm M2 : 5495.842 MHz : 8.138 dBm Delta1 : 28.758 MHz : 1.013 dB T1 : 5490.932 MHz : -1.744 dBm T2 : 5508.968 MHz : -0.574 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 28.758 MHz Measured 99% Bandwidth: 18.036 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

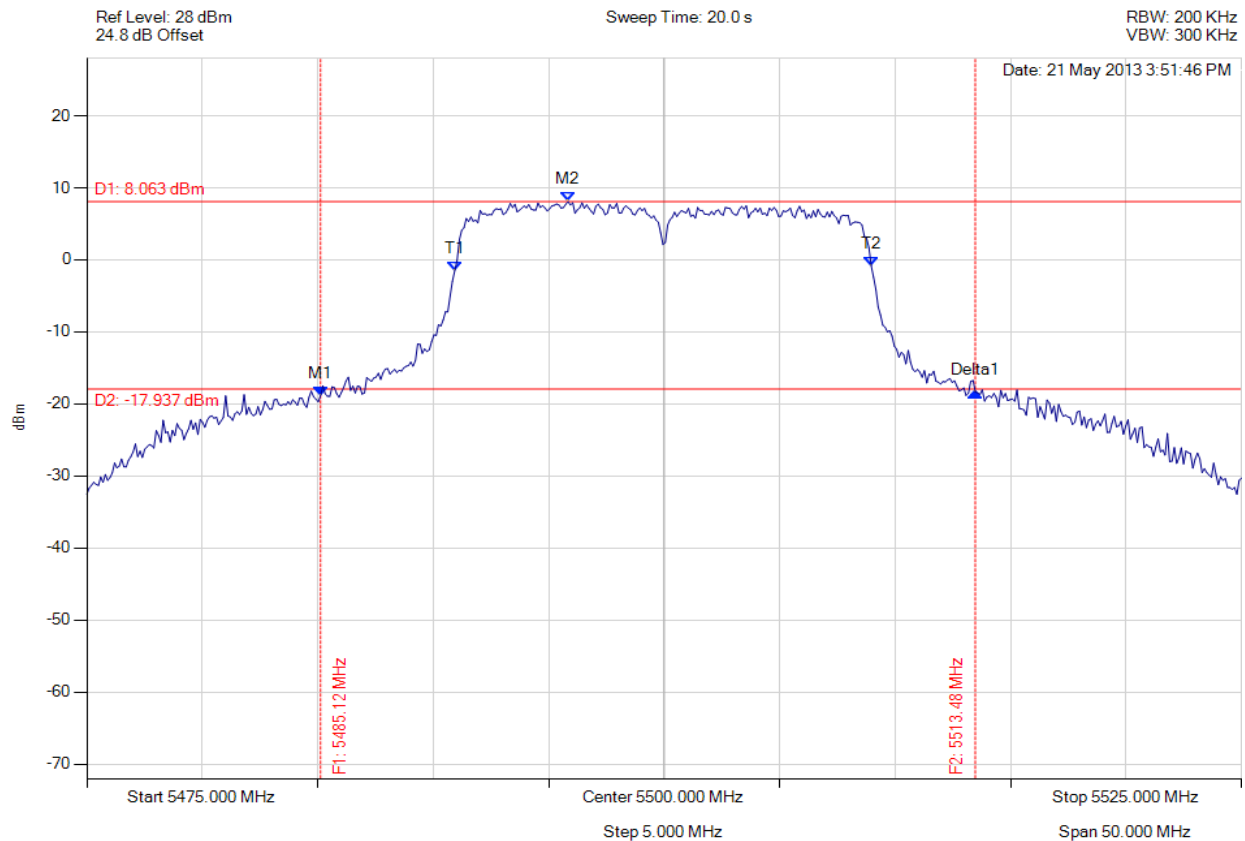


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 142 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5485.120 MHz : -18.858 dBm M2 : 5495.842 MHz : 8.063 dBm Delta1 : 28.357 MHz : 0.533 dB T1 : 5490.932 MHz : -1.499 dBm T2 : 5508.968 MHz : -0.873 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 28.357 MHz Measured 99% Bandwidth: 18.036 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

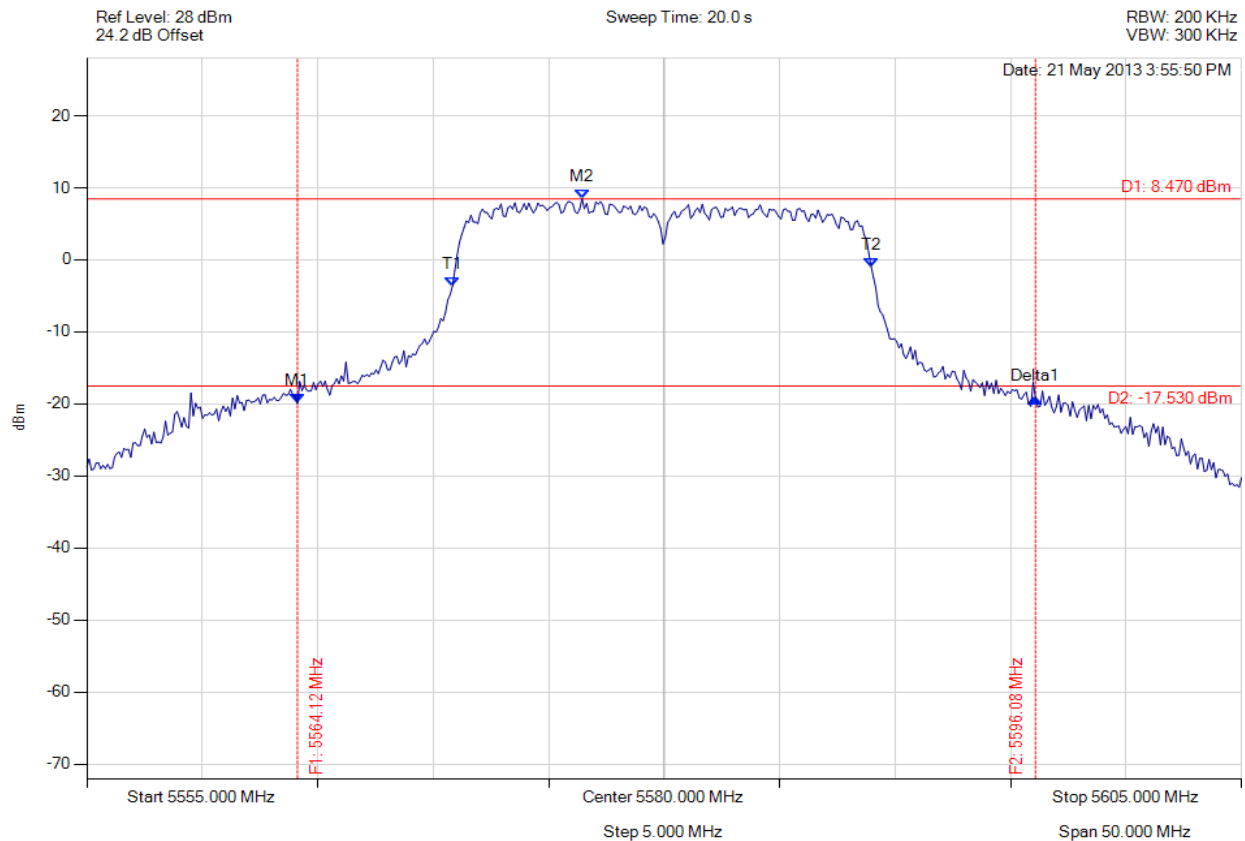


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 143 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5564.118 MHz : -19.944 dBm M2 : 5576.443 MHz : 8.470 dBm Delta1 : 31.964 MHz : 0.744 dB T1 : 5570.832 MHz : -3.692 dBm T2 : 5588.968 MHz : -1.005 dBm OBW : 18.136 MHz	Measured 26 dB Bandwidth: 31.964 MHz Measured 99% Bandwidth: 18.136 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

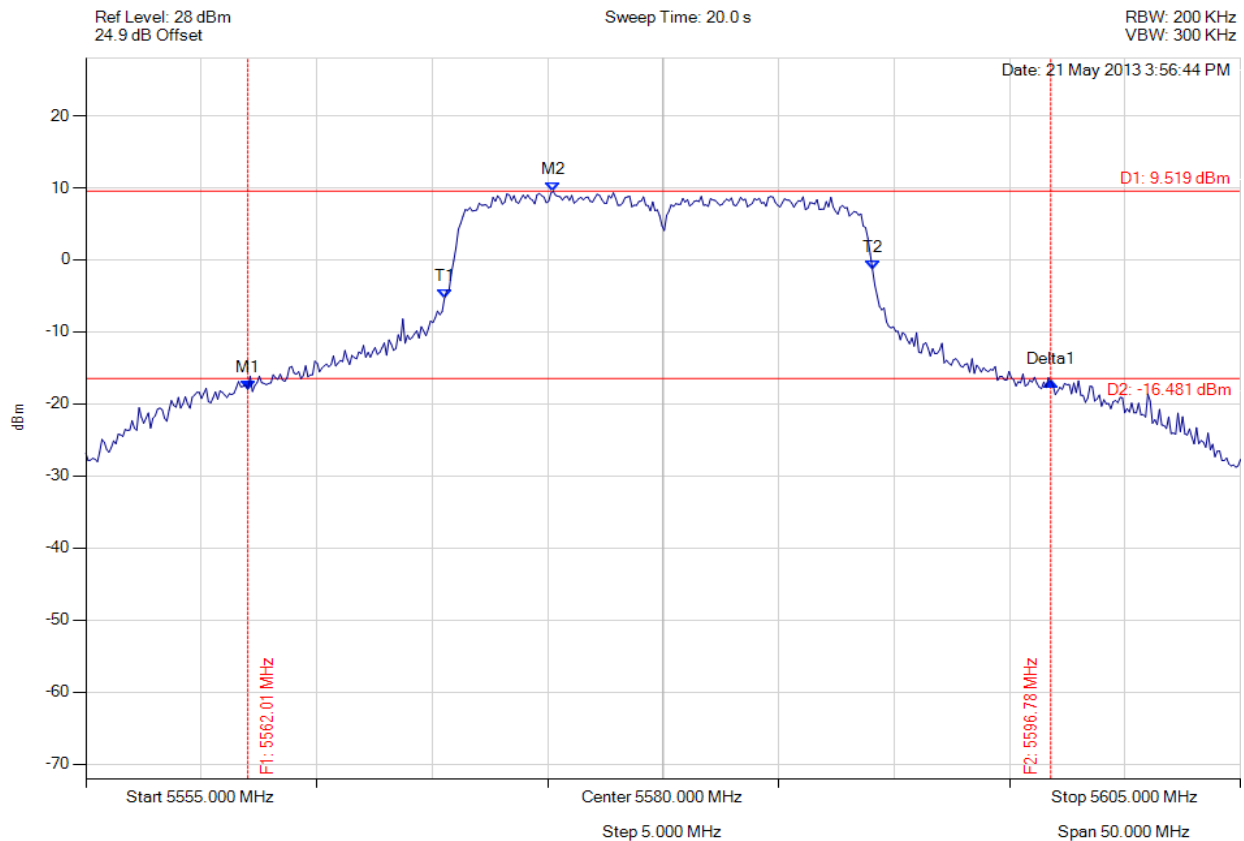


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 144 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5562.014 MHz : -17.997 dBm M2 : 5575.240 MHz : 9.519 dBm Delta1 : 34.770 MHz : 1.141 dB T1 : 5570.531 MHz : -5.341 dBm T2 : 5589.068 MHz : -1.392 dBm OBW : 18.537 MHz	Measured 26 dB Bandwidth: 34.770 MHz Measured 99% Bandwidth: 18.537 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

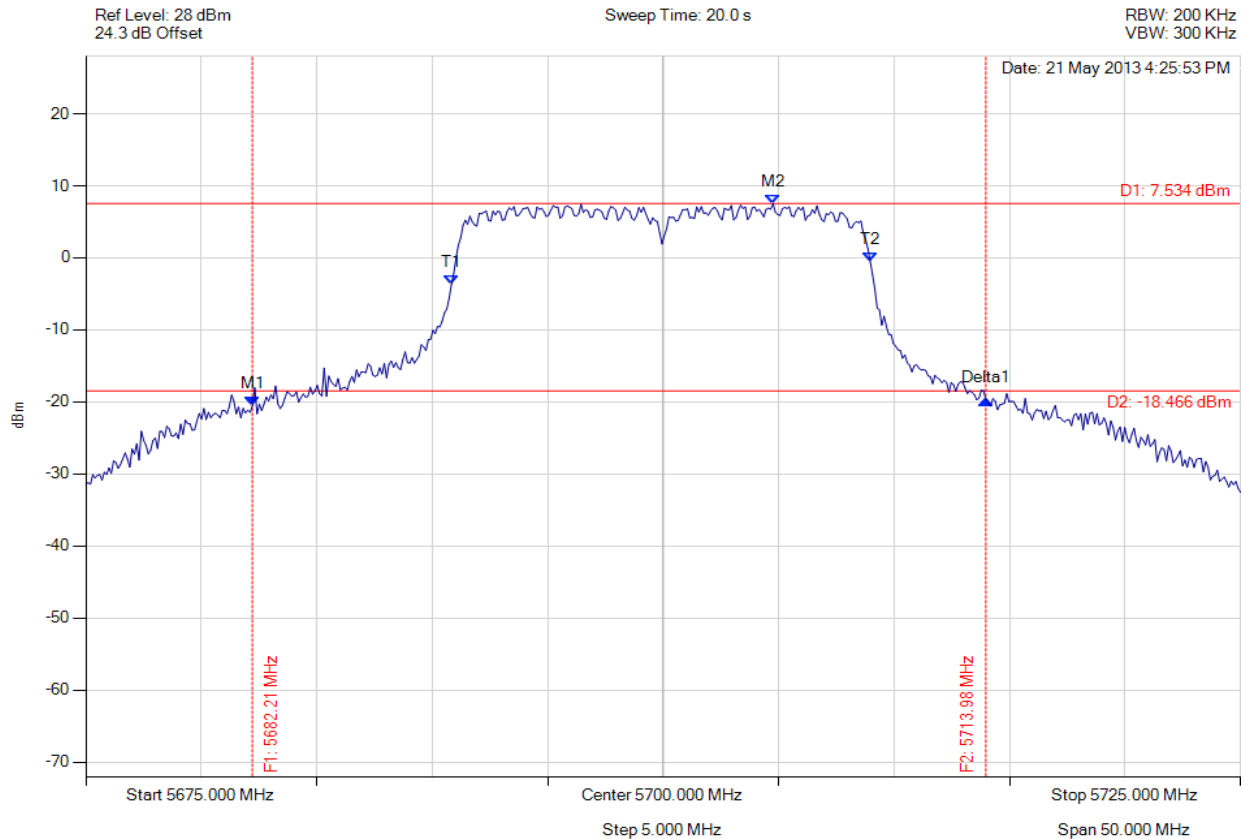


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 145 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5700.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5682.214 MHz : -20.525 dBm M2 : 5704.760 MHz : 7.534 dBm Delta1 : 31.764 MHz : 0.824 dB T1 : 5690.832 MHz : -3.724 dBm T2 : 5708.968 MHz : -0.580 dBm OBW : 18.136 MHz	Measured 26 dB Bandwidth: 31.764 MHz Measured 99% Bandwidth: 18.136 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

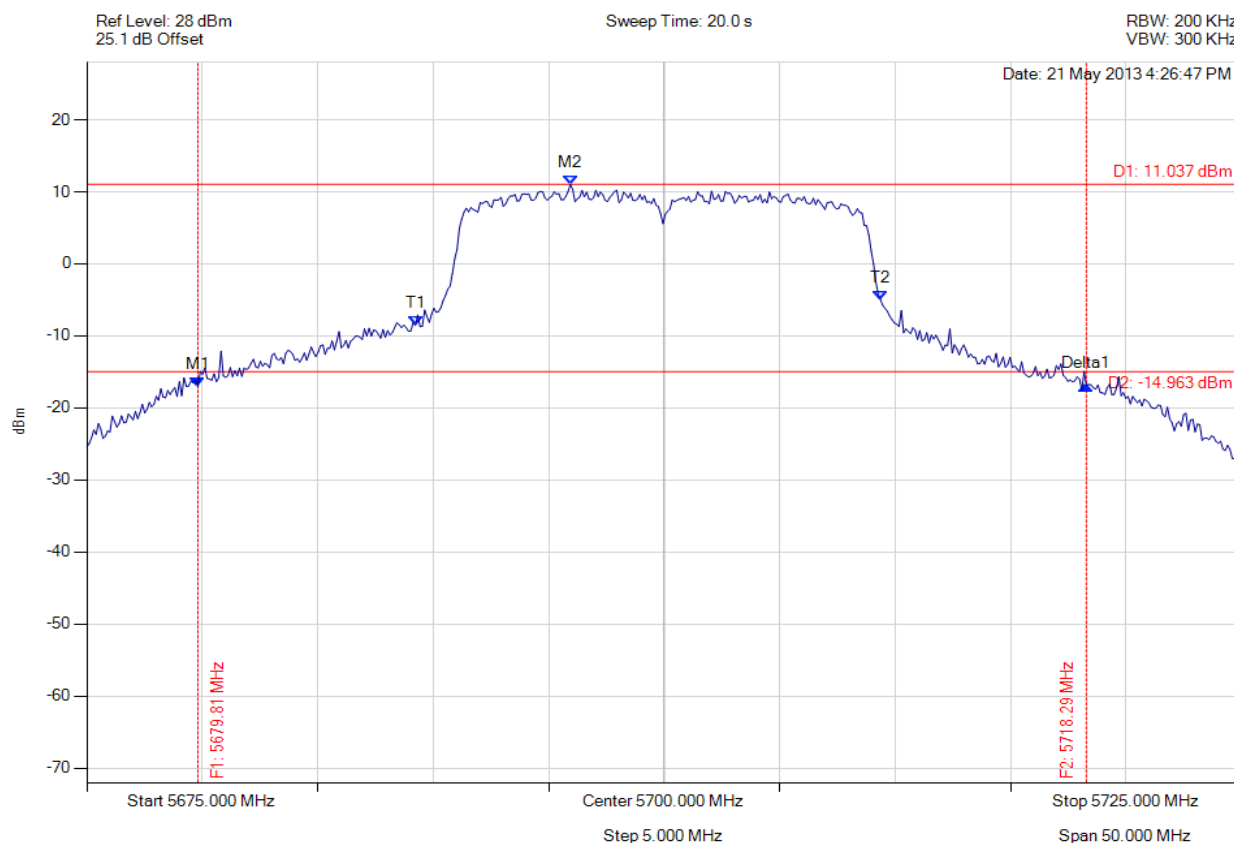


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 146 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5700.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5679.810 MHz : -17.078 dBm M2 : 5695.942 MHz : 11.037 dBm Delta1 : 38.477 MHz : 0.209 dB T1 : 5689.228 MHz : -8.542 dBm T2 : 5709.369 MHz : -4.985 dBm OBW : 20.140 MHz	Measured 26 dB Bandwidth: 38.477 MHz Measured 99% Bandwidth: 20.140 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

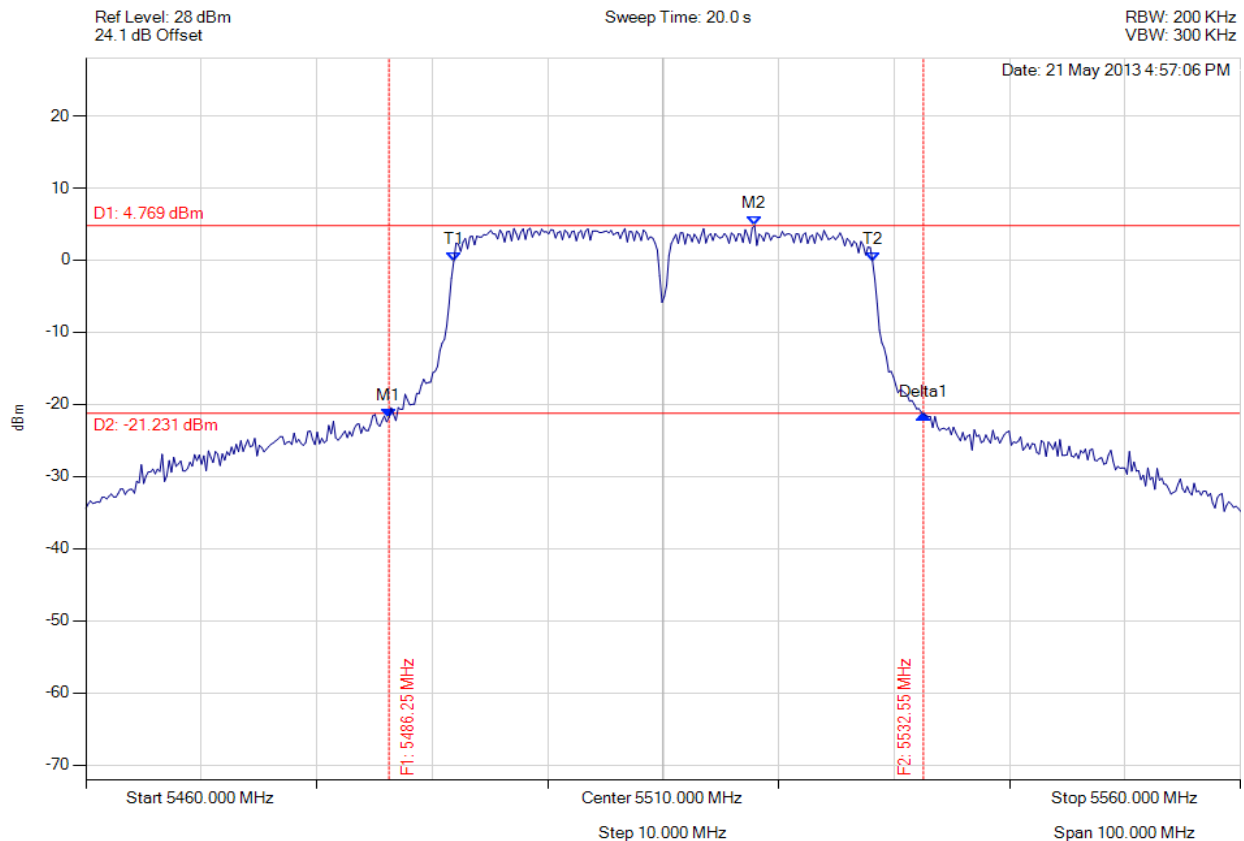


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 147 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5486.253 MHz : -21.819 dBm M2 : 5517.916 MHz : 4.769 dBm Delta1 : 46.293 MHz : 0.502 dB T1 : 5491.864 MHz : -0.151 dBm T2 : 5528.136 MHz : -0.184 dBm OBW : 36.273 MHz	Measured 26 dB Bandwidth: 46.293 MHz Measured 99% Bandwidth: 36.273 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

