EXHIBIT 9

Section 2.1033 (b)(6) TEST REPORT

A report of measurements showing compliance with the pertinent FCC technical requirements. This report shall identify the test procedure used (e.g., specify the FCC test procedure, or industry test procedure that was used), the date the measurements were made, the location where the measurements were made, and the device that was tested (model and serial number, if available). The report shall include sample calculations showing how the measurement results were converted

Response

A test report for 5.8GHz DTS (Digital Transmission System) is attached.

CERTIFICATION TEST REPORT OF FCC PART 15 SUBPART C 5.8GHz DTS

Applicant	Alcatel-Lucent, Inc. 600-700 Mountain Avenue Murray Hill, New Jersey 07974-0636 USA
FCC ID	AS5BBTRX-10A
Product Name	MetroCell Access Point Module
Model Name	9764 MCO Wi-Fi AP V1.0
Test Standard(s)	47 CFR FCC Part 15 Subpart C
Test Frequency Range	5725-5850 MHz
Test Date	June 20 – December 20, 2013
Submission Type	Class II Permissive Change
Operating Mode(s)	Master of DTS Device
Test Report Number	2012-0268 FCC 5.8GHz DTS
Test Laboratory	Global Product Compliance Laboratory 600-700 Mountain Avenue Room 5B-108 Murray Hill, New Jersey 07974-0636 USA

Note: The test results documented in this report refer exclusively to the test model/sample specified, under the conditions and modes of operation as described herein. This report shall not be reproduced, in whole or in part without the approval of Alcatel-Lucent Global Product Compliance Laboratory. This report must not be used by the recipient to claim product endorsement by NVLAP or any other agency of the U.S. Government.

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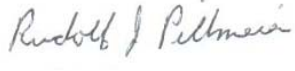
1. ATTESTATION OF TEST RESULTS

Company Name	Alcatel-Lucent, Inc.
FCC ID	AS5BBTRX-10A
Product Name	MetroCell Access Point Module
Model Name	9764 MCO Wi-Fi AP V1.0
Serial Number	LBALLU-RT124600209 (Conducted) LBALLU-RT131980172 (Conducted) LBALLU-RT131980174 (Radiated) LBALLU-RT131980277 (Radiated)
Part No	3BK60912AAAB ICS01 REV 04 (Medium Gain) 3BK60926AAAB ICS01 REV 04 (High Gain)
Test Standard(s)	47 CFR FCC Part 15 Subpart C, Section 15.247
Reference(s)	• FCC Part 15 Subpart C §15.247 • FCC KDB 558074, Guidelines for Performing Compliance Measurement on Digital Transmission Systems (DTS) Operating Under Part 15.247, v03r01, April 9, 2013. • FCC KDB 662911D01, Emissions Testing of Transmitters with Multiple Outputs in the Same Band, 5/28/2013, v02
Test Frequency Range	5725-5850 MHz
Date Tested	June 20 – December 20, 2013
Operating Mode(s)	Master of DTS Device
Test Laboratory	Global Product Compliance Laboratory Alcatel-Lucent USA, Inc 600-700 Mountain Avenue Room 5B-108 Murray Hill, New Jersey 07974-0636 USA

Per Section 2.911(d) Certification of Base Station Equipment, this is to certify that the above product has been evaluated and found to be in compliance with the requirements of the Code of Federal Regulations (CFR), Title 47, Part 15, Subpart C Intentional Radiators, Section 15.247, operating in the 5725-5850 MHz band.



Rudolf J. Pillmeier

Technical Manager
FCC Compliance Test Group
Global Product Compliance Laboratory
Alcatel-Lucent USA, Inc

Per Section 2.911(d) Certification of Technical Test Data, I hereby certify that the technical test data are the results of tests supervised by me.

Qin Yu, Ph.D.

Member of Technical Staff
Global Product Compliance Laboratory
Alcatel-Lucent USA, Inc

I hereby to certify that the evaluation of the subject product has been either performed or led by me in accordance with the Commission's Rules and Regulations set forth in the above standards. The data and the descriptions about the test setup, procedures and configuration presented in this report are accurate.

Steve E. Gordon

Lead Test Engineer
Member of Technical Staff
Global Product Compliance Laboratory
Alcatel-Lucent USA, Inc

2. SUMMARY OF THE TEST RESULTS

Applied Standards: 47 CFR FCC Part Subpart C Section 15.247		
Section	**Description of Tests**	**Results In Compliance**
4.4	**Occupied Bandwidth, Section 15.247(a)(2)**	**Yes**
4.5	**Maximum Power Output, Section 15.247 (b)(3)(4)**	**Yes**
4.6	**Peak Power Spectrum Density, Section 15.247(e)**	**Yes**
4.7	**Unwanted Out-of-Band Emissions in Non-Restricted Band Conducted, Section 15.247(d)**	**Yes**
4.8	**Unwanted Radiated Emissions, Section 15.247(d)**	**Yes**

3. GENERAL INFORMATION

3.1. Product Descriptions

Table 3.1.1 Product Specifications

Specification Items	Description
Product Type	WiFi (2Tx, 2Rx)
Radio Type	Intentional Transceiver
Power Type	5.3VDC through the 20 pin interface connector between MetroCell Base Station and Wifi AP
IEEE Specifications	802.11a and 11n for 20MHz and 802.11n for 40MHz.
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Data Rate (Mbps)	802.11a: 6Mpbs and 802.11n: MCS0 for 1S and MCS8 for 2S
Operating Frequency Range	5725-5850 MHz
Channel Bandwidth	20/40MHz
Max Rated Conducted Power	18dBm per chain and 21dBm total
Min Rated Conducted Power	0dBm per chain and 3dBm total
Max Rated EIRP Power	26.2dBm per chain and 29.2 dBm total
Min Rated EIRP Power	-2dBm per chain and 1dBm total
Operating Mode	Master
Software Version (Master)	WiNG5.x
Hardware Version (Master)	9764 MCO Wi-Fi AP V1.0
Antenna	Refer to Section 3.3

3.2. Accessories

An Alcatel-Lucent WiFi test board TSC2028, which provide power conversion from -48VDC to 5VDC, was used for all required conducted testing at antenna ports. The 9764 Alcatel-Lucent 9764 LightRadio™ PCS MCO, a FCC certified small base station, was used in the radiated testing to supply the DC power for WiFi AP. The MCO Wi-Fi AP is a plug-in module and is installed on the bottom of the 9764 MCO for high-density hotspots in real operation. The WiFi AP gets its DC power supply from its interface connector with the MCO. The MCO is unmodified and is commercially available per FCC requirement given in 2.1033(b)(8).

3.3. Antenna Information

There are two different types of antenna modules equipped for this AP product: high-gain antenna module and medium-gain antenna module. Each antenna module consists of a 2.4GHz antenna and a 5GHz antenna. Each antenna has two built-in ports and two antenna elements where two antenna elements are connected to Tx/Rx Port 1 and Tx/Rx Port 2, respectively.

The following information is on antennas:

Table 3.3.1 Antenna Data from Manufactuerer

Ant	Model Name	Antenna Type	Tx/Rx Port	Gain		Freq	
				2.4 GHz	5 GHz	2.4 GHz	5 GHz
1	EMM00024-AC3	Embedded, IFA Elements on PCBA	Tx/Rx 1/2	3.5dBi (typical) and 3.7dBi (Max)	5.5dBi (typical) and 6.1dBi (Max)	2.4-2.5 GHz	4.9-5.875 GHz
2	EMM00043-AC3	Embedded MIMO Antenna Module, Dual Slant Dipole	Tx/Rx 1/2	5.7dBi (typical) and 5.8dBi (Max)	6.9dBi (typical) and 7.9dBi (Max)	2.4-2.5 GHz	5.1-5.875 GHz

The gain and beamwidth at azimuth and elevation 0° and 90° were measured for both antenna modules above at Port 1 and Port 2, respectively. The 3D maximum antenna gains for each antenna at Port 1 and Port 2 were thus verified as below.

The antennas 1 and 2 are referred as “Medium Gain Antenna” and “High Gain Antenna” in this report, respectively.

Table 3.3.2 Measured Antenna Data

Antenna	Model	Ant Input Impedance	Measured Max Gain (dBi)	
			Port 1	Port 2
1	EMM00024-AC3 (Medium Gain)	50 Ω	6.33	5.84
2	EMM00043-AC3 (Higher Gain)	50 Ω	7.84	8.24

The compliance with the maximum setting of the EUT equipped with both antennas were evaluated.

The antenna gains were measured in a 4m x 4m x 4m full anechoic chamber with a vector network analyzer at Laird Technologies, the vendor of the antenna. The full anechoic chamber has 23 probes, spaced at 15º in elevation, with an internal arch diameter of 2.4 meters.

4. REQUIRED MEASUREMENTS AND RESULTS

4.1. Regulatory Requirements

The tests in this report were performed for DTS operating in the 5725-5850 MHz Bands in accordance with FCC CFR 47 Part 15 Subpart C, FCC KDB 558074 (Guidelines for Performing Compliance Measurement on Digital Transmission Systems (DTS) Operating Under Part 15.247, v03r01, April 9, 2013) and FCC KDB 662911D01 (Emissions Testing of Transmitters with Multiple Outputs in the Same Band, 5/28/2013, v02).

The FCC CFR 47 Section 15.247 specified the limits for bandwidth, power output and undesirable emissions:

I. Bandwidth Limits (FCC 15.247 (a)(2)).

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

II. Power Limit (FCC 15.247 (b)(3)(4)).

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 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.

III. Power Spectrum Density (FCC 15.247(e))

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. The same method of determining the conducted output power shall be used to determine the power spectral density.

IV. Undesirable Emission Limits (FCC 15.247 (d))

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

with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

V. Frequency Stability

The FCC CFR 47 Section 15.247 did not specify the requirement for frequency stability of the carrier. But Section 15.215(c) stated that:

> Intentional radiators operating under the alternative provisions to the general emission limits, as contained in 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

The compliance with the above requirement has been demonstrated in the FCC original filling test report of 5.8GHz UNII-3 band, where the Wi-Fi AP transmitted an 18dBm carrier at Channel 153, 5765MHz, 802.11n, HT40-2Tx-1S, MCS3, 16QAM. Therefore, no evaluation for the frequency stability was conducted in this test report.