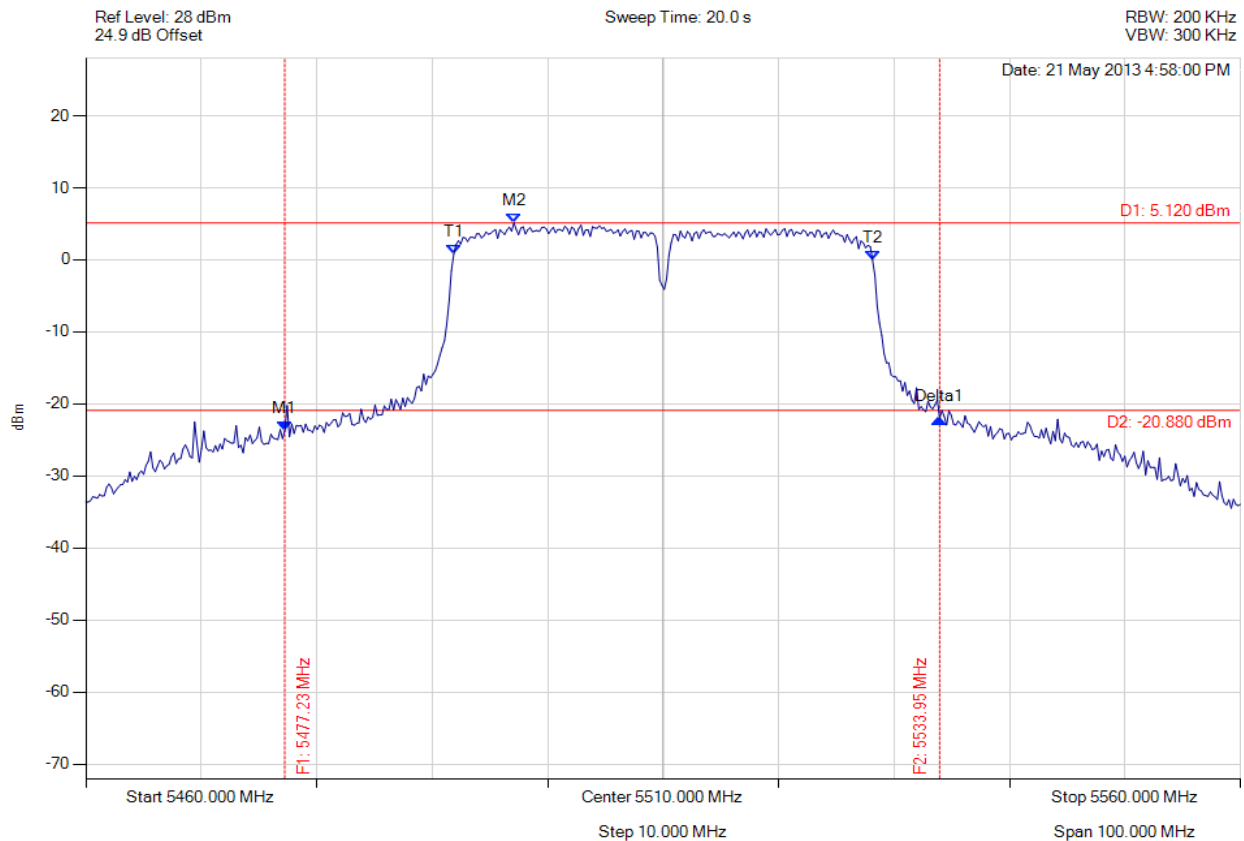


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 148 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5477.234 MHz : -23.728 dBm M2 : 5497.074 MHz : 5.120 dBm Delta1 : 56.713 MHz : 1.721 dB T1 : 5491.864 MHz : 0.809 dBm T2 : 5528.136 MHz : -0.056 dBm OBW : 36.273 MHz	Measured 26 dB Bandwidth: 56.713 MHz Measured 99% Bandwidth: 36.273 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

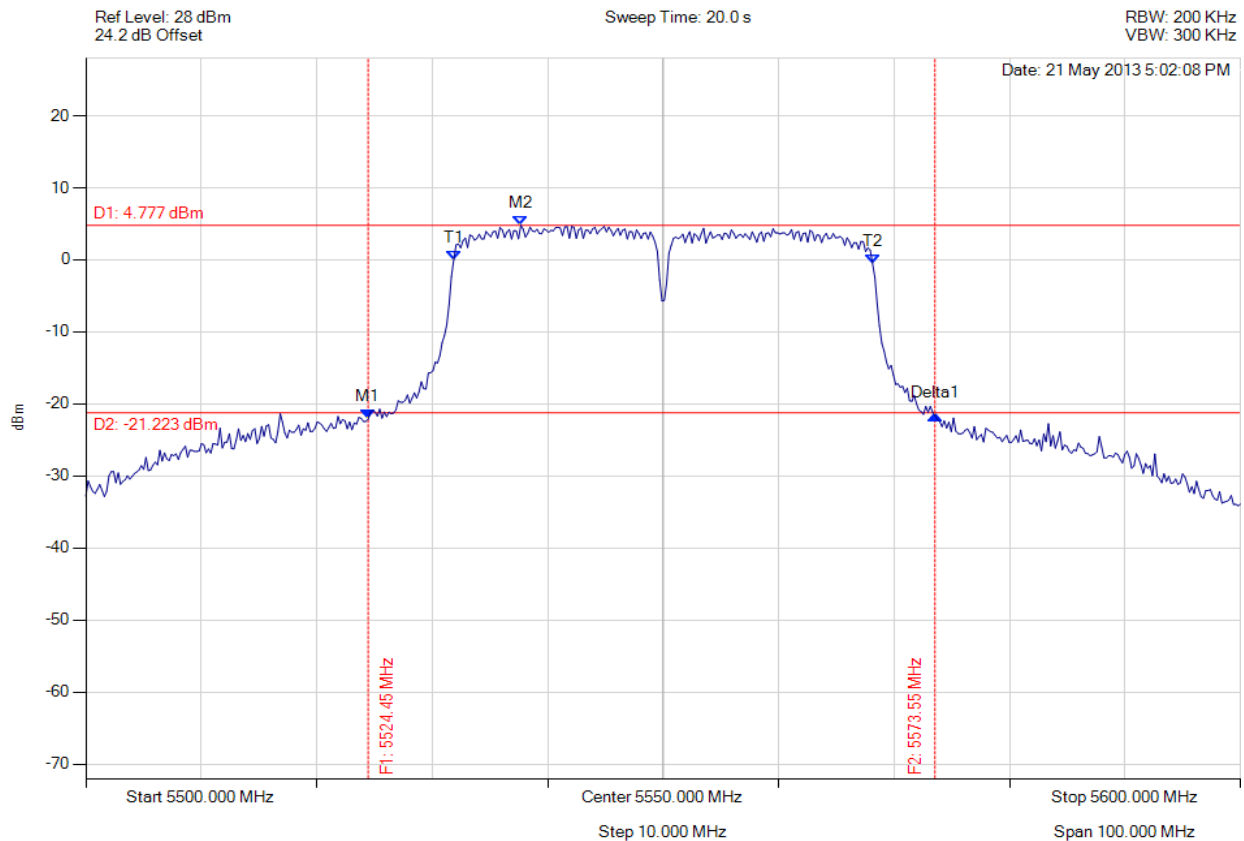


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 149 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5524.449 MHz : -22.122 dBm M2 : 5537.675 MHz : 4.777 dBm Delta1 : 49.098 MHz : 0.521 dB T1 : 5531.864 MHz : 0.026 dBm T2 : 5568.136 MHz : -0.511 dBm OBW : 36.273 MHz	Measured 26 dB Bandwidth: 49.098 MHz Measured 99% Bandwidth: 36.273 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

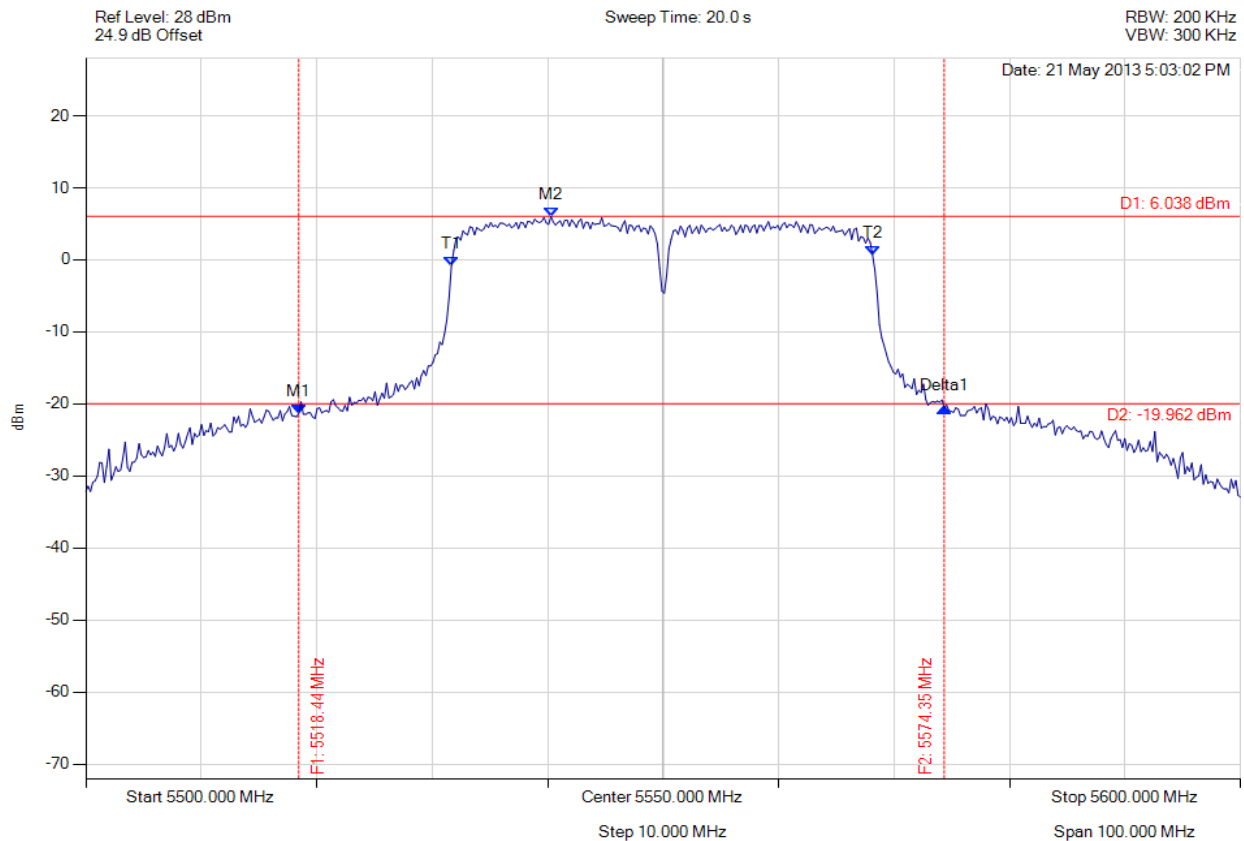


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 150 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5518.437 MHz : -21.312 dBm M2 : 5540.281 MHz : 6.038 dBm Delta1 : 55.912 MHz : 0.730 dB T1 : 5531.663 MHz : -0.853 dBm T2 : 5568.136 MHz : 0.683 dBm OBW : 36.473 MHz	Measured 26 dB Bandwidth: 55.912 MHz Measured 99% Bandwidth: 36.473 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

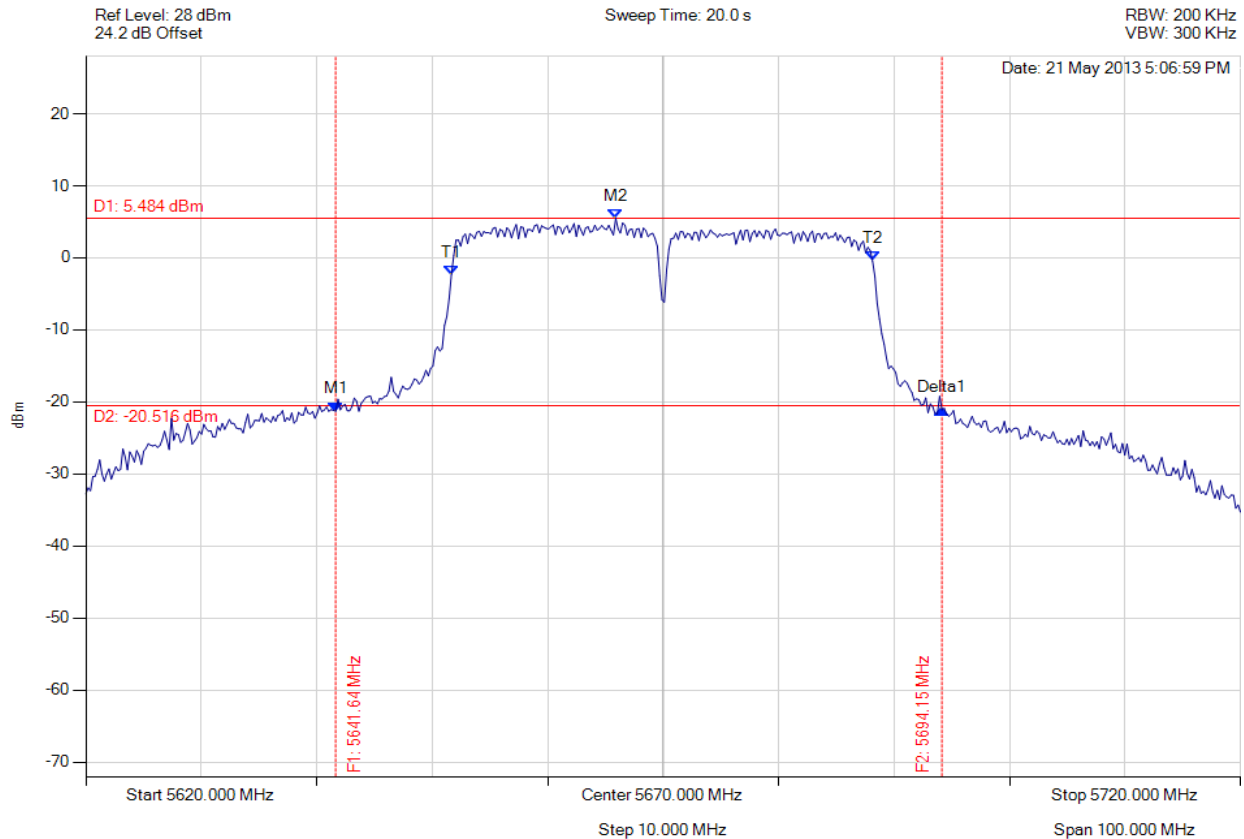


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 151 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5670.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5641.643 MHz : -21.296 dBm M2 : 5665.892 MHz : 5.484 dBm Delta1 : 52.505 MHz : 0.179 dB T1 : 5651.663 MHz : -2.297 dBm T2 : 5688.136 MHz : -0.440 dBm OBW : 36.473 MHz	Measured 26 dB Bandwidth: 52.505 MHz Measured 99% Bandwidth: 36.473 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

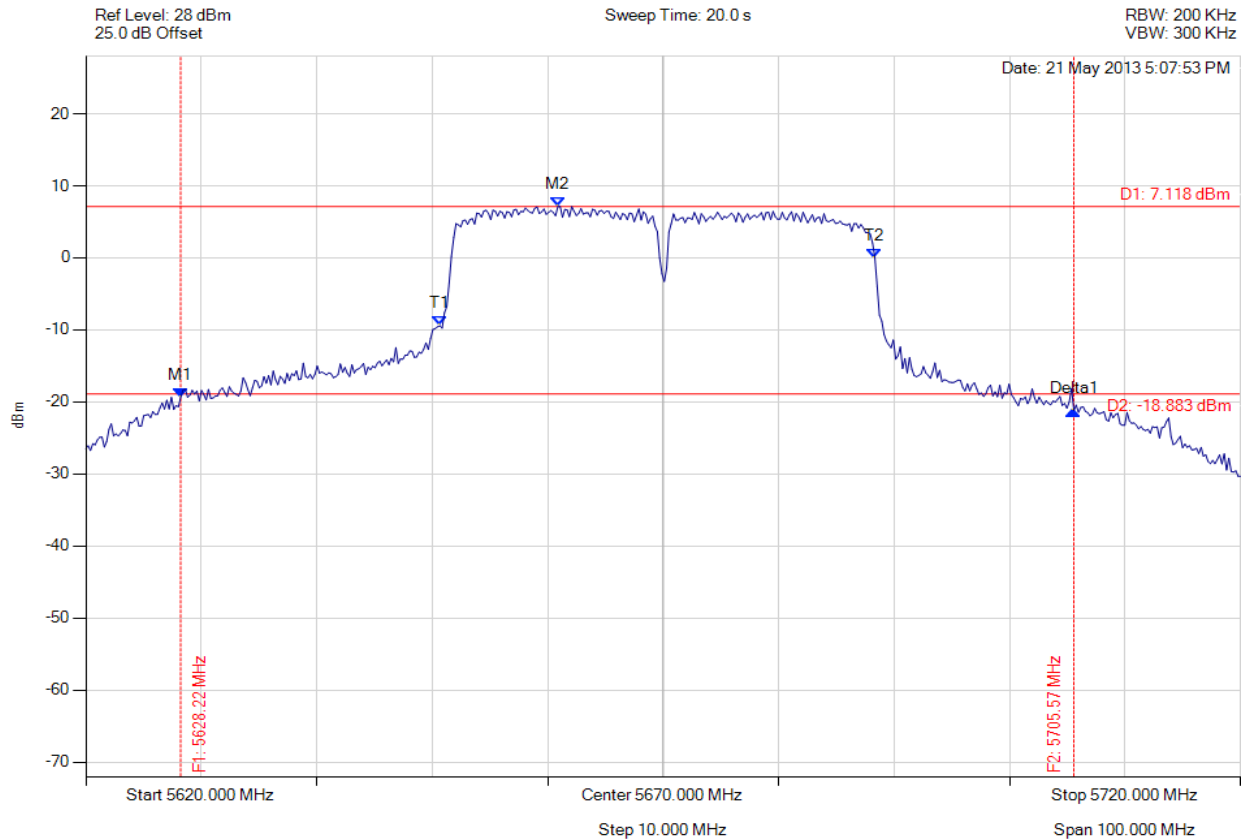


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 152 of 193



26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5670.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5628.216 MHz : -19.354 dBm M2 : 5660.882 MHz : 7.118 dBm Delta1 : 77.355 MHz : -1.845 dB T1 : 5650.661 MHz : -9.427 dBm T2 : 5688.337 MHz : -0.041 dBm OBW : 37.675 MHz	Measured 26 dB Bandwidth: 77.355 MHz Measured 99% Bandwidth: 37.675 MHz

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



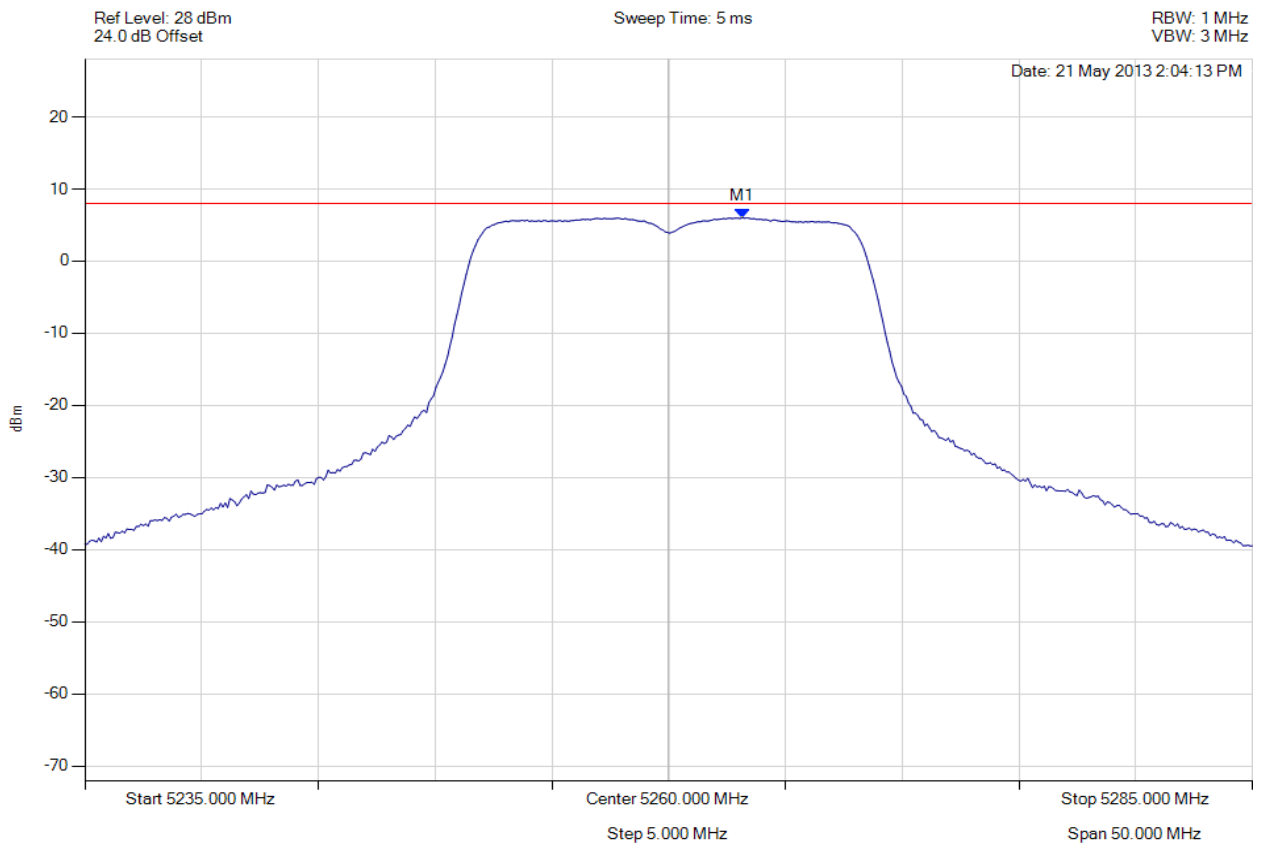
Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 153 of 193

A.1.2. Peak Power Spectral Density



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5263.156 MHz : 6.014 dBm	Limit: ≤ 7.990 dBm Margin: -1.98 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