VI. AC Power Line Conducted Emissions

The FCC CFR 47 Section 15.247 did not specify the requirement for AC power line conducted emissions. But Section 15.207(c) stated that:

> FCC 15.207(c) states that measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

The compliance with the above requirement has been demonstrated in the FCC original filling test report of 5.8GHz UNII-3 band, where the host unit, PCS Metro Cell Outdoor (Metro Dock), transmitted 2x1W, 5MHz LTE carriers in B Block on both ports and the Wi-Fi AP transmitted at both ports with a 2437MHz (20MHz bandwidth, 11g-2Tx, 6Mpbs) carrier at 22dBm and a 5765MHz (HT20-2Tx-1S, MCS8) carrier at 18dBm in MIMO. Therefore, no evaluation for the AC power line conducted emissions was conducted in this test report.

4.2. 5.8GHz ISM Band Carrier Frequencies

Table 4.2.1 5.8GHz Frequency Channel Plan

Channel No.	Freq (MHz)	Channel No.	Freq (MHz)
145	5725	160	5800
146	5730	161	5805
147	5735	162	5810
148	5740	163	5815
149	5745	164	5820
150	5750	165	5825
151	5755	166	5830
152	5760	167	5835
153	5765	168	5840
154	5770	169	5845
155	5775	170	5850
156	5780	171	5855
157	5785	172	5860
158	5790	173	5865
159	5795	174	5870

Table 4.2.2 5.8 GHz ISM Frequency Channels Used for Testing

Channel No.	Freq (MHz)	Channel Bandwidth
149	5745	20MHz
157	5785	
165	5825	
151	5755	40MHz
159	5795	

4.3. Test Configurations and Setup

All measurements were performed with the EUT transmitting at continuous transmission with at least 98% duty cycle at the maximum power control level.

All signal types, modulation types and bandwidth modes were evaluated for both conducted and radiated testing:

Table 4.3.1 Configurations and Power Levels Tested For 5.8GHz DTS 20MHz Carrier Bandwidth

Mode	Modulation	Data Rate (Mbps)	N_{ss}	Power Setting for Medium Gain Antenna (dBm)	Power Setting for High Gain Antenna (dBm)
.11a - 2Tx	OFDM/CDD	6	1	18	18
HT20-2Tx-1S	OFDM/CDD	MCS0	1	18	18
HT20-2Tx-2S	OFDM/SM	MCS8	2	18	18

Table 4.3.2 Configurations and Power Levels Tested For 5.8GHz DTS 40MHz Carrier Bandwidth

Mode	Modulation	Data Rate (Mbps)	N_{ss}	Power Setting for Medium Gain Antenna (dBm)	Power Setting for High Gain Antenna (dBm)
HT40-2Tx-1S	OFDM/CDD	MCS0	1	18	18
HT40-2Tx-2S	OFDM/SM	MCS8	2	18	18

Since the power setting is same for both medium gain antenna and high gain antenna, only the EUT with the high gain antenna was evaluated which gives the worst case.

The test setup diagrams are given below as well.