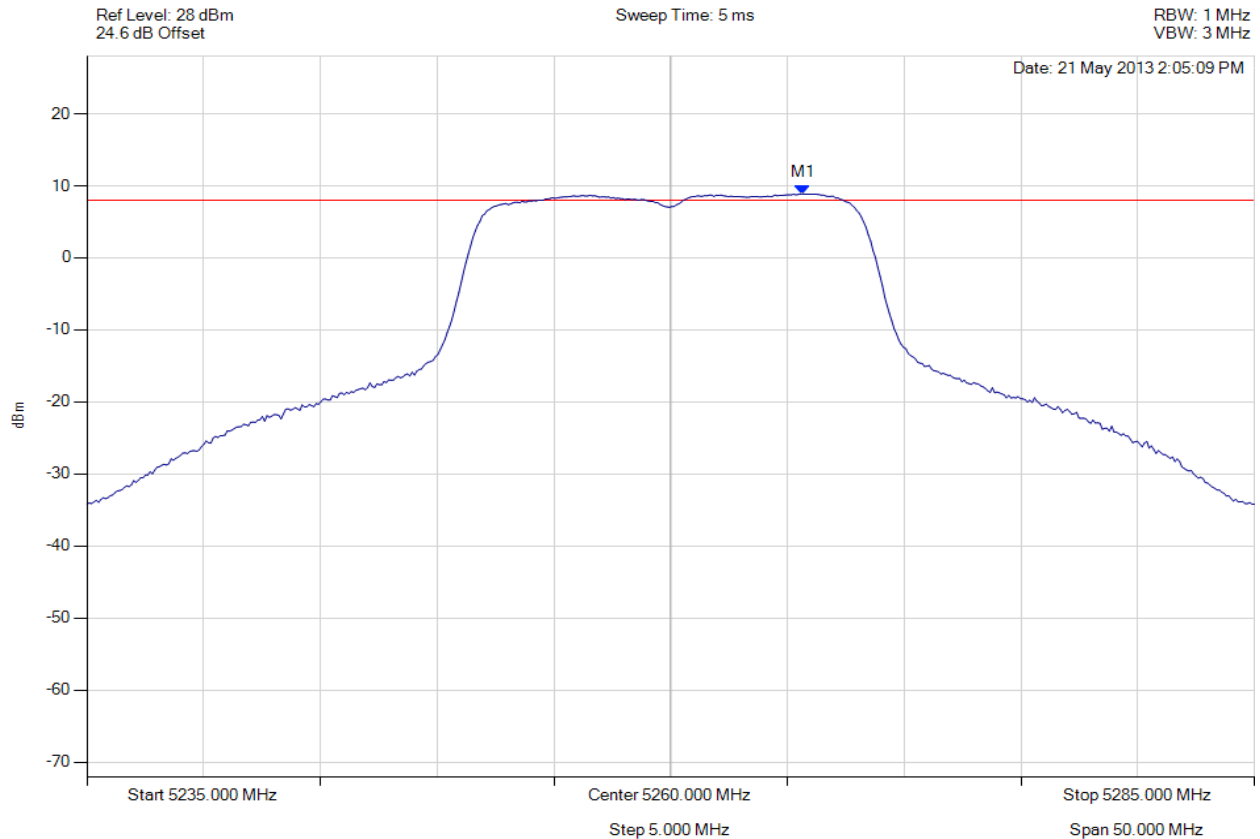


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 154 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5265.661 MHz : 8.872 dBm	Limit: ≤ 7.990 dBm Margin: 0.88 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

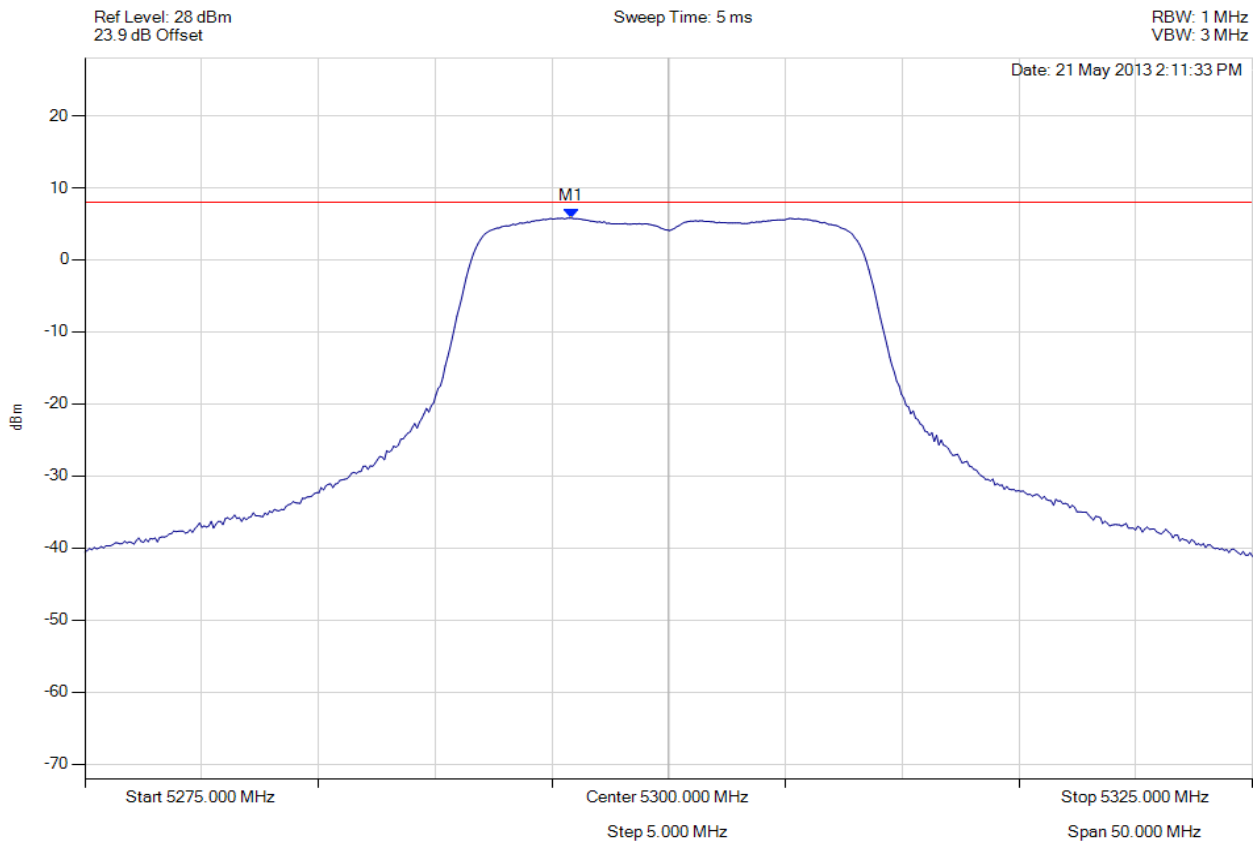


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 155 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5295.842 MHz : 5.782 dBm	Limit: ≤ 7.990 dBm Margin: -2.21 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

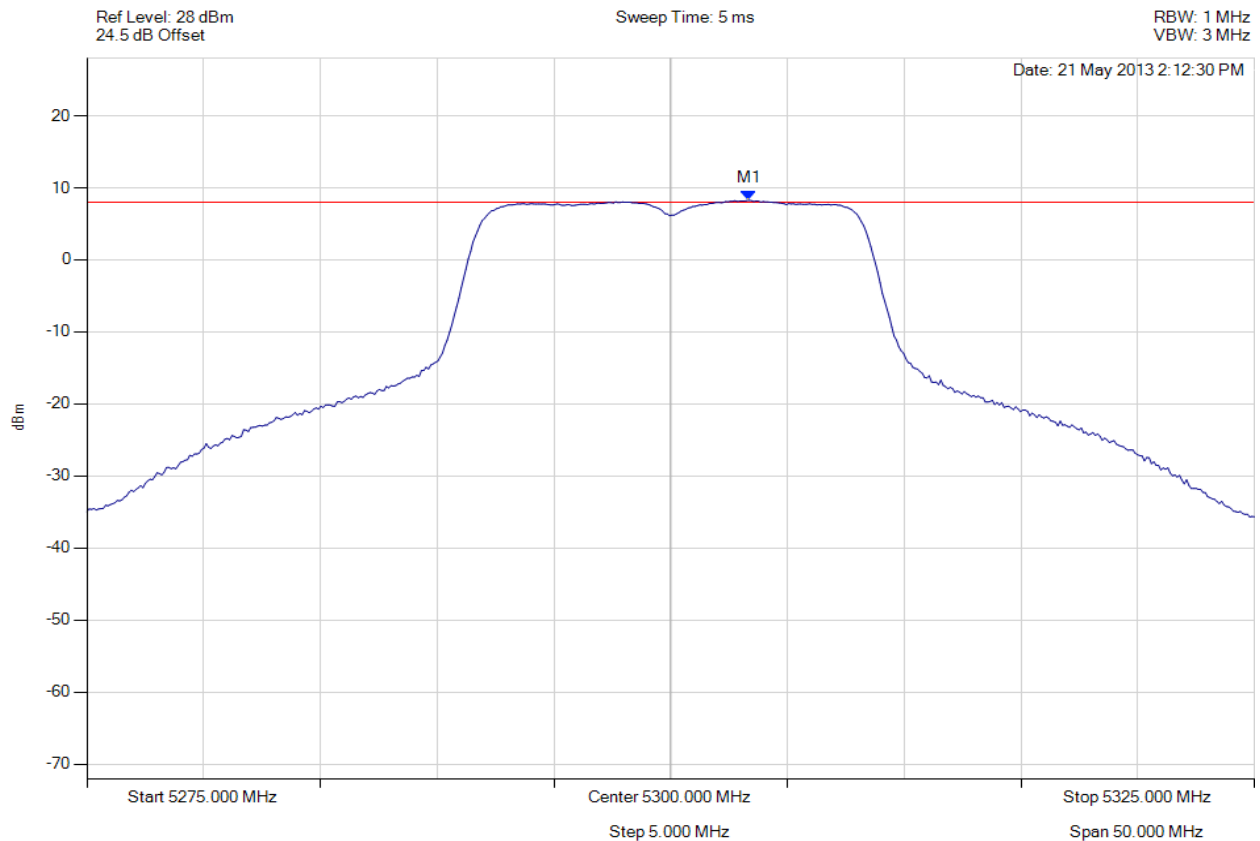


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 156 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



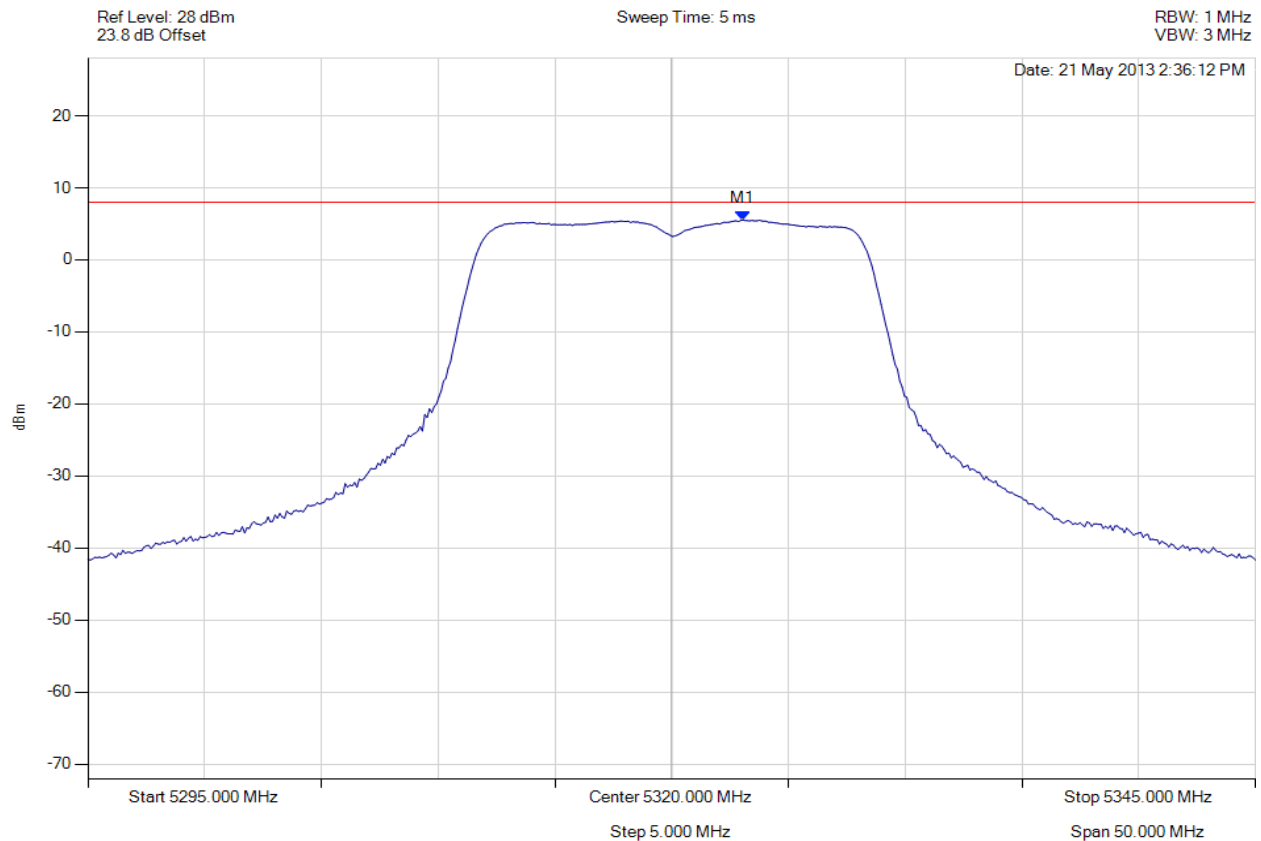
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5303.357 MHz : 8.258 dBm	Limit: ≤ 7.990 dBm Margin: 0.27 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5323.056 MHz : 5.529 dBm	Limit: ≤ 7.990 dBm Margin: -2.46 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

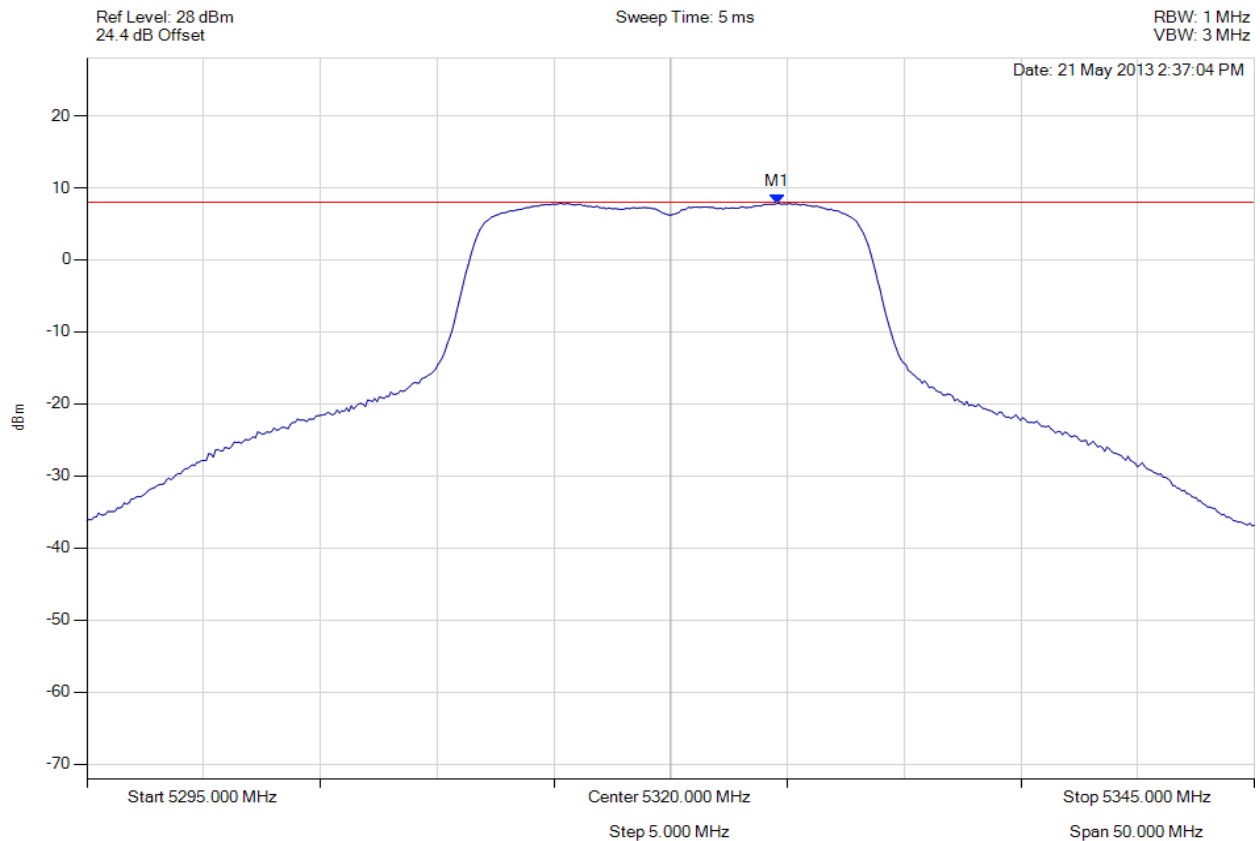


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 158 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5324.559 MHz : 7.869 dBm	Limit: ≤ 7.990 dBm Margin: -0.12 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

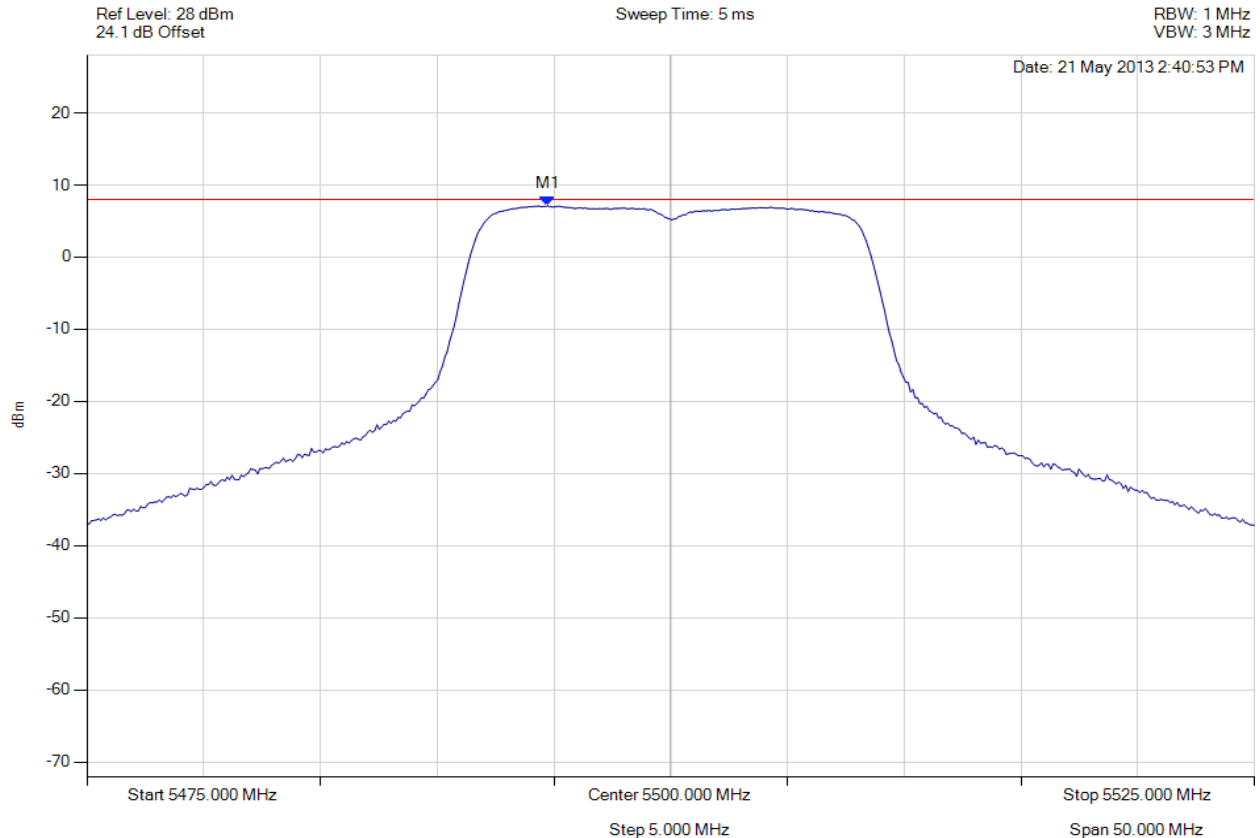


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 159 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5494.739 MHz : 7.092 dBm	Limit: ≤ 7.990 dBm Margin: -0.90 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

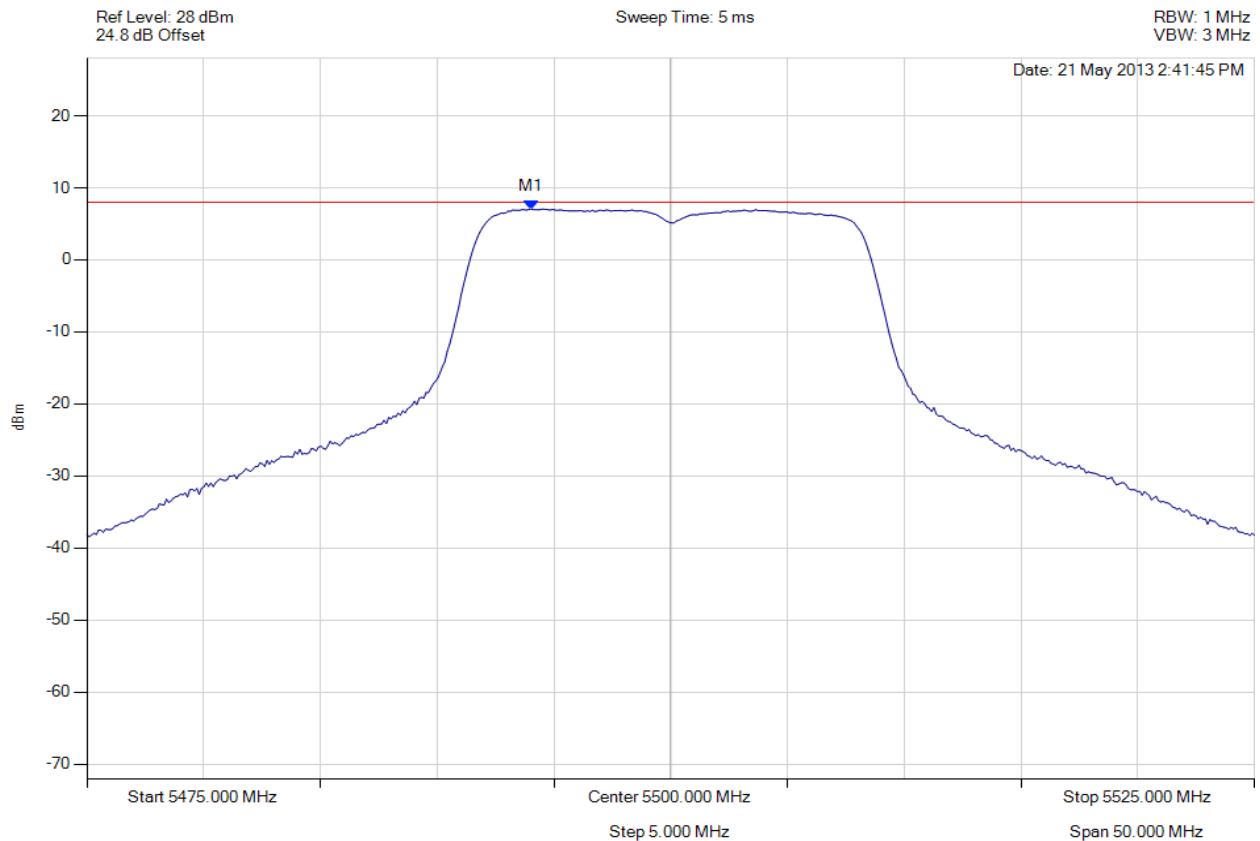


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 160 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5494.038 MHz : 7.051 dBm	Limit: ≤ 7.990 dBm Margin: -0.94 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

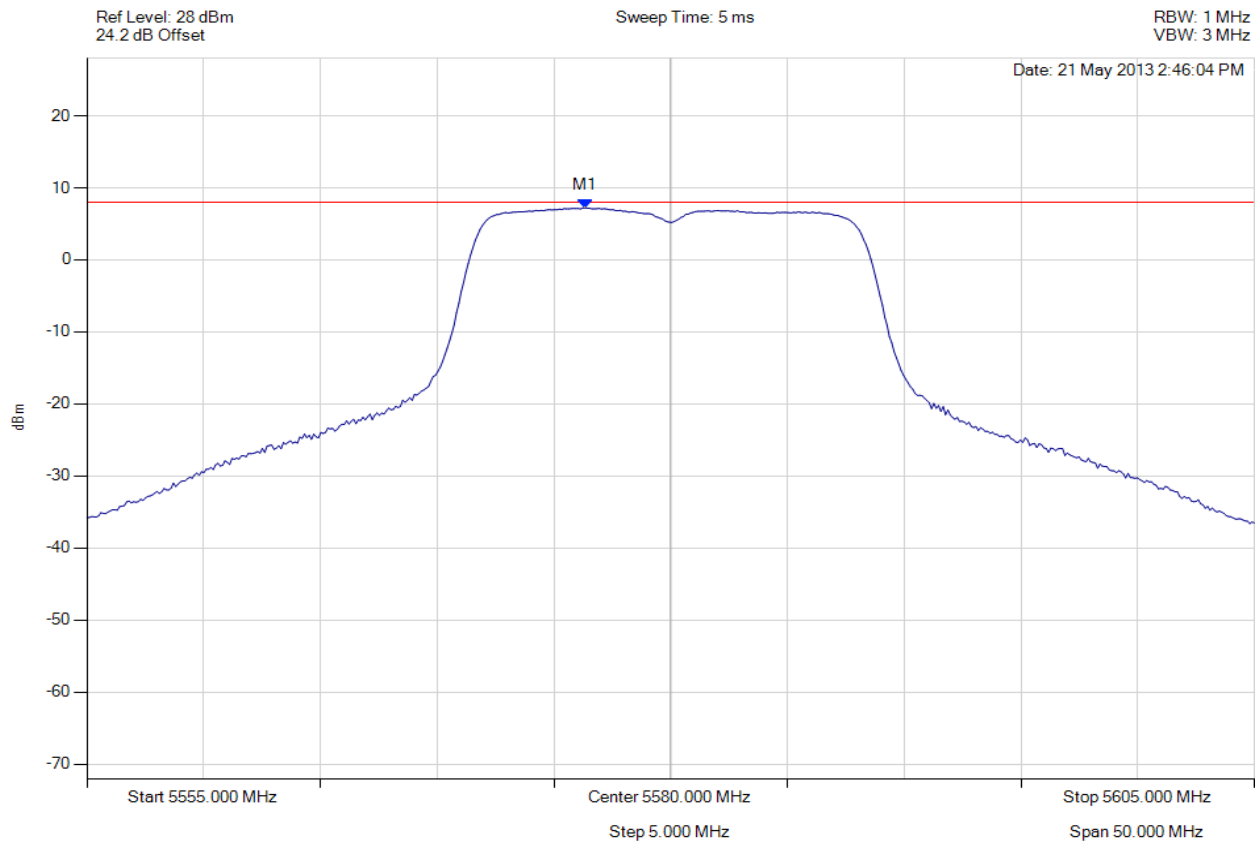


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 161 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5576.343 MHz : 7.221 dBm	Limit: ≤ 7.990 dBm Margin: -0.77 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

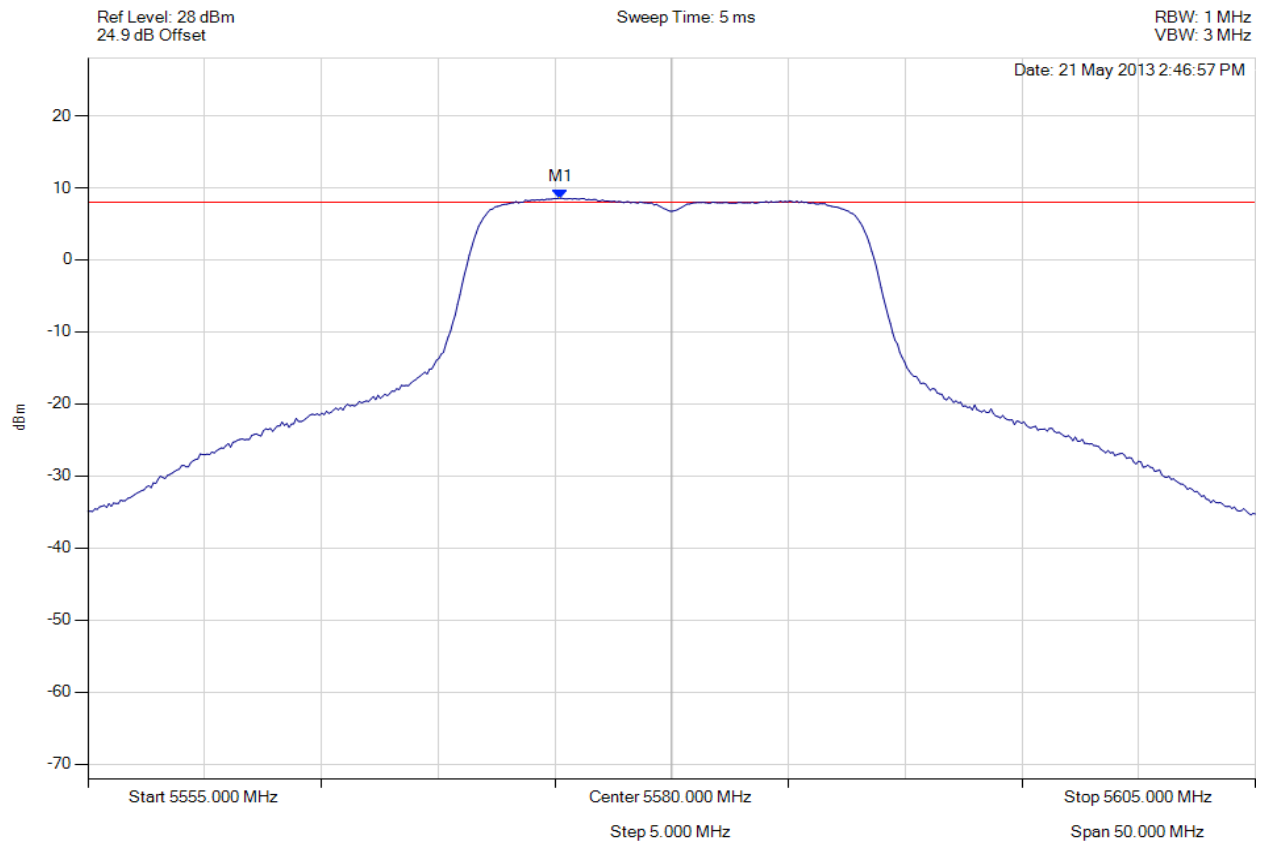


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 162 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5575.240 MHz : 8.528 dBm	Limit: ≤ 7.990 dBm Margin: 0.54 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

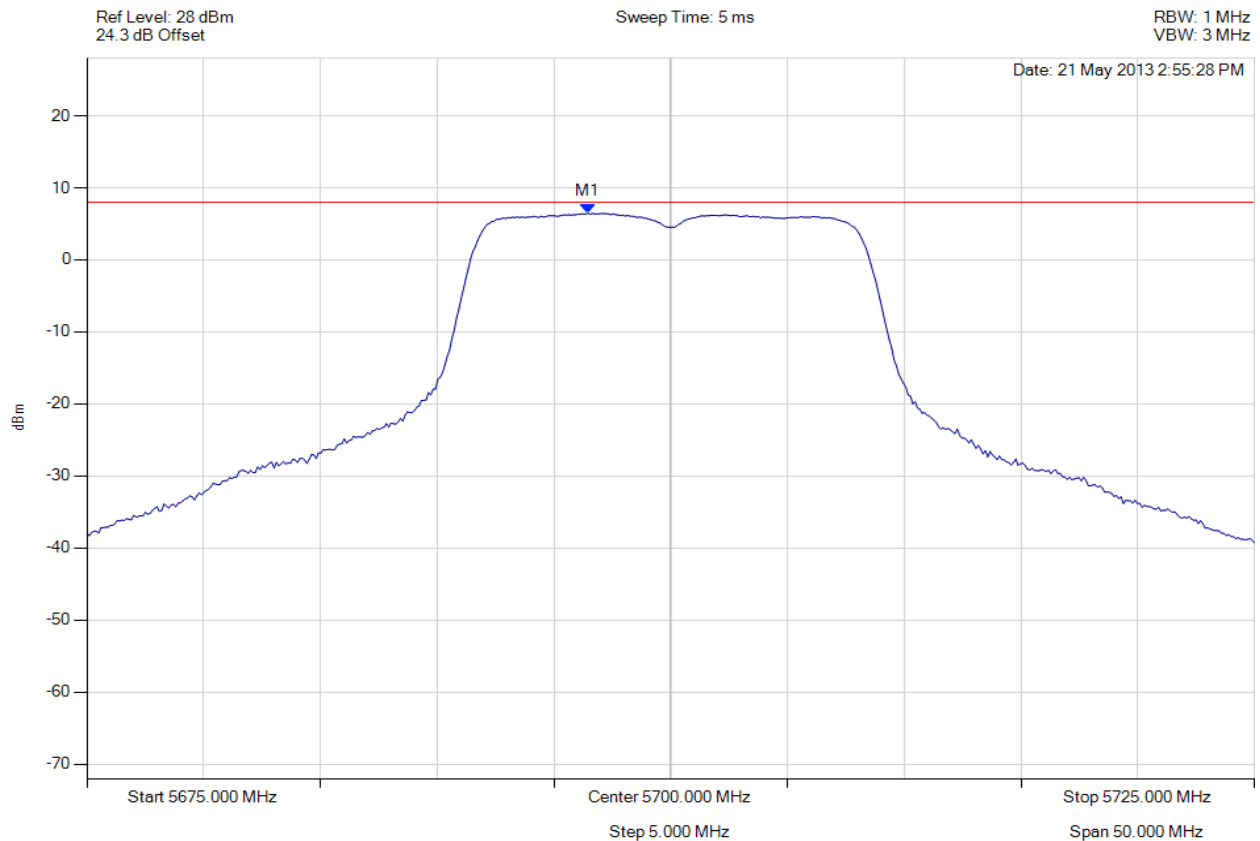


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 163 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5700.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5696.443 MHz : 6.468 dBm	Limit: ≤ 7.990 dBm Margin: -1.52 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

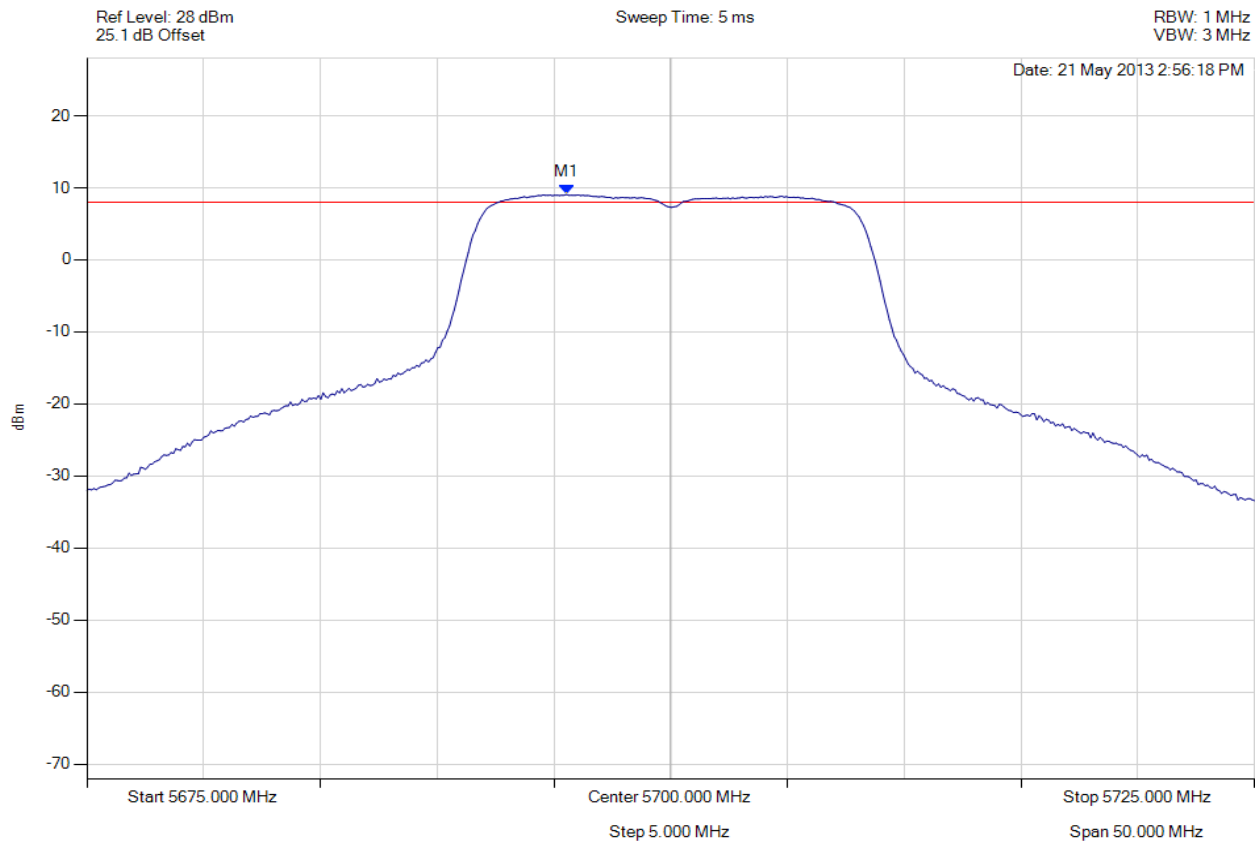


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 164 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5700.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5695.541 MHz : 9.076 dBm	Limit: ≤ 7.990 dBm Margin: 1.09 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

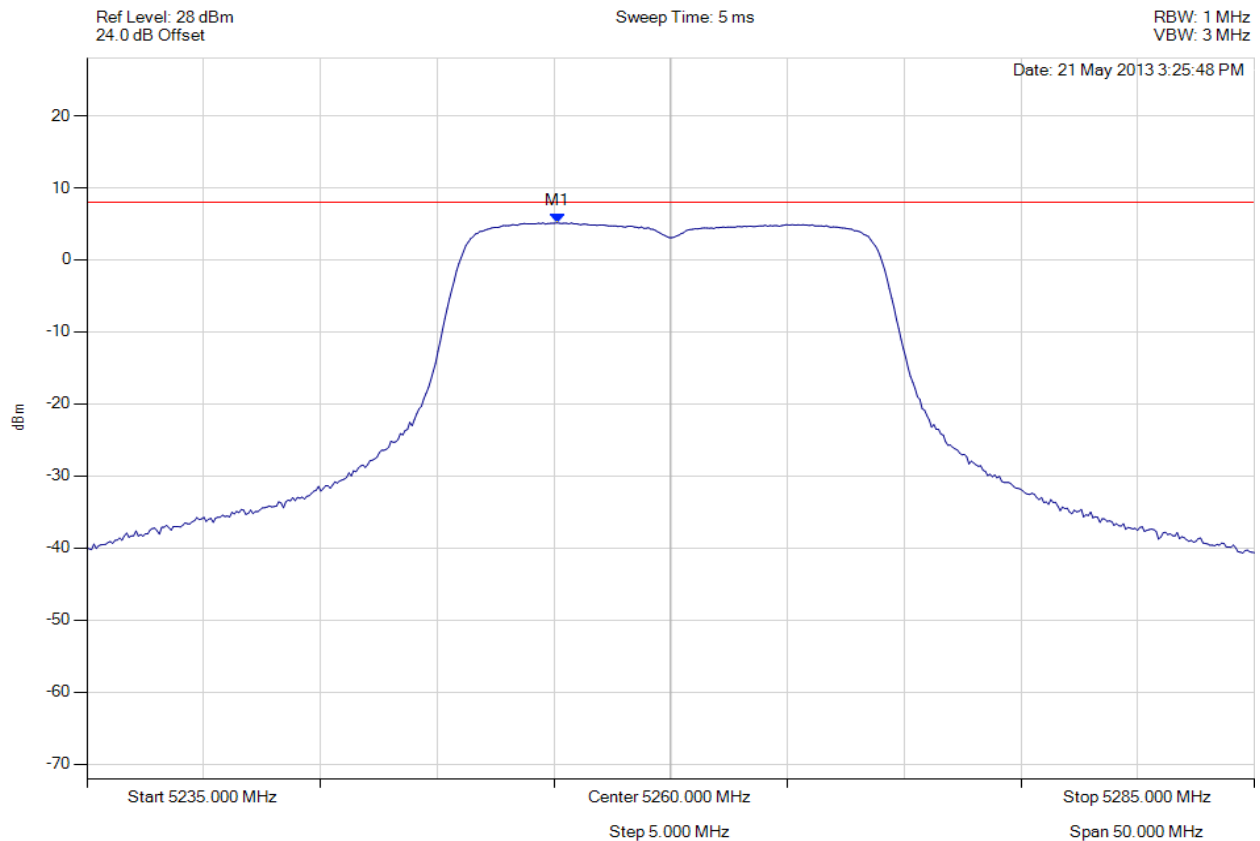


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 165 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5255.140 MHz : 5.141 dBm	Limit: ≤ 7.990 dBm Margin: -2.85 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

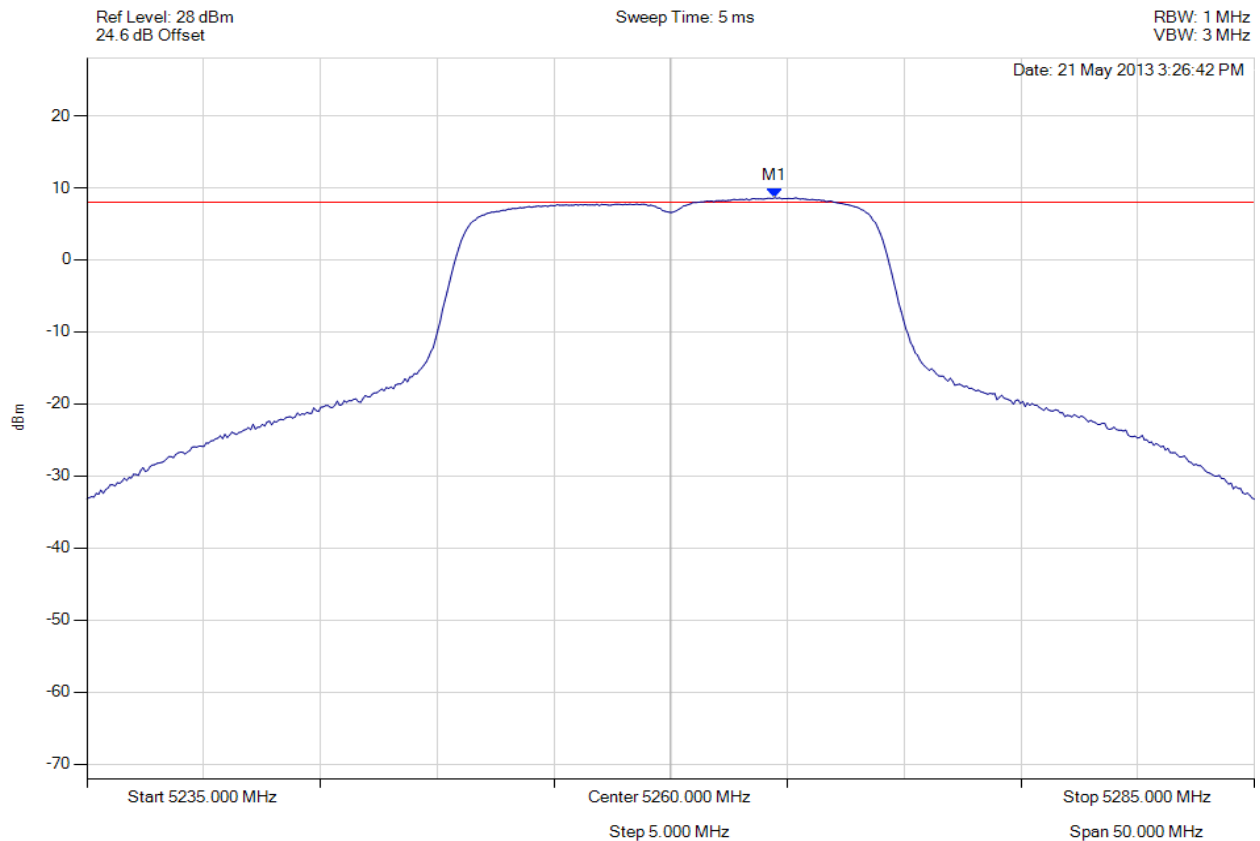


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 166 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5264.459 MHz : 8.619 dBm	Limit: ≤ 7.990 dBm Margin: 0.63 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