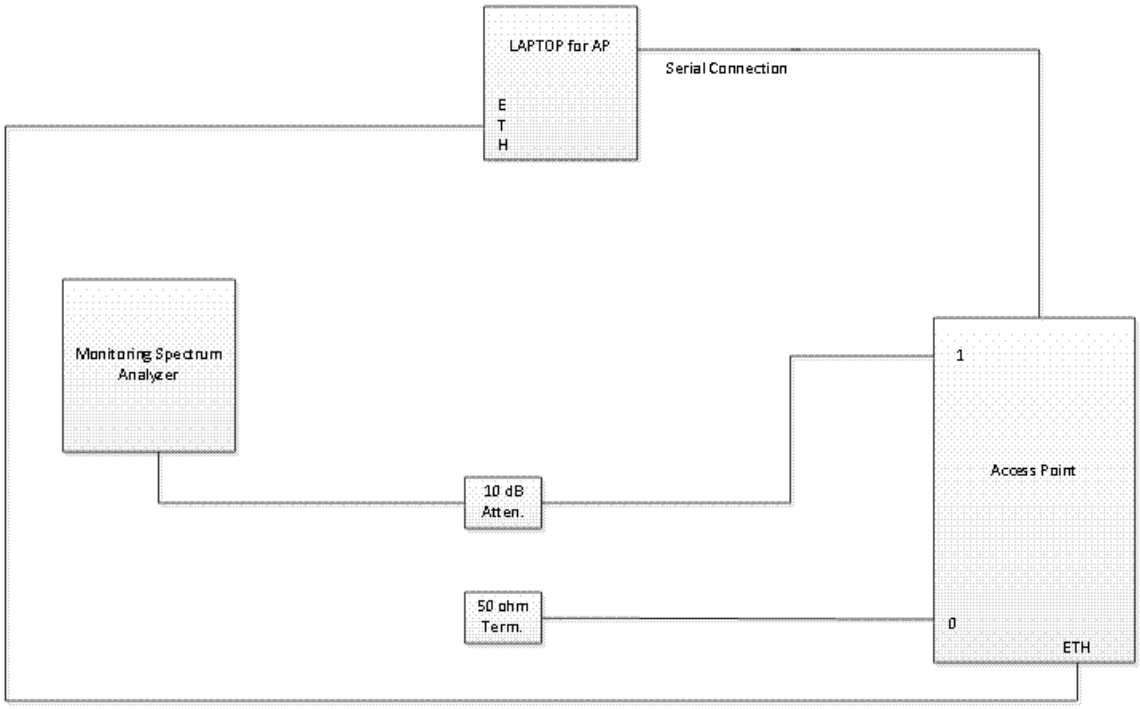


Figure 4.3.1 Setup Diagram of Conducted Test

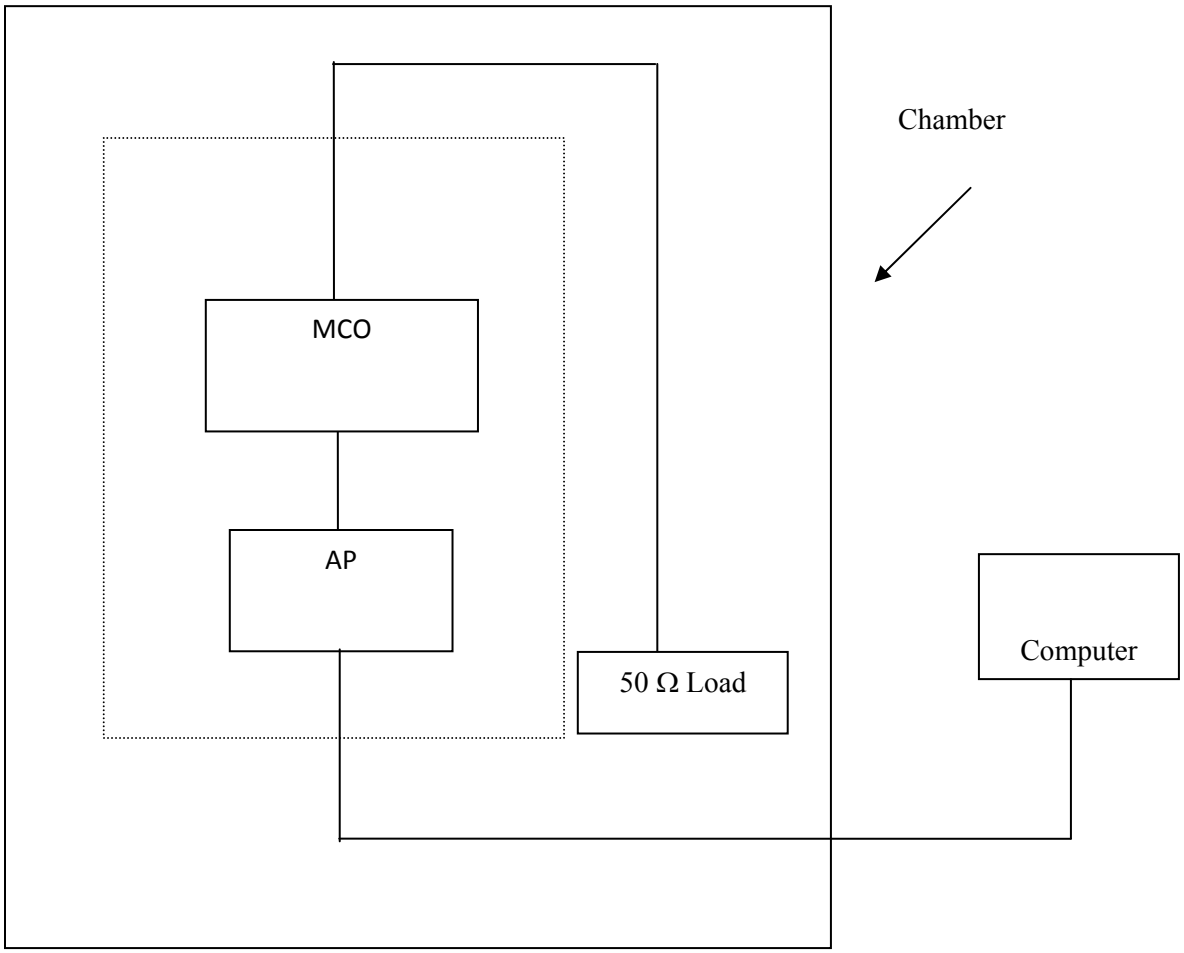


Figure 4.3.3 Setup Diagram of Radiated Test

4.4. MEASUREMENT REQUIRED: OCCUPIED BANDWIDTH – FCC SECTION 15.247 (a)(2)

The 6dB DTS bandwidth was measured at the both antenna ports with the configurations and power levels given in Tables 4.3.1 and 4.3.2 for all channels listed in Table 4.2.2. The measurement follows the procedures given in KDB 558074. The automatic bandwidth measurement function of the spectrum analyzer with the X dB bandwidth mode was utilized with X set to 6 dB, where the resolution bandwidth (RBW) is set to 100kHz and the video bandwidth (VBW) is set to 300kHz, and the peak detector with maximum hold and auto sweep was used.

The limit is minimum 500kHz.

The 6dB DTS bandwidth measured was in the range of 16.36-17.71 MHz for 20MHz carriers and 35.63-36.4 MHz for 40MHz carriers. The measured results are tabluated below. Four plots which have the smallest and widest emissions bandwidth at two ports are provided below.

Table 4.4.1 6dB DTS Bandwidth for 20MHz Carrier

Ch No/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Power /Port (dBm)	Port 1 (MHz)	Port 2 (MHz)
149/5745	.11a - 2Tx	OFDM/CDD	6	18	16.38	16.45
	HT20-2Tx-1S	OFDM/CDD	MCS0		17.20	17.65
	HT20-2Tx-2S	OFDM/SM	MCS8		17.64	17.67
157/5785	.11a - 2Tx	OFDM/CDD	6		16.36	16.43
	HT20-2Tx-1S	OFDM/CDD	MCS0		17.29	17.55
	HT20-2Tx-2S	OFDM/SM	MCS8		17.66	17.62
165/5825	.11a - 2Tx	OFDM/CDD	6		16.38	16.44
	HT20-2Tx-1S	OFDM/CDD	MCS0		17.57	17.37
	HT20-2Tx-2S	OFDM/SM	MCS8		17.66	17.71

Table 4.4.2 6dB DTS Bandwidth for 40MHz Carrier

Ch No (Pri, Sec)/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Power /port (dBm)	Port 1 (MHz)	Port 2 (MHz)
151 (149+, 153-)/ 5755	HT40-2Tx-1S	OFDM/CDD	MCS0	18	35.78	35.77
	HT40-2Tx-2S	OFDM/SM	MCS8	18	35.63	36.11
159 (157+, 161-) /5795	HT40-2Tx-1S	OFDM/CDD	MCS0	18	36.12	36.40
	HT40-2Tx-2S	OFDM/SM	MCS8	18	35.85	35.82

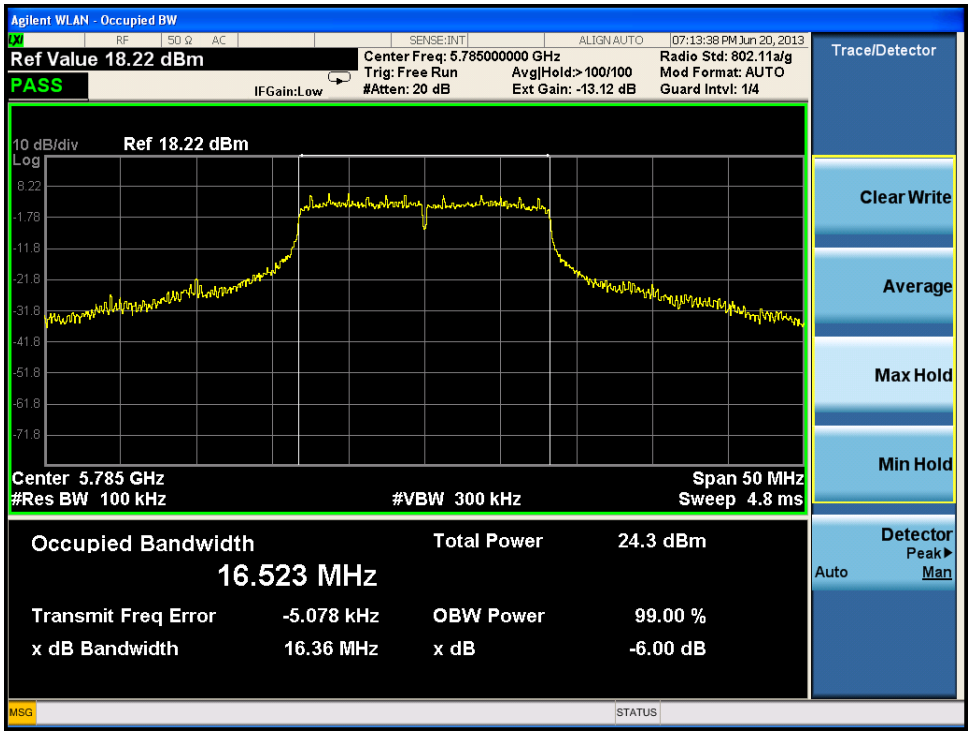


Figure 4.4.1 The Minimum 6dB DTS Bandwidth Measured (16.36MHz) for 802.11a (20 MHz-2TX) Carrier at Ch 157/5785MHz, 18dBm, OFDM/CDD, 6 Mbps, Port 1.