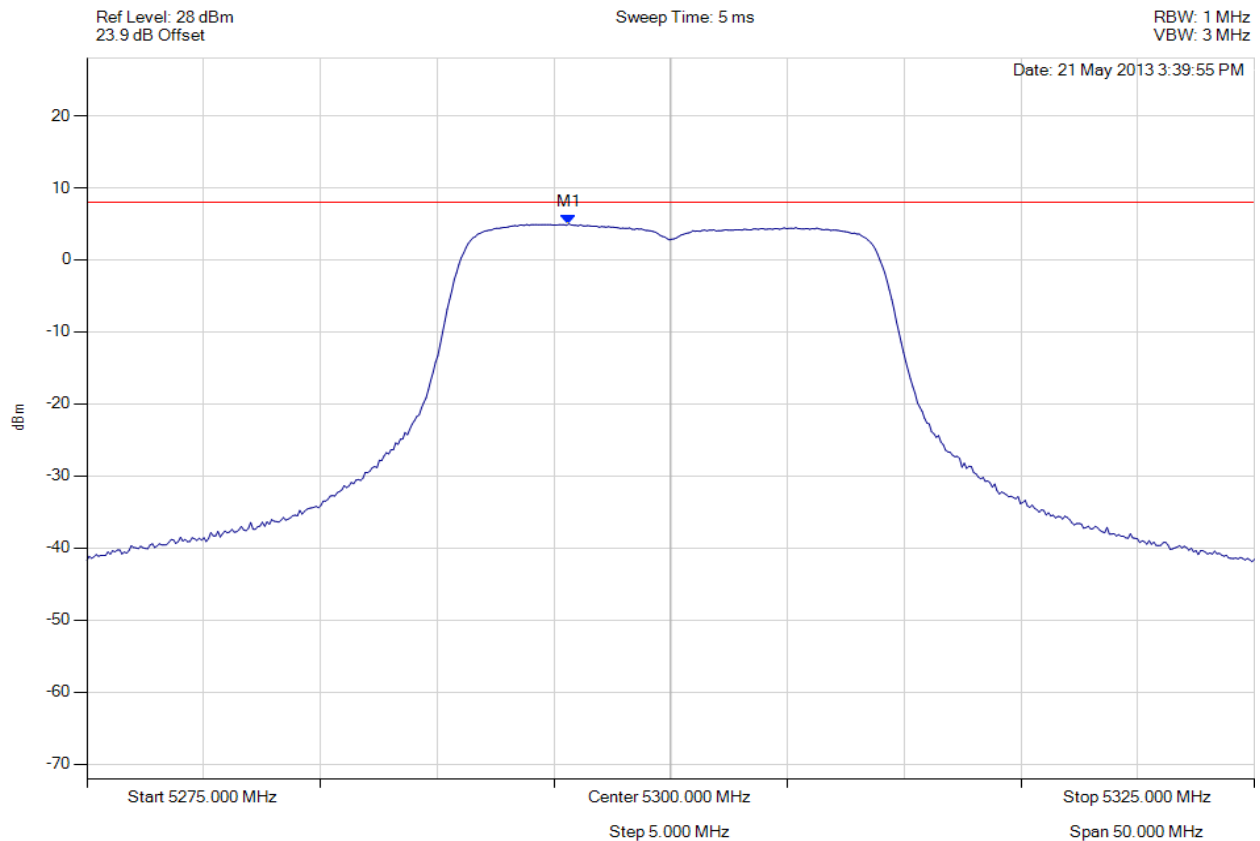


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 167 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5295.641 MHz : 4.993 dBm	Limit: ≤ 7.990 dBm Margin: -3.00 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

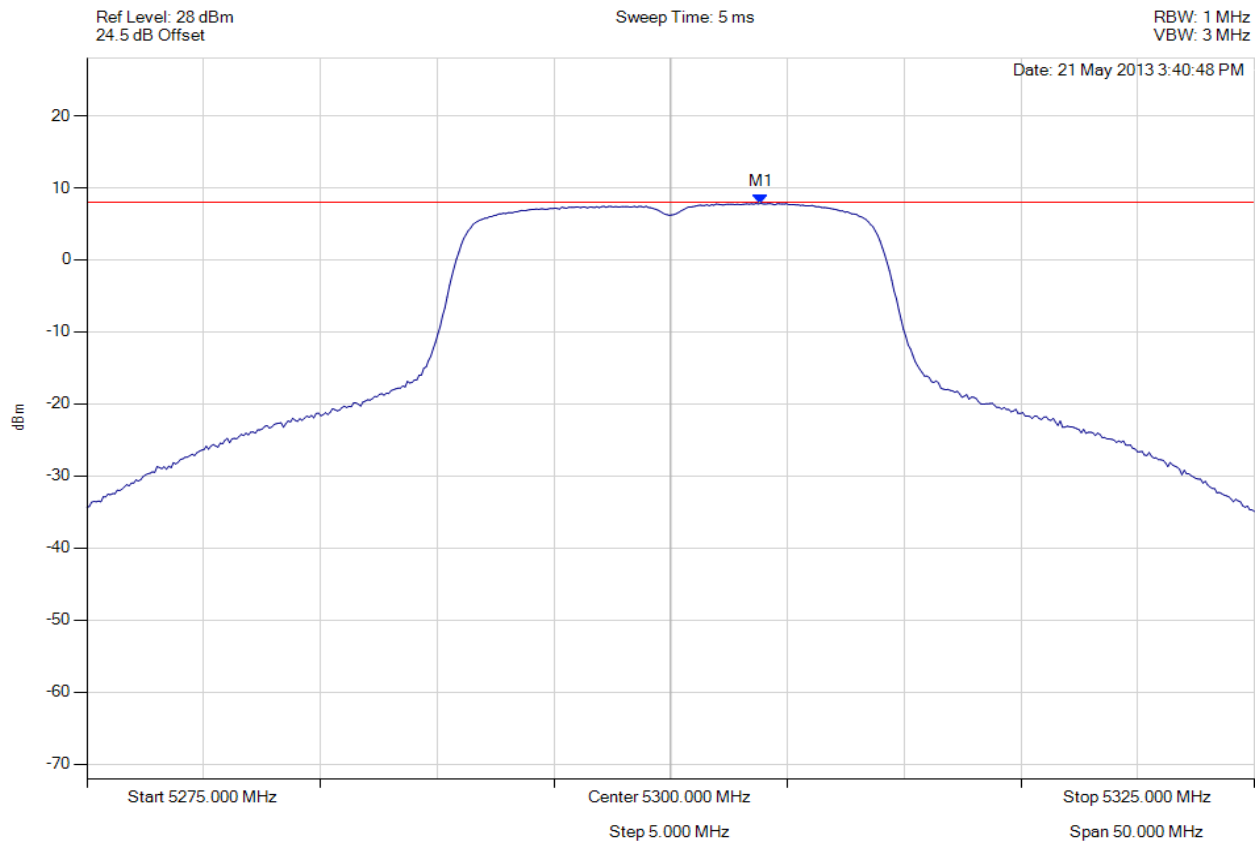


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 168 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



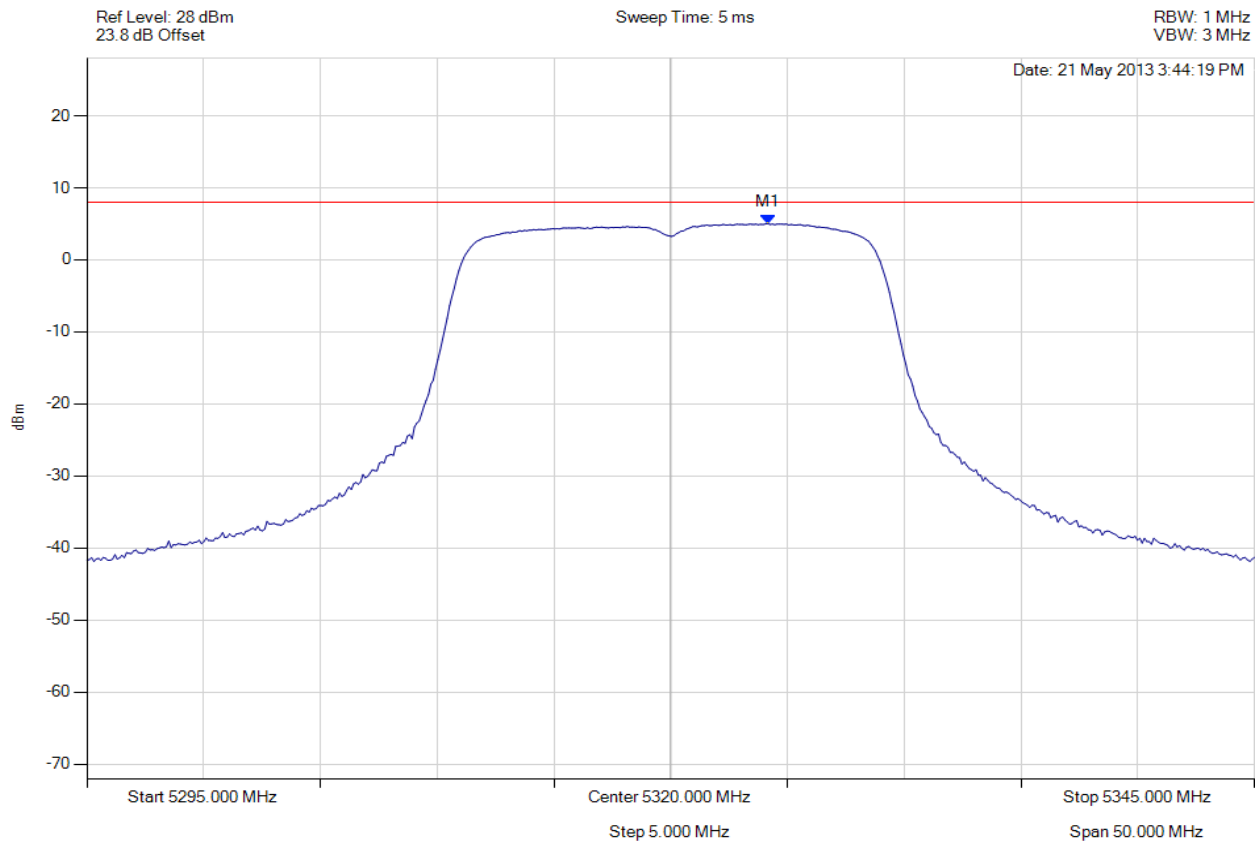
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5303.858 MHz : 7.833 dBm	Limit: ≤ 7.990 dBm Margin: -0.16 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5324.158 MHz : 5.024 dBm	Limit: ≤ 7.990 dBm Margin: -2.97 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

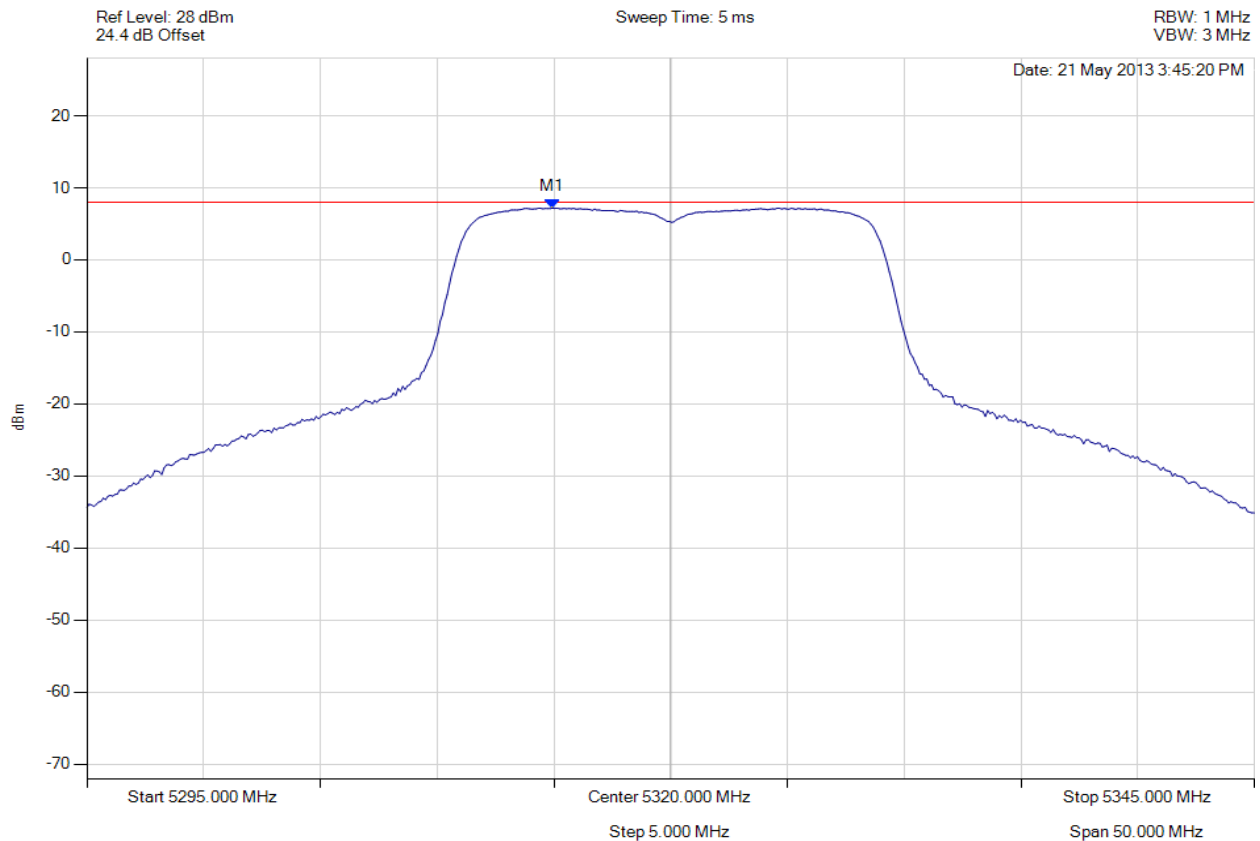


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 170 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5314.940 MHz : 7.191 dBm	Limit: ≤ 7.990 dBm Margin: -0.80 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

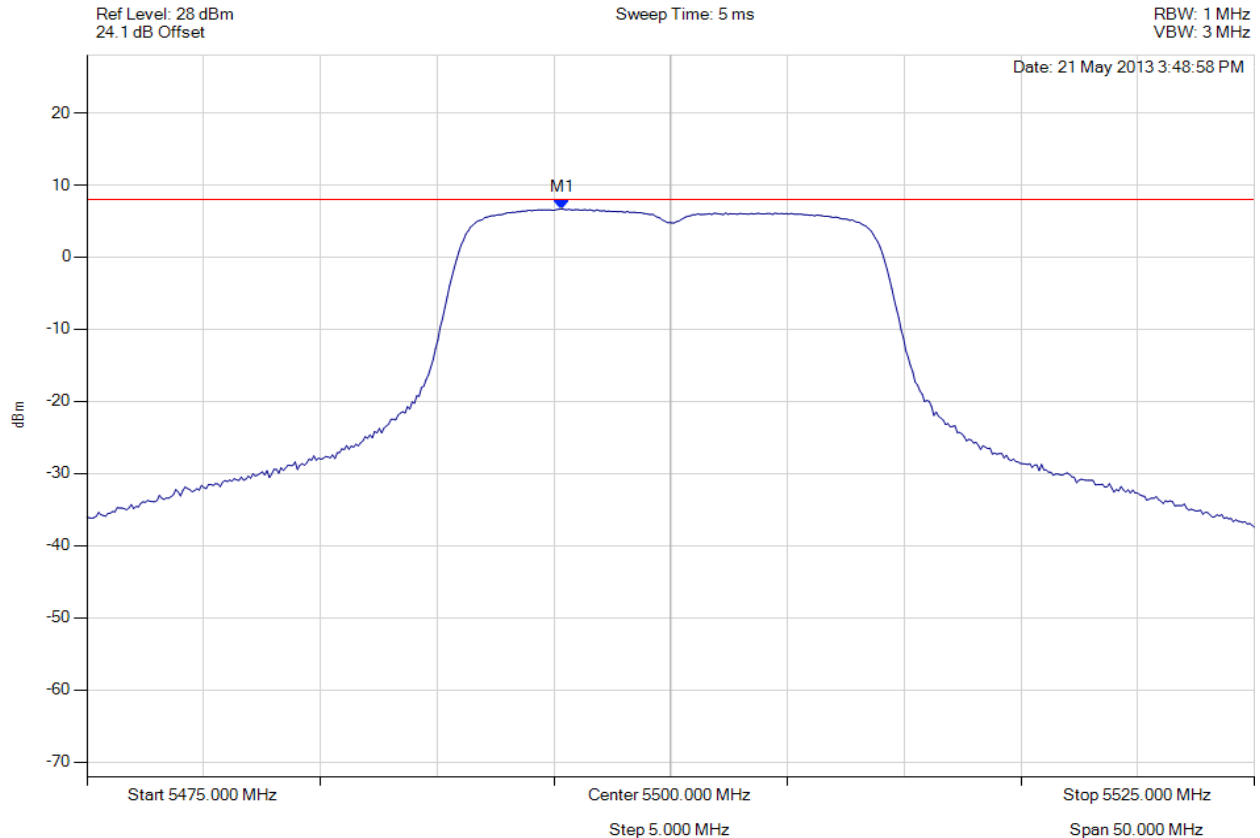


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 171 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5495.341 MHz : 6.700 dBm	Limit: ≤ 7.990 dBm Margin: -1.29 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

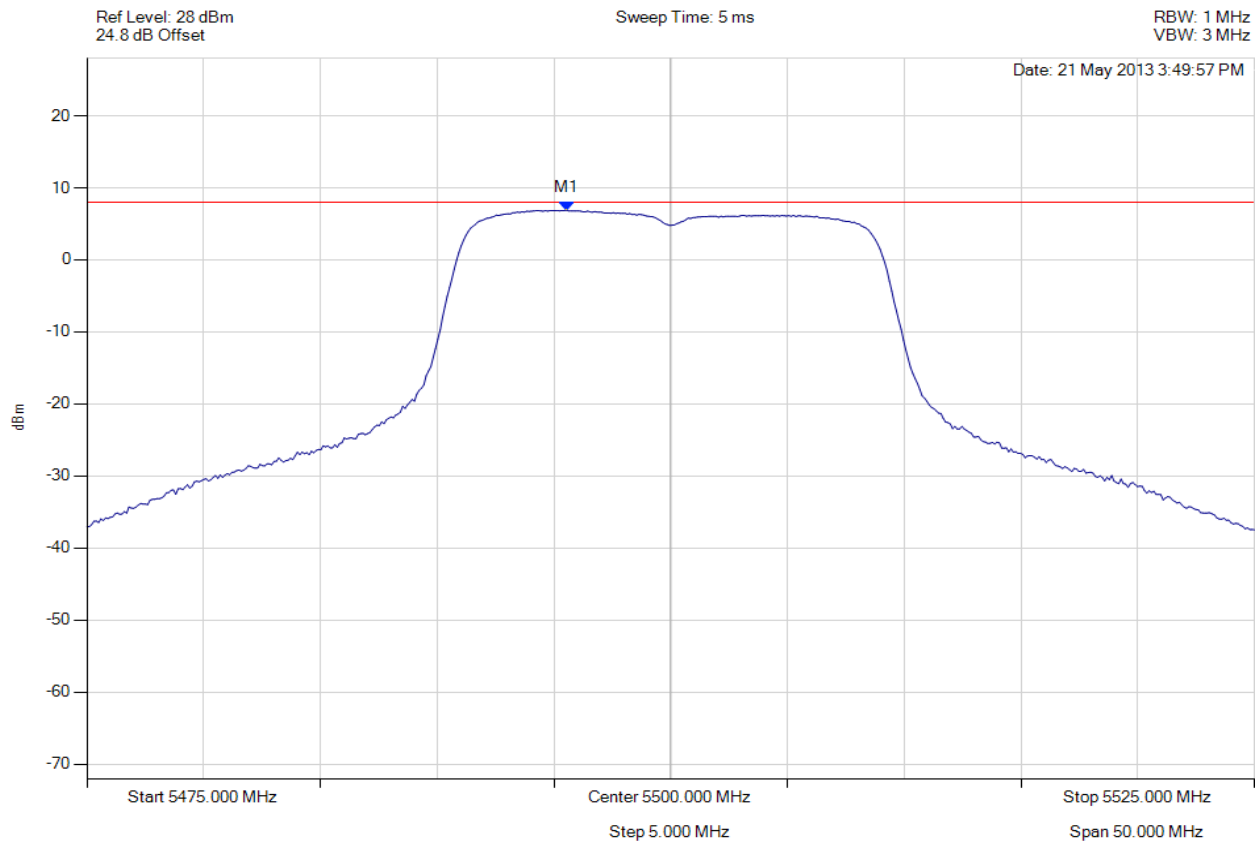


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 172 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5495.541 MHz : 6.890 dBm	Limit: ≤ 7.990 dBm Margin: -1.10 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

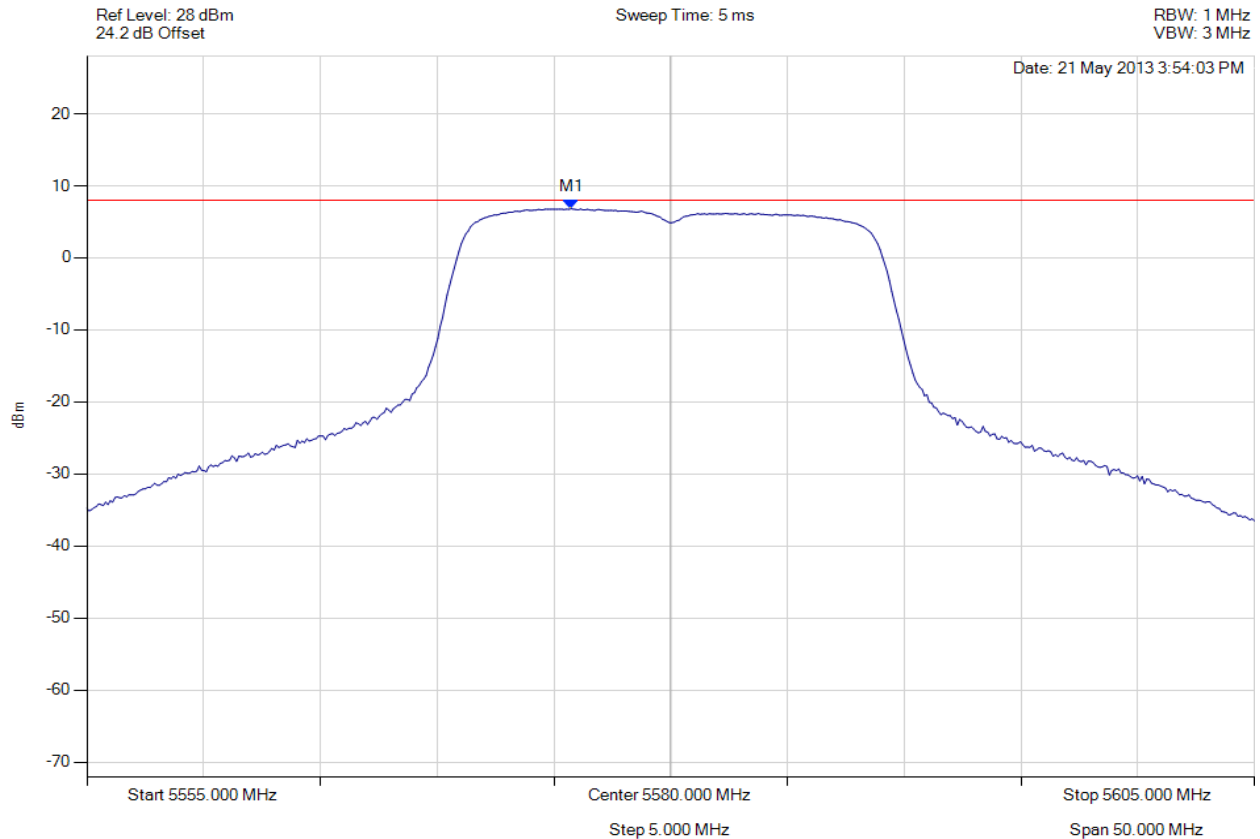


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 173 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5575.741 MHz : 6.820 dBm	Limit: ≤ 7.990 dBm Margin: -1.17 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