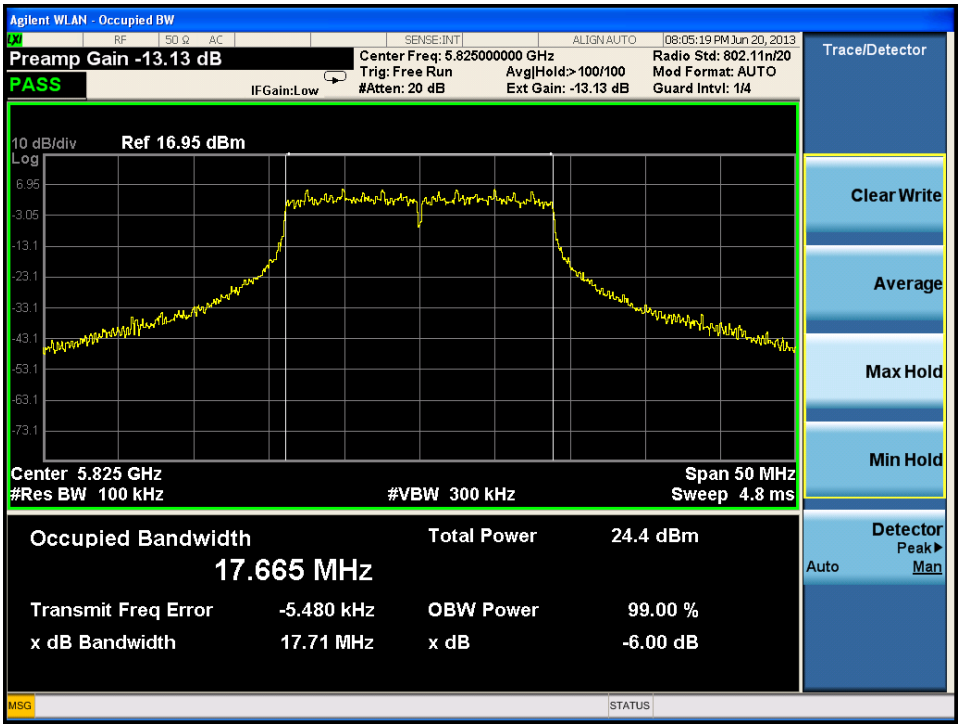


Figure 4.4.2 The Maximum 6dB DTS Bandwidth Measured (17.71MHz) for 802.11n (20MHz-2Tx-2S) Carrier at Ch 165/5825MHz, 18dBm OFDM/SM, MCS8, Port 2.

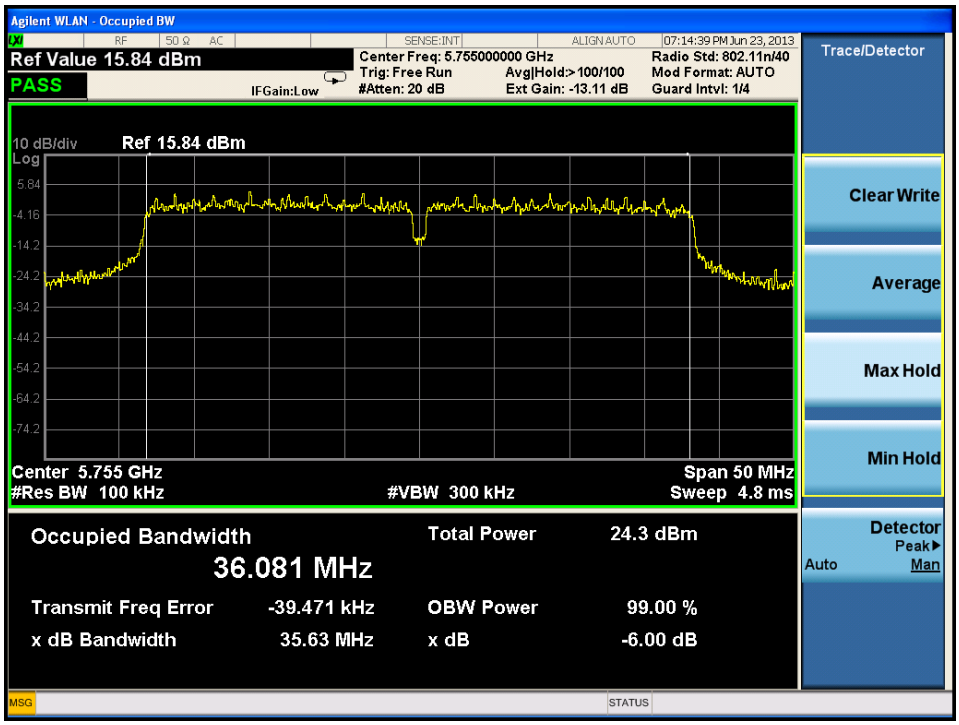


Figure 4.4.3 The Minimum 6dB DTS Bandwidth Measured (35.63MHz) for 802.11n (HT40-2Tx-2S) Carrier at Ch 151/5755MHz, 18dBm, OFDM/SM, MCS8, Port 1.

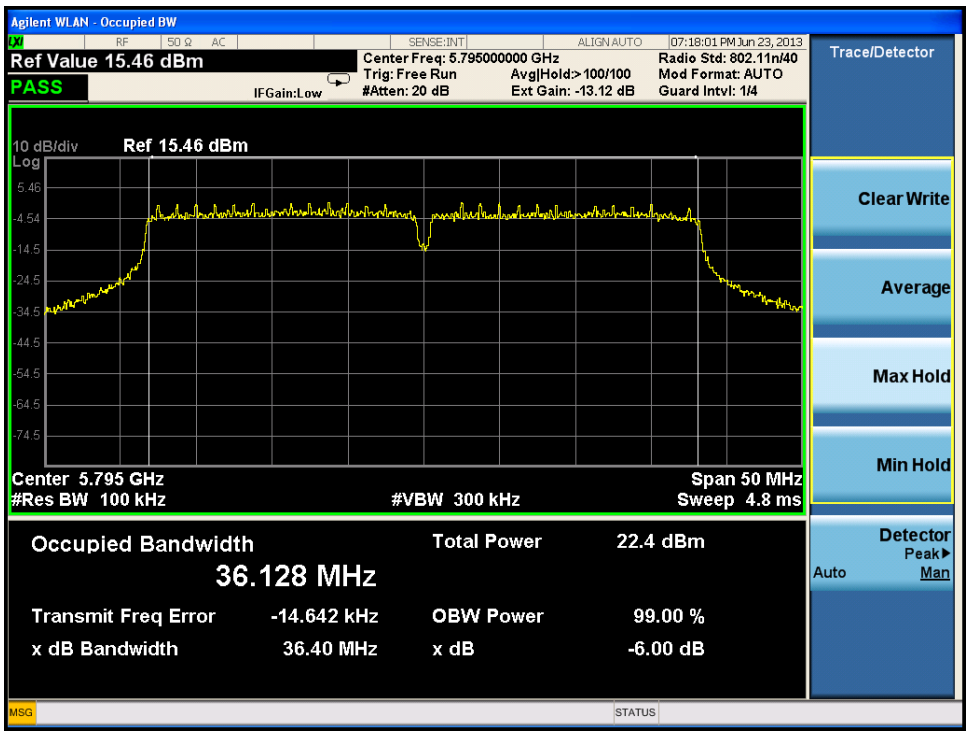


Figure 4.4.4 The Maximum 6dB DTS Bandwidth Measured (36.40MHz) for 802.11n (HT40-2Tx-1S) Carrier at Ch 159/5795MHz, 18dBm, OFDM/CDD, MCS0, Port 2.