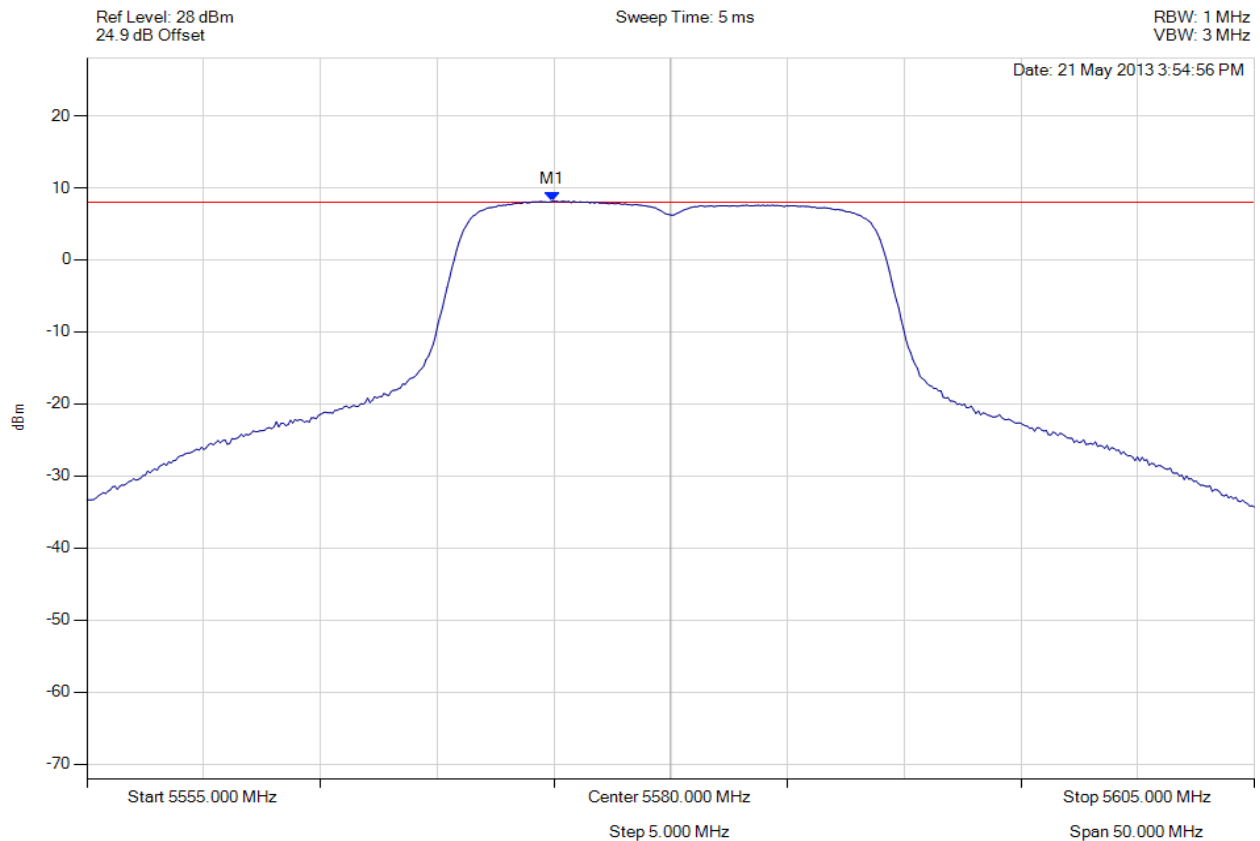


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 174 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



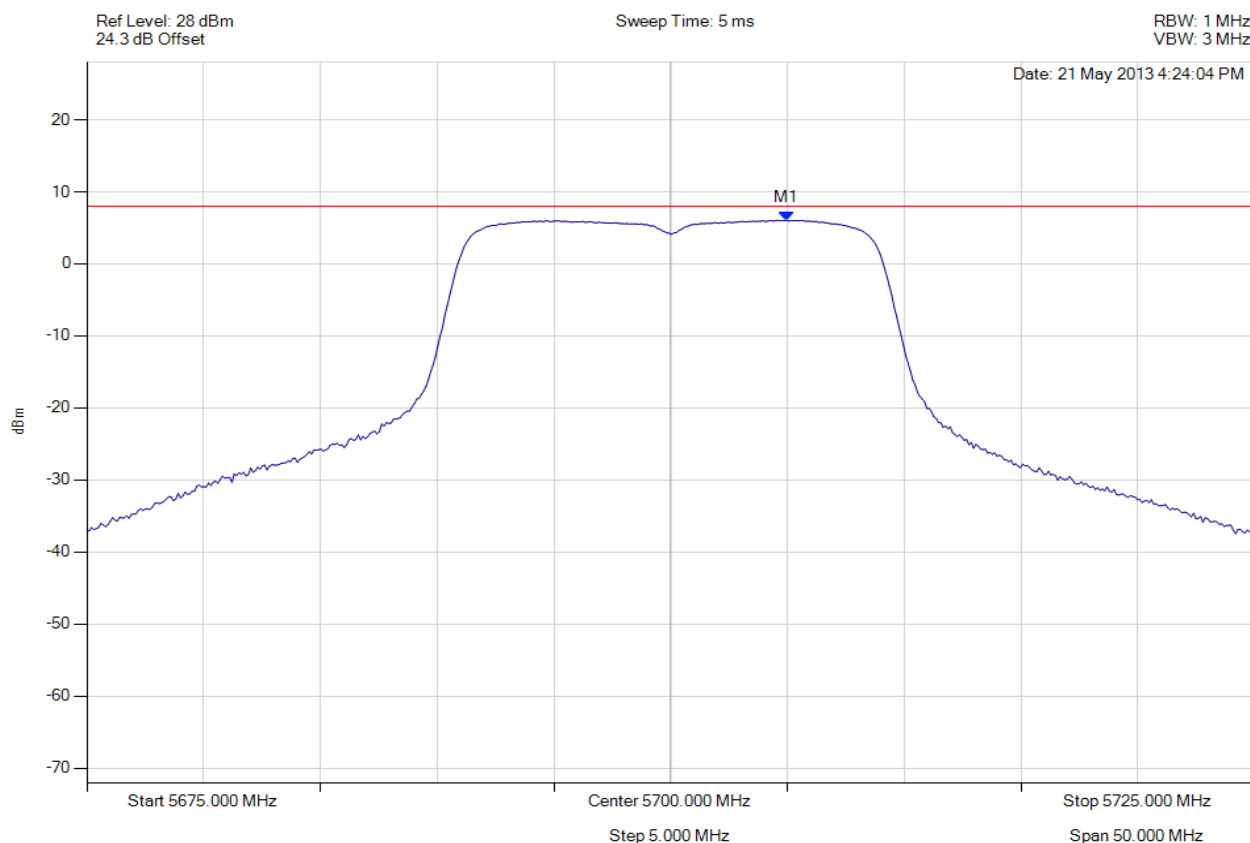
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5574.940 MHz : 8.151 dBm	Limit: ≤ 7.990 dBm Margin: 0.16 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5700.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5704.960 MHz : 6.047 dBm	Limit: ≤ 7.990 dBm Margin: -1.94 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

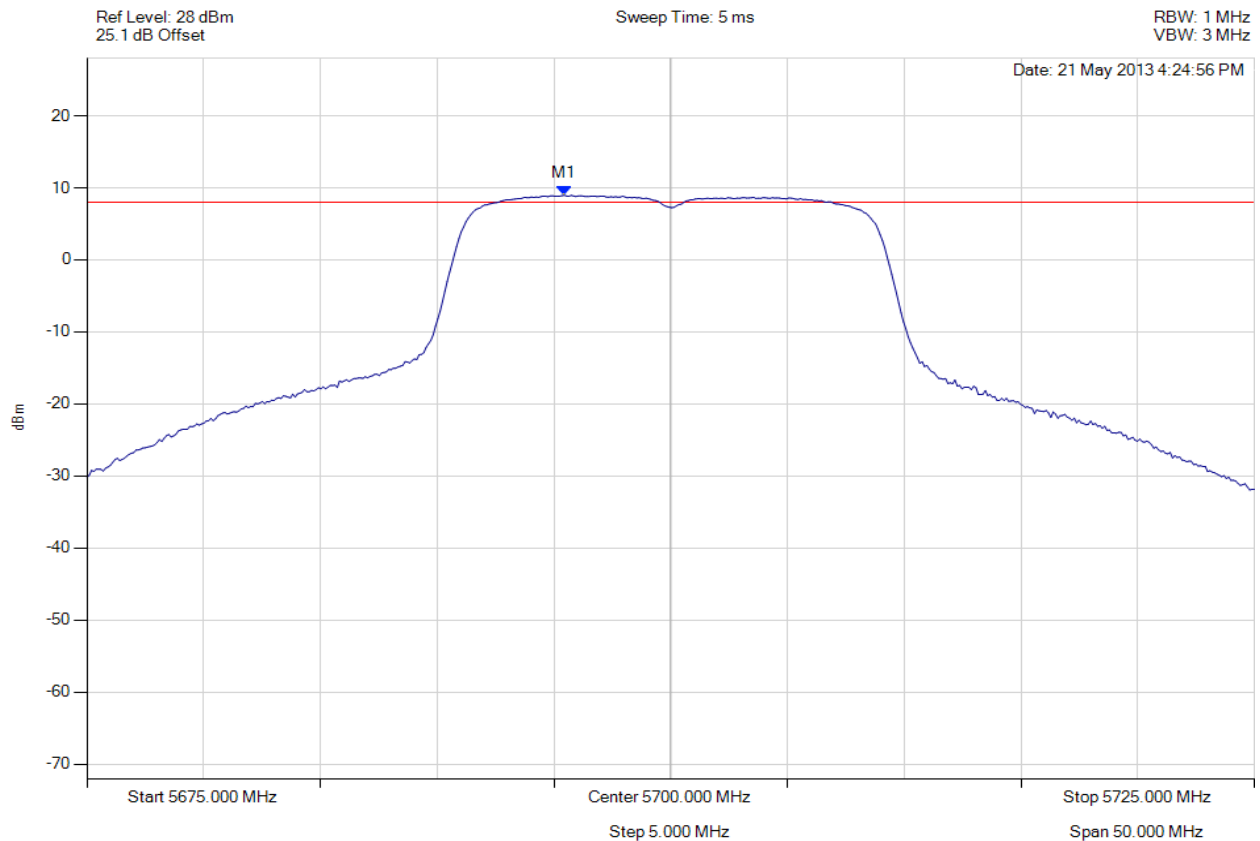


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 176 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5700.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



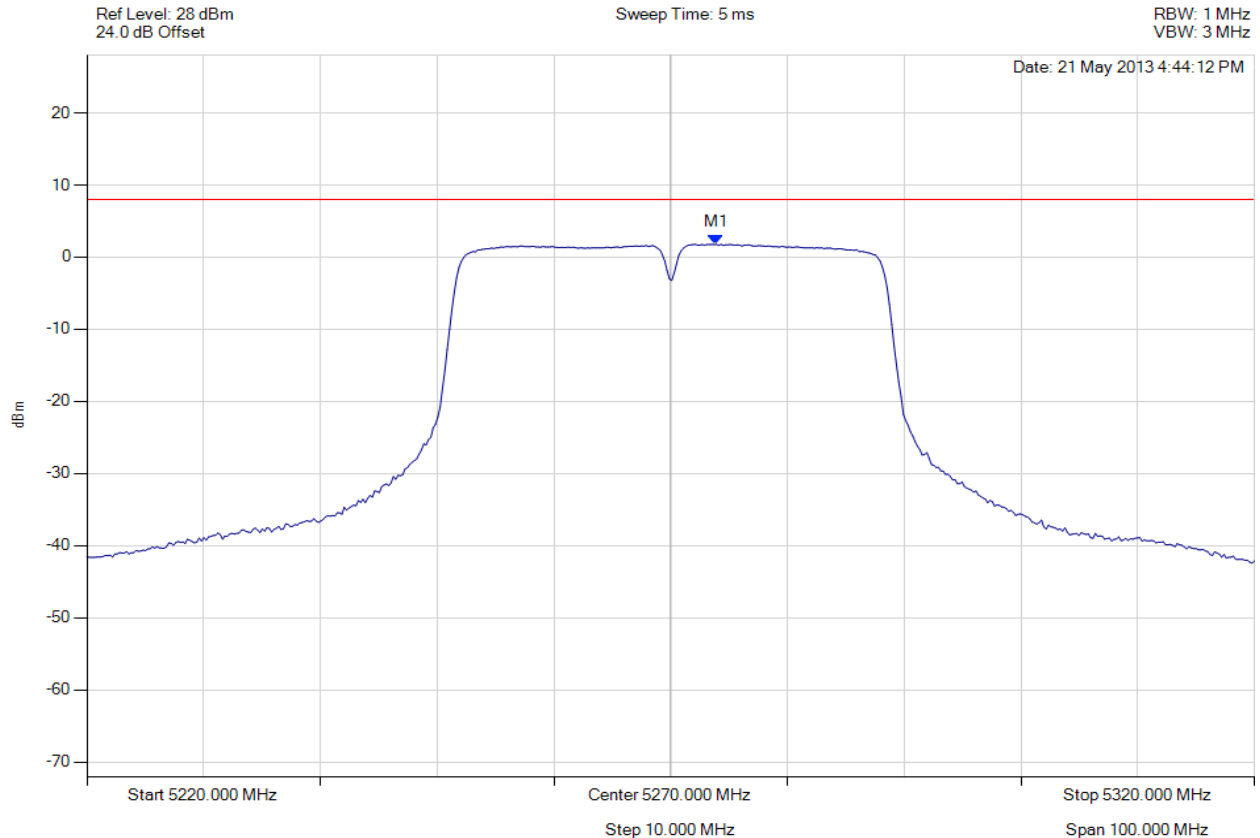
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5695.441 MHz : 8.964 dBm	Limit: ≤ 7.990 dBm Margin: 0.97 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5273.908 MHz : 1.778 dBm	Limit: ≤ 7.990 dBm Margin: -6.21 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

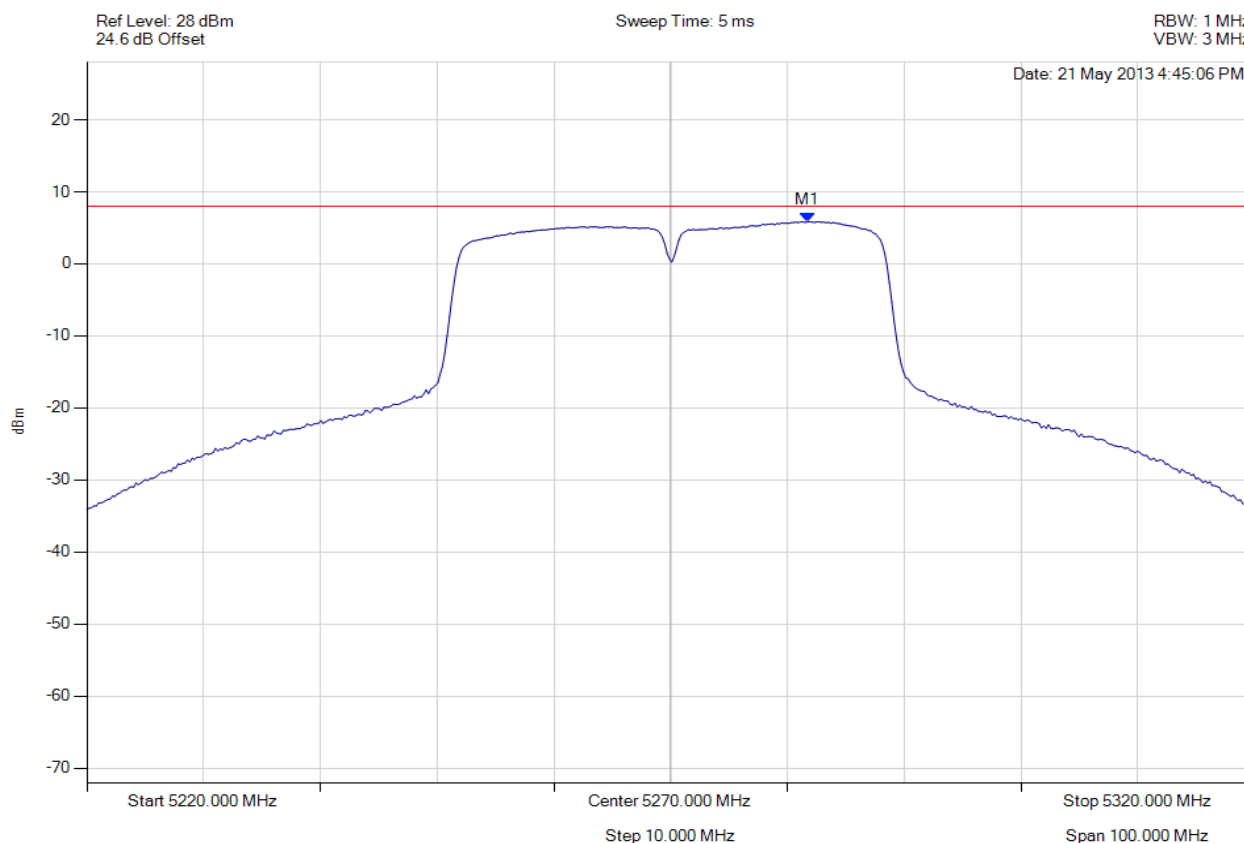


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 178 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5281.723 MHz : 5.836 dBm	Limit: ≤ 7.990 dBm Margin: -2.15 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

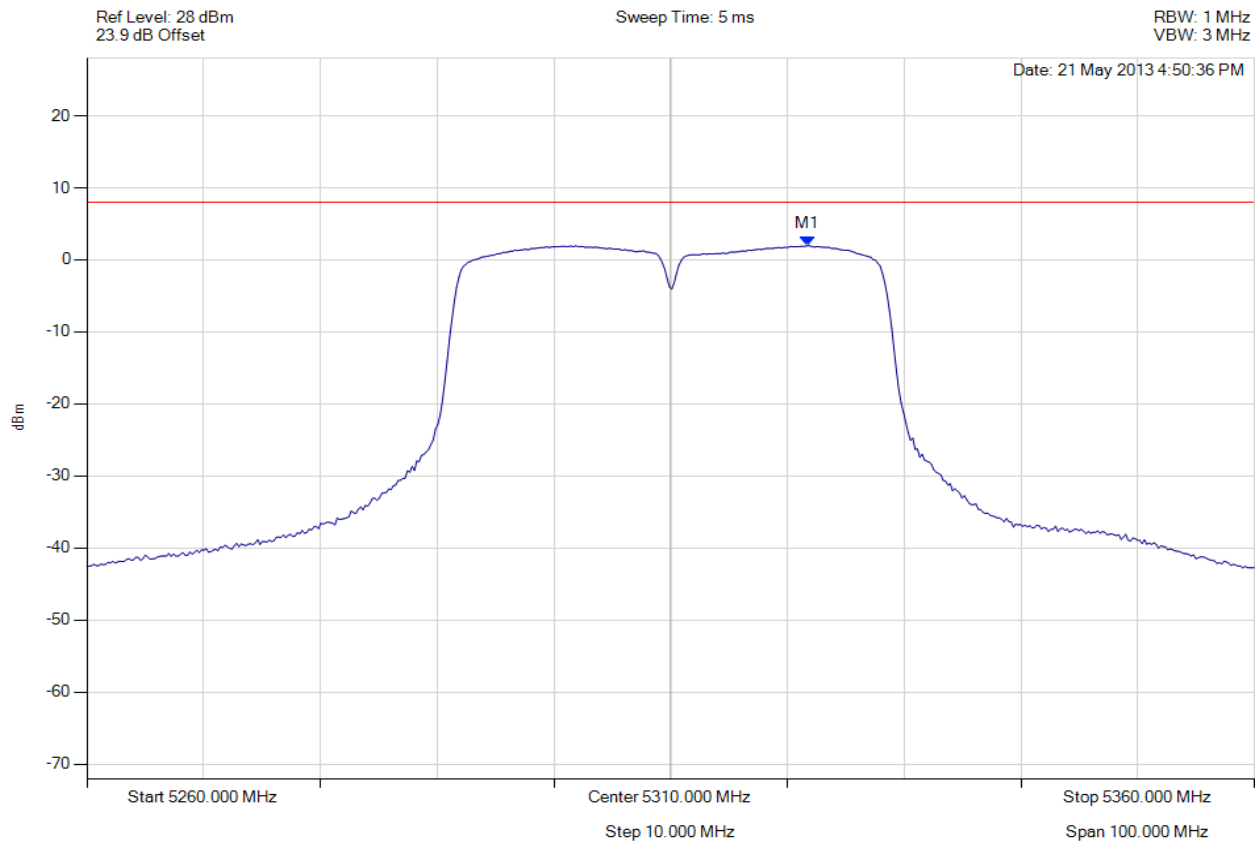


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 179 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5321.723 MHz : 1.972 dBm	Limit: ≤ 7.990 dBm Margin: -6.02 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