Results:

The minimum 6dB DTS bandwidths of the EUT measured at its antenna transmitting terminals across the 5.8GHz DTS band for all operation modes are greater than 500kHz. The results and measurements are in full compliance with the Rules of the Commission.

4.5. MEASUREMENT REQUIRED: MAXIMUM POWER OUTPUT – FCC SECTION 15.247 (b)(3)(4)

The maximum ouput power was measured at the both antenna ports with the configurations and power levels given in Tables 4.3.1 and 4.3.2 for all channels listed in Table 4.2.2. The measurement follows the procedures given in KDB 558074.

The limit is 1W (30dBm) total or 0.5W (27dBm) per port with antenna gain less than 6dBi. The maximum conducted output power shall be reduced by the amount in dB that the antenna gain exceeds 6 dBi.

For multiple antennas with equal transmit power but unequal gains, per KDB 662911 D01 v02, the directional antenna gain of uncorrelated signals is equal to

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G1}{10}}+10^{\frac{G2}{10}}+\cdots+10^{\frac{GN}{10}}}{N_{ANT}}\right] dBi, \qquad \text{and}$$

the direntional antenna gain of correlated signals is equal to

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{G_1/20}+10^{G_2/20}+\ldots..+10^{G_N/20}\right)^2}{N_{ANT}}\right] dBi,$$

where G_1, G_2 ..., G_N are antenna gains.

For the spatial mulplexing (SM) trasnmissions of 802.11n MCS8-15, the EUT operates with two uncorrelated spatial data streams on two transmitting ports. Therefore the Array Gain 10 *log* (N_{ANT}/N_{SS}) = 0 in calculating the directional antenna gain.

For Cyclic Delay Diversity (CDD) transmissions, per KDB 662911 D01 v02 for 802.11 devices, the directional antenna gain may be calculated by using either of the following methods:

i. Directional Gain = Max{ G_1, G_2 ..., G_N} + Array Gain
   a. For power measurements, Array Gain = 0 if $N_{ANT} \leq 4$;
   b. For power sepctrum density (PSD) measurement, Array Gain = 10 *log* (N_{ANT}/N_{SS}) dB, where N_{ss} is number of spatial streams and N_{ss} = 1 was suggested by the FCC for calculating the worst directional gain.

ii. Calculate the directional gain by using the formula for correlated signals provided above.

For the power limit, the directional antenna gain for CDD set equal to the gain of the antenna having the highest gain and the directional antenna gain for SM was calculated by using the equation above for uncorrelated signals. The calculated limits for the combined maximum transmitting power and PSD are tabulated below.

Table 4.5.1. Maximum Total Transmitting Power and PSD Limits at Antenna Ports for 5.8GHz DTS High Gain Antennas

Mode	Modulation	Data Rate (Mbps)	N_{ss}	Directional Gain for Spectral Density (dBi)	Directional Gain for Total Power (dBi)	Total SD (dBm/3kHz)	Total Power (dBm)
.11a - 2Tx	OFDM/CDD	6	1	11.05	8.24	2.95	27.76
HT20-2Tx-1S	OFDM/CDD	MCS0	1	11.05	8.24	2.95	27.76
HT20-2Tx-2S	OFDM/SM	MCS8	2	8.04	8.04	5.96	27.96
HT40-2Tx-1S	OFDM/CDD	MCS0	1	11.05	8.24	2.95	27.76
HT40-2Tx-2S	OFDM/SM	MCS8	2	8.04	8.04	5.96	27.96

Per KDB guidance, the Maximum Peak Conducted Output Power will be measured with Peak detector and Maximum Hold with DTS Bandwidth (6dB BW). The Maximum Conducted Average Output Power will be measured with Average Detector and with EBW (26dB BW). FCC Section 15.247(b)(3) permits the maximum (average) conducted output power to be measured as an alternative to the maximum peak conducted output power for demonstrating compliance to the limit.

In this testing, the maximum peak conducted output power was measured and reported. The output power was first verified by a Power Meter and then measured by a spectrum analyzer. The RBW and VBW were set to 1MHz and 3MHz, respectively. The peak detector and maximum hold were used.

The output power was calculated by integrating the spectrum across the 6 dB DTS BW of the carrier using the SA's band power measurement function with band limits set equal to the 6dB BW band edges. The total combined output power is calculated by summing the measured output power in mW at the various antenna ports.

The maximum total output peak conducted power measured among all operation modes supported was 27.53dBm for 20MHz carriers and 27.22Bm for 40MHz carriers. Since the power setting for both medium gain antenna and high gain antenna is same, the conducted power limits for the high gain antenna is lower than for the medium gain antenna. Therefore, the maximum total output peak conducted power measured are below the FCC required maximum limits for both high gain antenna and medium gain antenna.