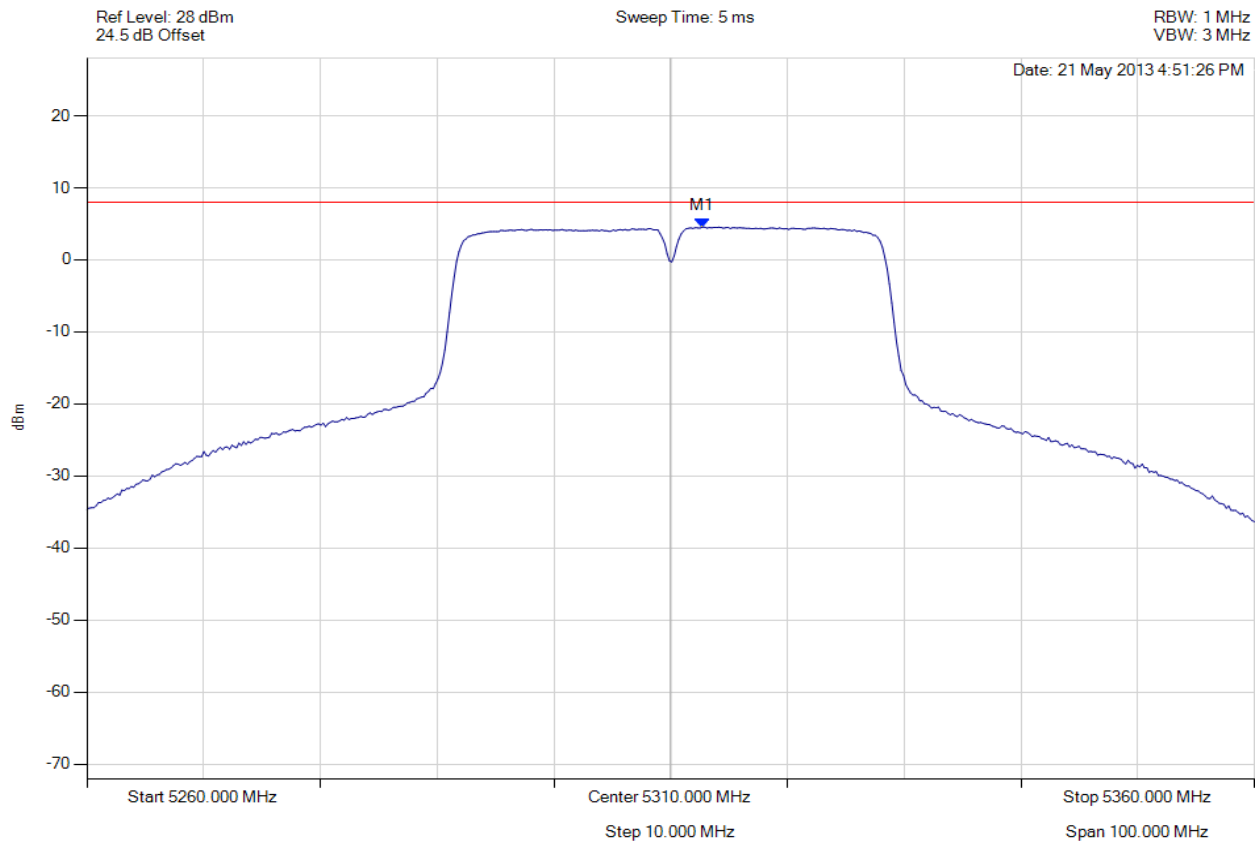


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 180 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5312.705 MHz : 4.539 dBm	Limit: ≤ 7.990 dBm Margin: -3.45 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

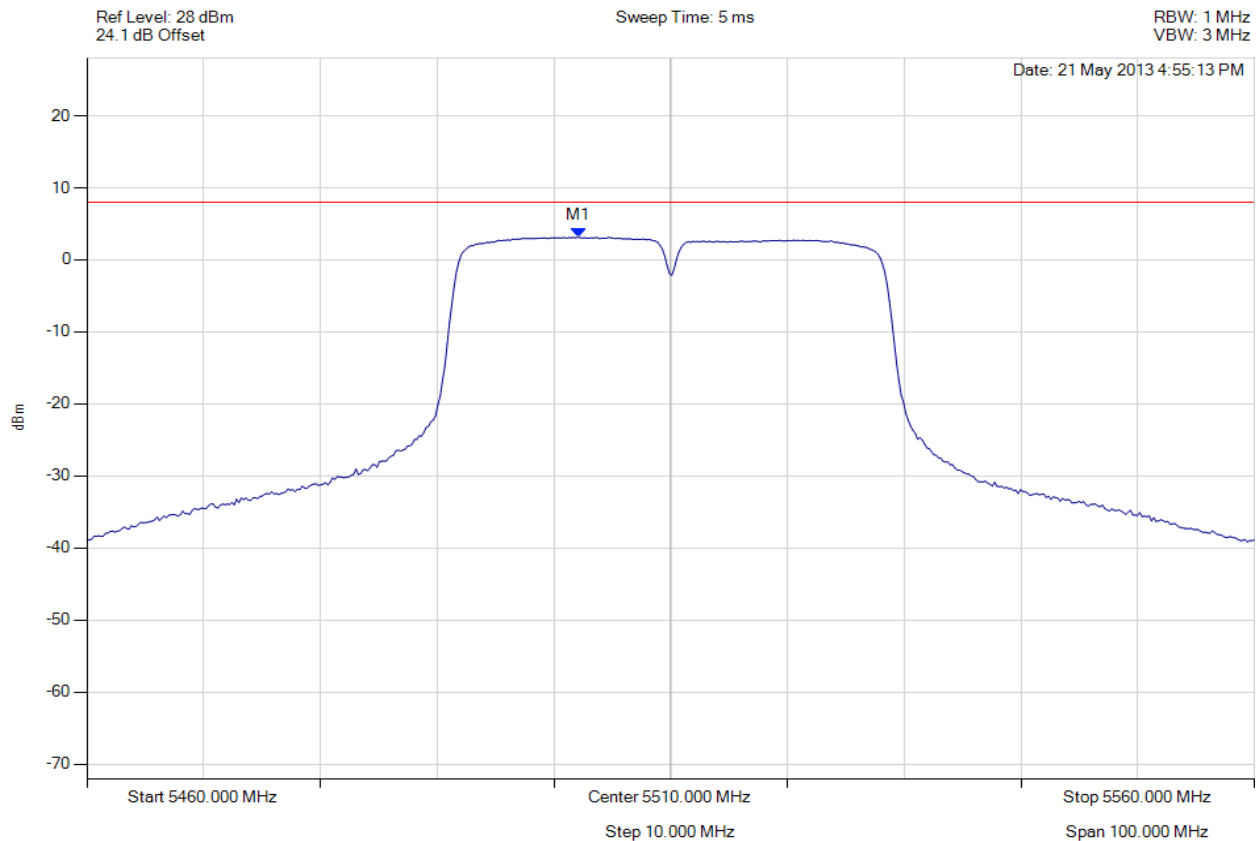


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 181 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.084 MHz : 3.169 dBm	Limit: ≤ 7.990 dBm Margin: -4.82 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

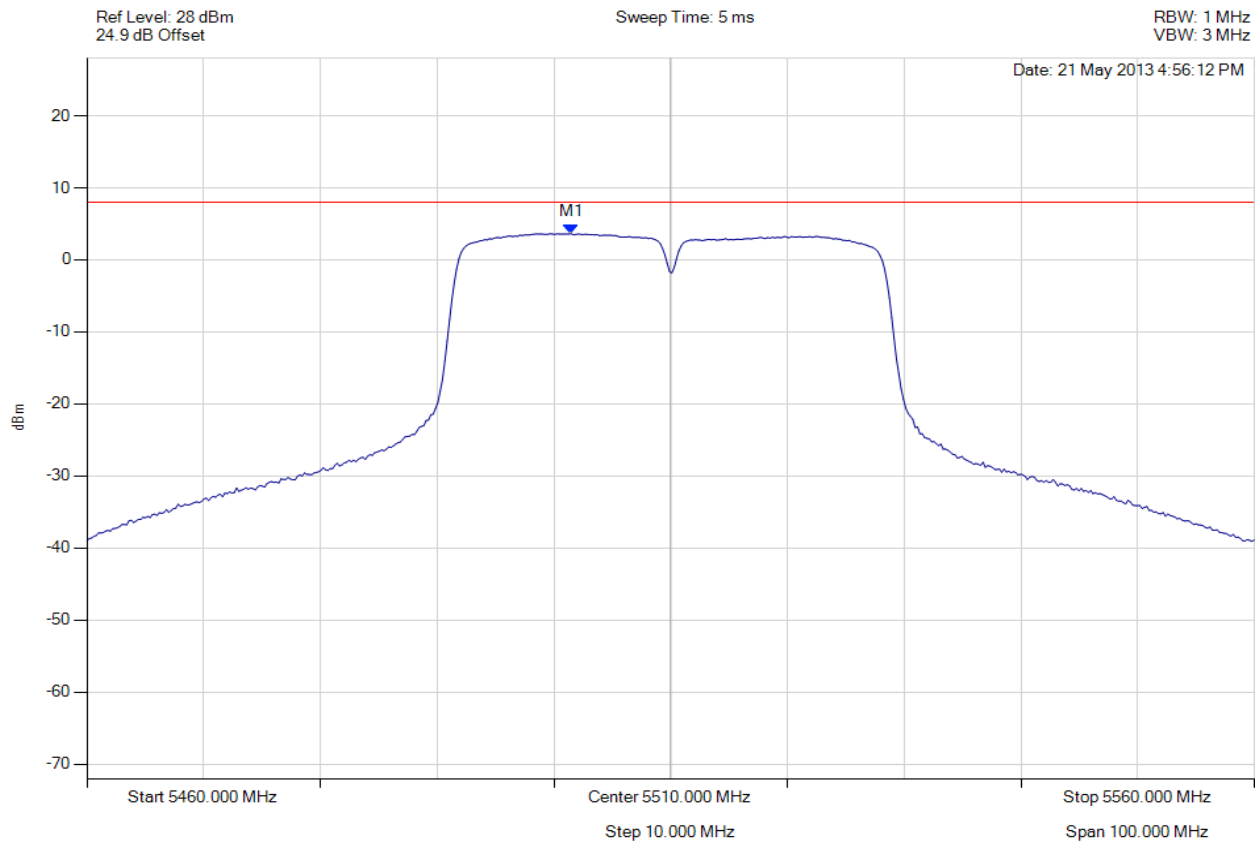


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 182 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



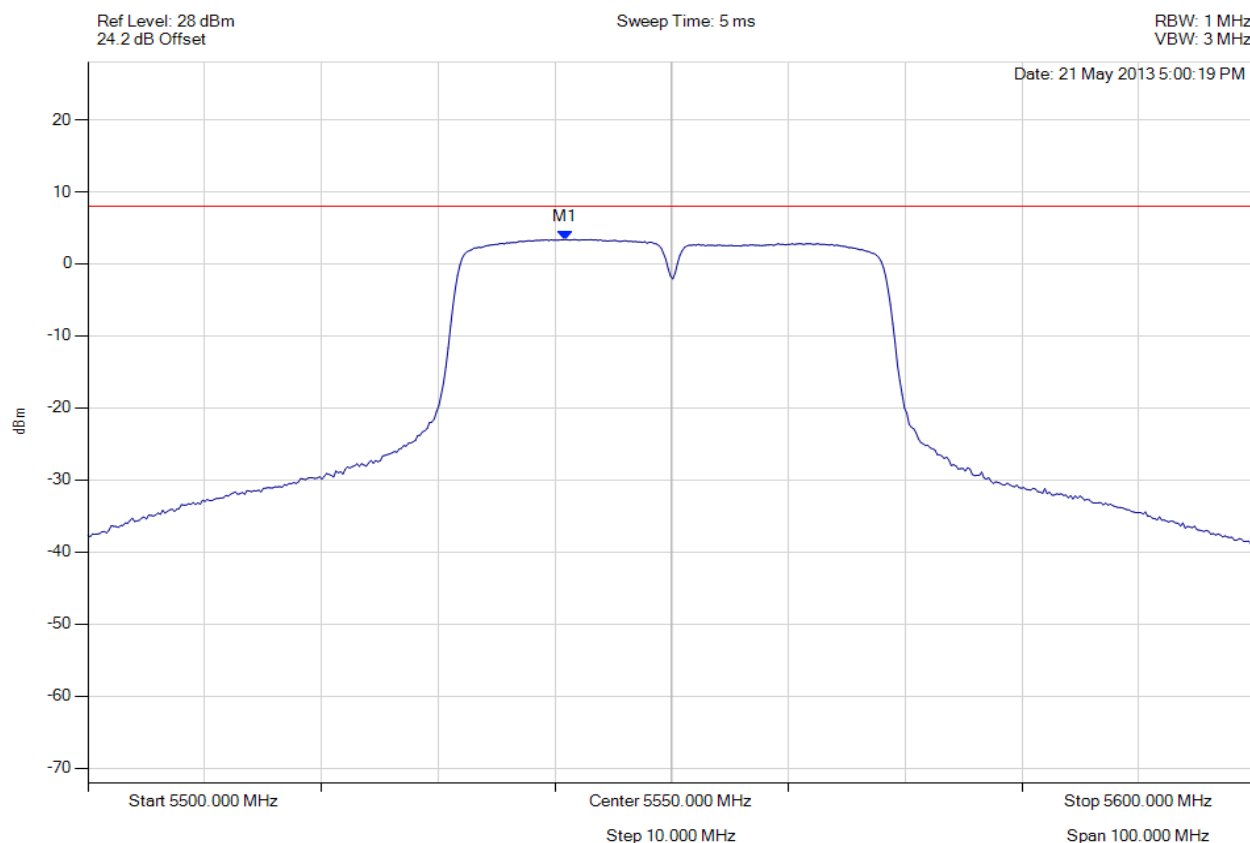
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5501.483 MHz : 3.624 dBm	Limit: ≤ 7.990 dBm Margin: -4.37 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5540.882 MHz : 3.378 dBm	Limit: ≤ 7.990 dBm Margin: -4.61 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

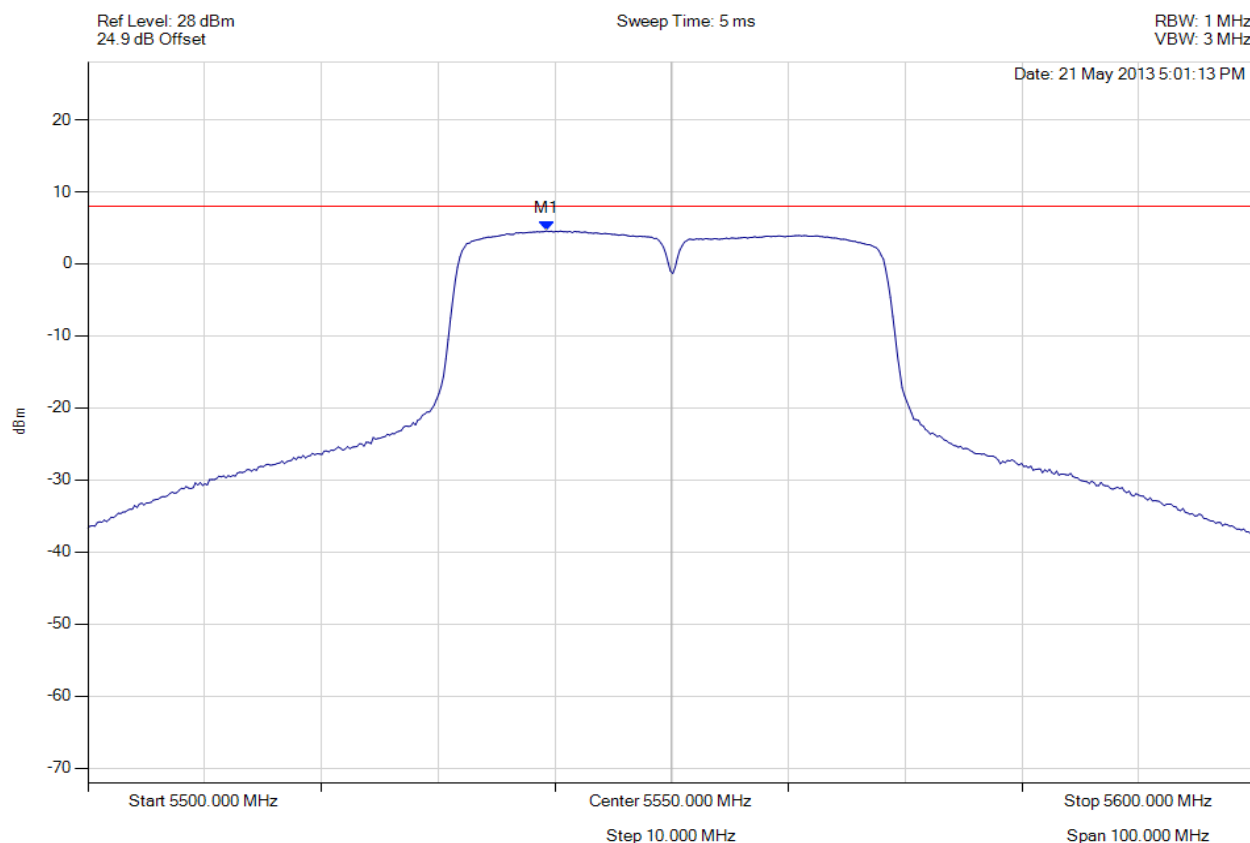


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 184 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5539.279 MHz : 4.568 dBm	Limit: ≤ 7.990 dBm Margin: -3.42 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

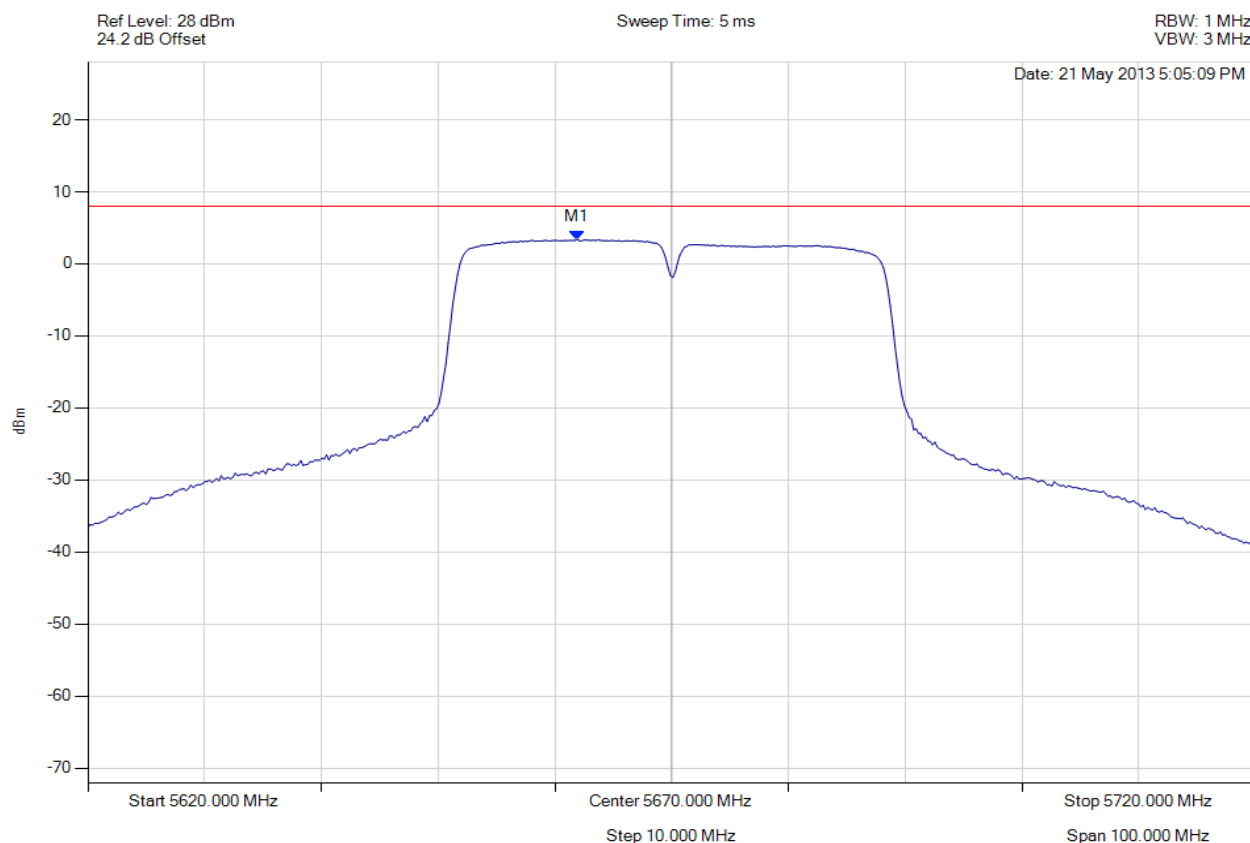


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 185 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5670.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5661.884 MHz : 3.377 dBm	Limit: ≤ 7.990 dBm Margin: -4.61 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

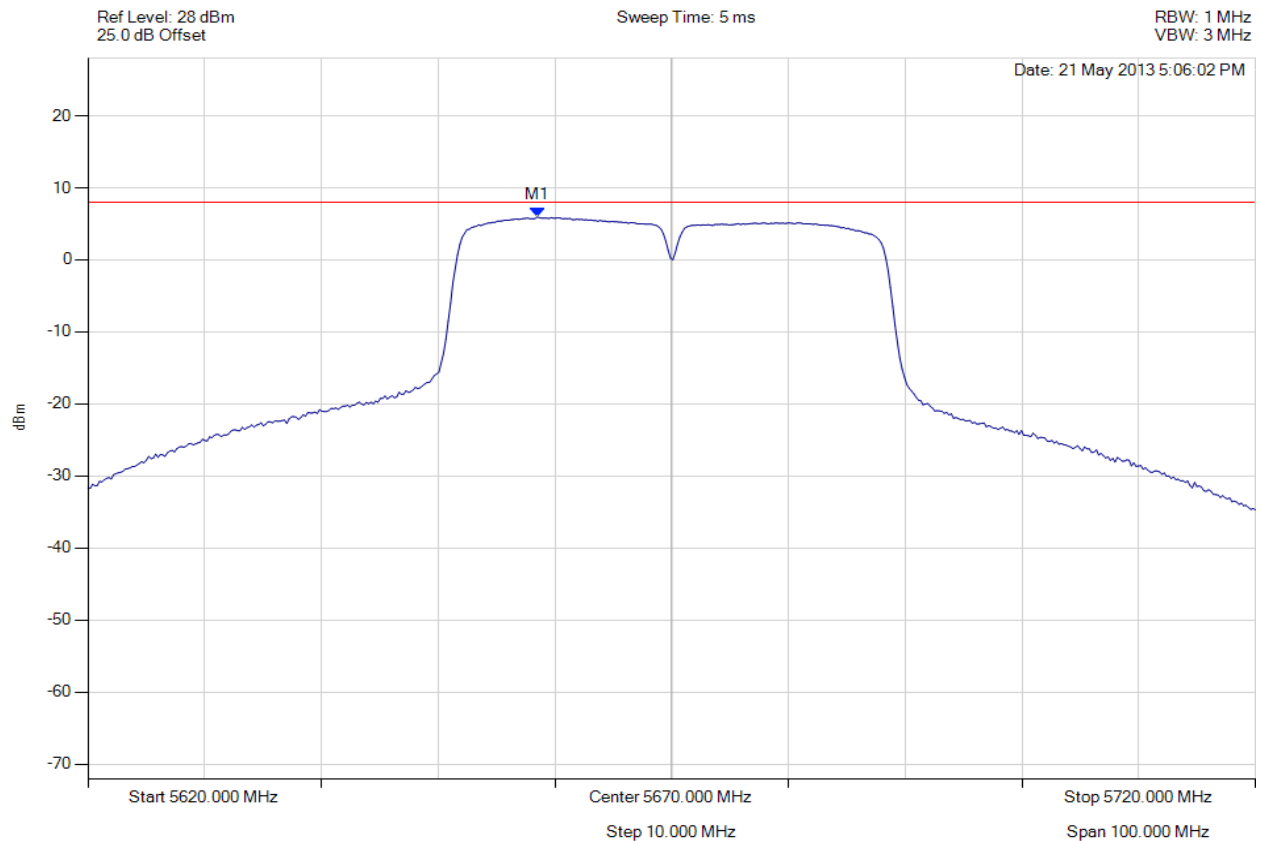


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 186 of 193



PEAK POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5670.00 MHz, Chain b, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5658.477 MHz : 5.935 dBm	Limit: ≤ 7.990 dBm Margin: -2.06 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



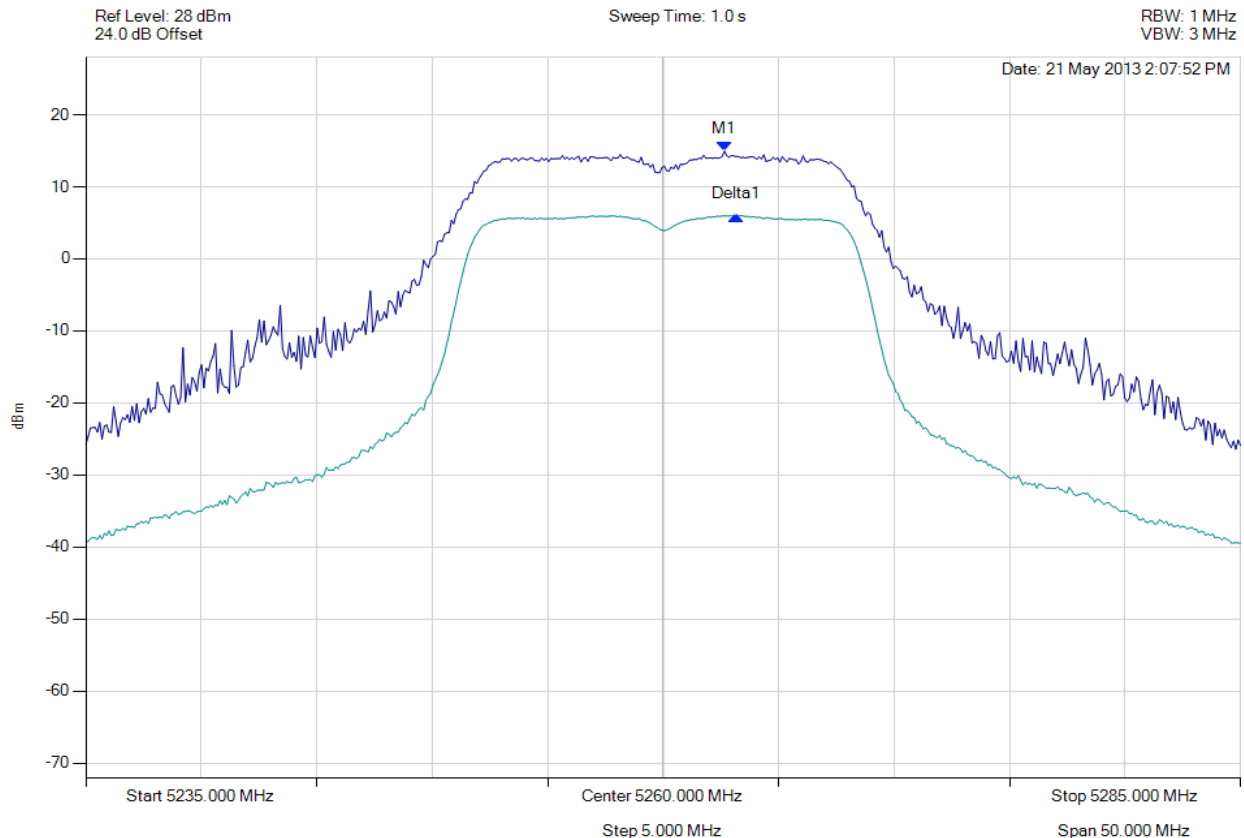
Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 187 of 193

A.1.3. Peak Excursion Ratio



PEAK EXCURSION RATIO

Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5262.655 MHz : 14.947 dBm Delta1 : 501 KHz : -8.918 dB	Measured Excursion Ratio: 8.92 dB Limit: 13.0 dB Margin: -4.08 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

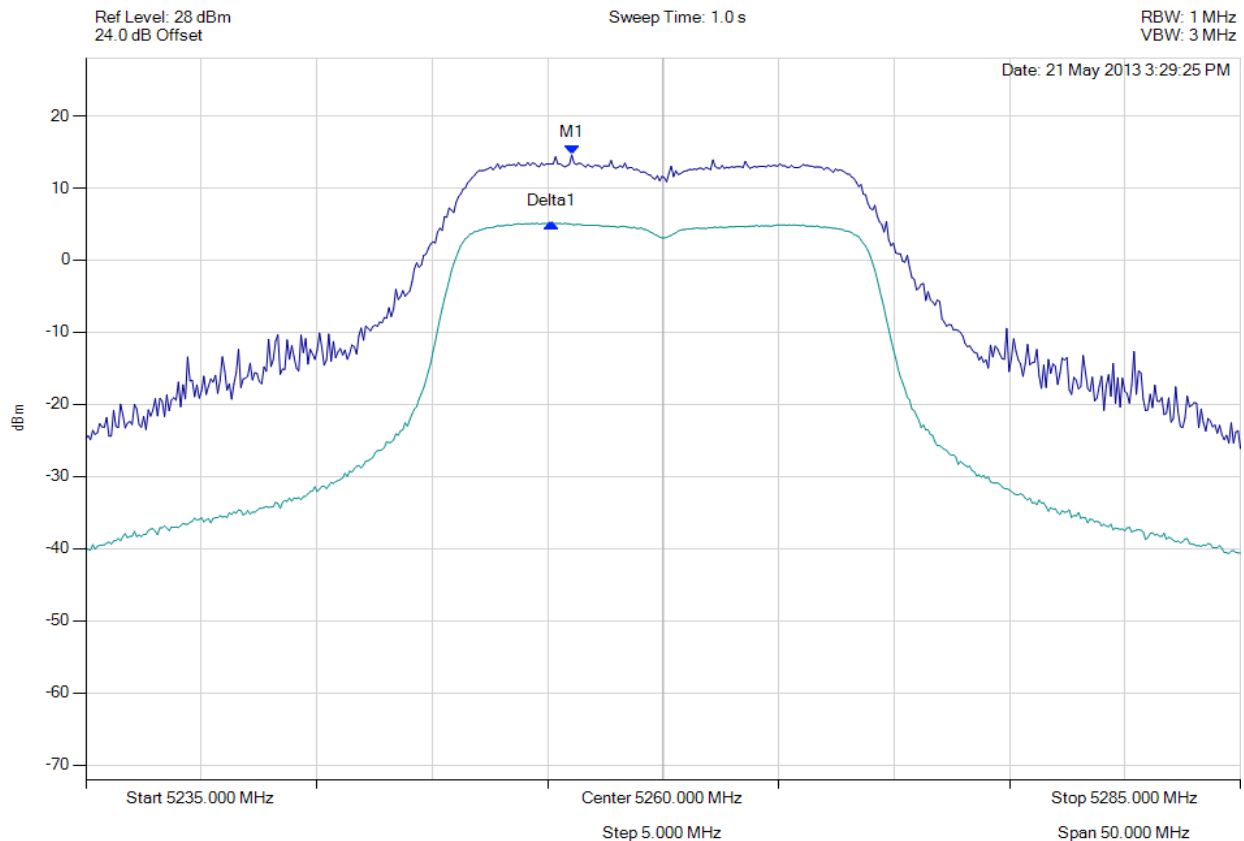


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 188 of 193



PEAK EXCURSION RATIO

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5256.042 MHz : 14.591 dBm Delta1 : -901804 Hz : -9.436 dB	Measured Excursion Ratio: 9.44 dB Limit: 13.0 dB Margin: -3.56 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

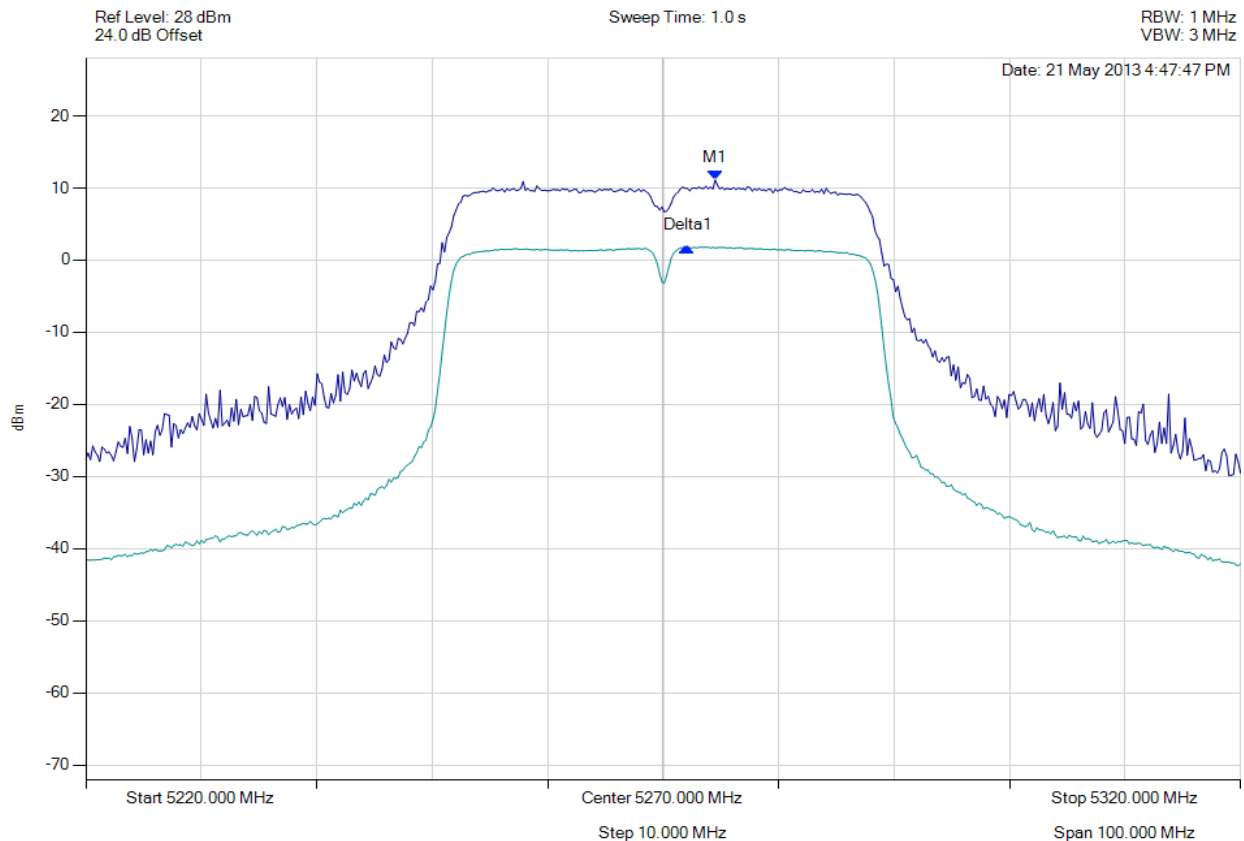


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 189 of 193



PEAK EXCURSION RATIO

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5274.509 MHz : 11.105 dBm Delta1 : -2404810 Hz : -9.289 dB	Measured Excursion Ratio: 9.29 dB Limit: 13.0 dB Margin: -3.71 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

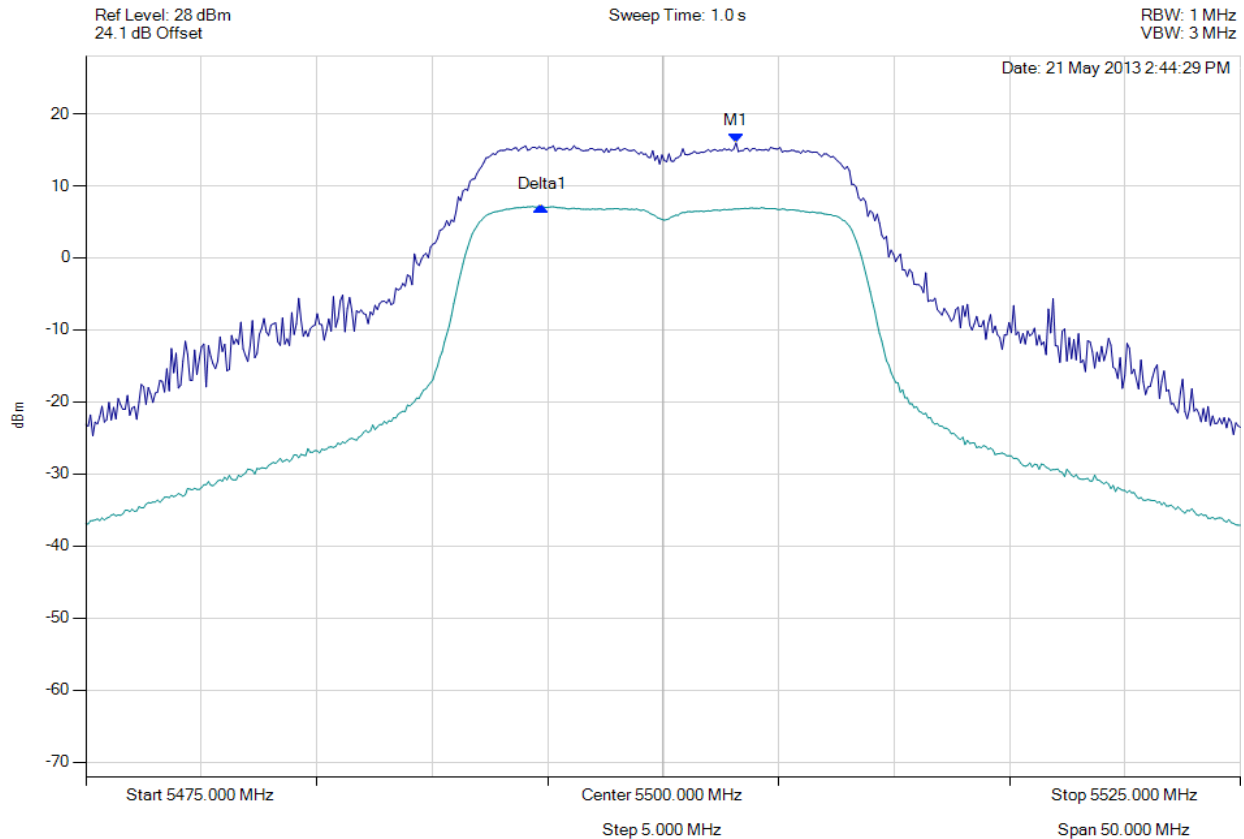


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 190 of 193



PEAK EXCURSION RATIO

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5503.156 MHz : 15.947 dBm Delta1 : -8416834 Hz : -8.812 dB	Measured Excursion Ratio: 8.81 dB Limit: 13.0 dB Margin: -4.19 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

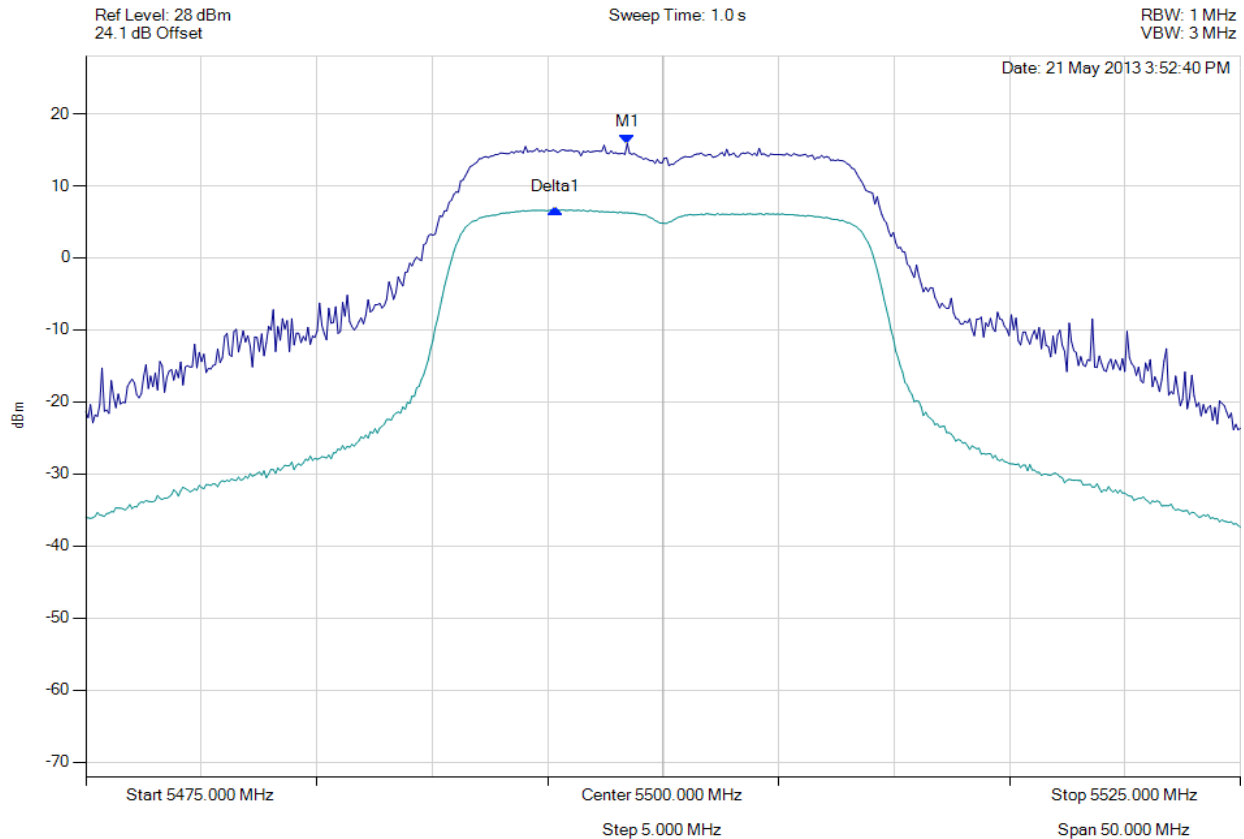


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 191 of 193



PEAK EXCURSION RATIO

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5498.447 MHz : 15.872 dBm Delta1 : -3106212 Hz : -9.129 dB	Measured Excursion Ratio: 9.13 dB Limit: 13.0 dB Margin: -3.87 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.

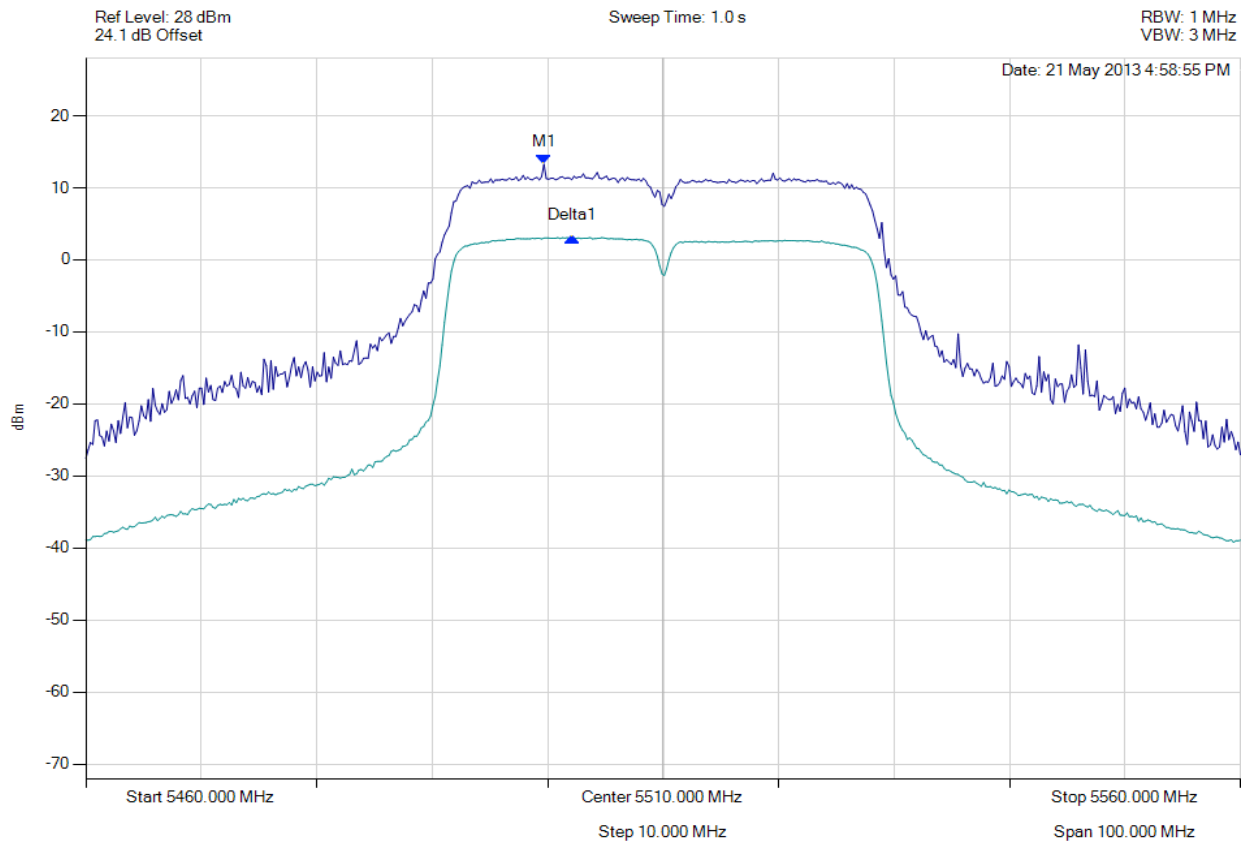


Title: Samsung Electronics 802.11a/b/g/n
To: FCC 47 CFR Part 15.407 & IC RSS-210
Serial #: ARTC01-U3 Rev A
Issue Date: 26th August 2013
Page: 192 of 193



PEAK EXCURSION RATIO

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: Ambient, Voltage: 12 Vdc



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Sweep Count = 0 RF Atten (dB) = 20 TRACE 1: Detector = MAX PEAK Trace Mode = VIEW TRACE 2: Detector = RMS Trace Mode = VIEW	M1 : 5499.679 MHz : 13.262 dBm Delta1 : 2.405 MHz : -10.124 dB	Measured Excursion Ratio: 10.12 dB Limit: 13.0 dB Margin: -2.88 dB

[Back to the Matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



440 Boulder Court, Suite 200
Pleasanton, CA 94566, USA
Tel: 1.925.462.0304
Fax: 1.925.462.0306
www.micomlabs.com