The measurement results and four typical plots which have maximum ouput power among them for both 20MHz carrier and 40MHz carrier are provided here.

Table 4.5.2 Maximum Peak Combined RF Power Output at Antenna Ports for 5.8GHz ISM 20MHz Carrier

Ch No/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Total Power Limit for HG Antenna (dBm)	Total Maximum Peak Power (dBm)
149/5745	.11a - 2Tx	OFDM/CDD	6	27.76	27.33
	HT20-2Tx-1S	OFDM/CDD	MCS0	27.76	27.03
	HT20-2Tx-2S	OFDM/SM	MCS8	27.96	27.43
157/5785	.11a - 2Tx	OFDM/CDD	6	27.76	27.13
	HT20-2Tx-1S	OFDM/CDD	MCS0	27.76	27.13
	HT20-2Tx-2S	OFDM/SM	MCS8	27.96	27.53
165/5825	.11a - 2Tx	OFDM/CDD	6	27.76	27.15
	HT20-2Tx-1S	OFDM/CDD	MCS0	27.76	27.00
	HT20-2Tx-2S	OFDM/SM	MCS8	27.96	27.45

Table 4.5.3 Maximum Peak Combined RF Power Output at Antenna Ports for 5.8GHz ISM 40MHz Carrier

Ch No/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Total Power Limit (dBm)	Total Power (dBm)
151/5755	HT40-2Tx-1S	OFDM/CDD	MCS0	27.76	26.52
	HT40-2Tx-2S	OFDM/SM	MCS8	27.96	26.99
159/5795	HT40-2Tx-1S	OFDM/CDD	MCS0	27.76	27.22
	HT40-2Tx-2S	OFDM/SM	MCS8	27.96	27.17

Figure 4.5.1 The Peak Output Power Measured for 802.11n (20MHz-2Tx-2S) Carrier at Channel 157/5785MHz, 18dBm Setting (Both High and Medium Gain Antenna), OFDM/SM, MCS8, Port 1.

Figure 4.5.2 The Peak Output Power Measured for 802.11n (20MHz-2Tx-2S) Carrier at Channel 157/5785MHz, 18dBm Setting (Both High and Medium Gain Antenna), OFDM/SM, MCS8, Port 2.

Figure 4.5.3 The Peak Output Power Measured for 802.11n (40MHz-2Tx-1S) Carrier at Channel 159/5795MHz, 18dBm Setting (Both High and Medium Gain Antenna), OFDM/CNN, MCS0, Port 1.

Figure 4.5.4 The Peak Output Power Measured for 802.11n (40MHz-2Tx-1S) Carrier at Channel 159/5795MHz, 18dBm Setting (Both High and Medium Gain Antenna), OFDM/CNN, MCS0, Port 2.

Results:

The maximum combined peak RF power outputs of the EUT at its antenna transmitting terminals across the 5.8GHz ISM band for all operation modes and both high gain antenna and medium gain antenna are all below FCC required limits and are in full compliance with the Rules of the Commission.

4.6. MEASUREMENT REQUIRED: PEAK POWER SPECTRUM DENSITY – FCC SECTION 15.247 (e)

The peak power spectrum density (PPSD) measures the maximum value of the time average of the PSD measured during a period of continuous transmission.

The PPSD must be less than 8 dBm in any 3 kHz band segment within the DTS bandwidth during any time interval of continuous transmission. The peak conducted PSD shall be reduced by the amount in dB that the antenna gain exceeds 6 dBi.

Per KDB guidance, the same method as used to determine the conducted output power shall be used to determine the power spectral density (*i.e.,* if maximum peak conducted output power was measured then the peak PSD procedure shall be used and if maximum conducted output power was measured then the average PSD procedure shall be used).

The PSD was measured at the antenna terminal with the configurations and power levels given in Tables 4.3.1 and 4.3.2 for all channels listed in Table 4.2.2. The measurement follows the procedures given in KDB 558074.

For the PSD limit, the directional antenna gain for CDD was calculated by using the equation given in Section 4.5 for correlated signals and the directional antenna gain for SM was calculated by using the equation given in Section 4.5 for uncorrelated signals. The PSD limits calculated for high gain antenna are given in Table 4.5.1, which are lower than that of the PSD limits for medium gain antenna.

The PSD was measured by a spectrum analyzer. The RBW and VBW were set to 3kHz and 9kHz, respectively. The peak detector and max hold were used. The PPSD can be found by using the peak search function on the instrument to find the peak of the spectrum. The total combined PSD is calculated by summing the measured output power in mW/3kHz at the port 1 measured with 3dB to account for the two ports.

The total PPSD measured among all operation modes supported was -4.69 dBm/3kHz for 20MHz carriers and -8.25 dBm/kHz for 40MHz carriers. They are all below the FCC required limits.

The measurement results are given below. The PPSD plot which have the smallest margin among both 20MHz carriers and 40MHz carriers is provided in Figures 4.6.1.

Table 4.6.1 PPSD at Antenna Ports for 5.8GHz ISM 20MHz Carrier

Ch No/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Total PPSD Limit for HG Antenna (dBm/3kHz)	Total PPSD (dBm/3kHz)
149/5745	.11a - 2Tx	OFDM/CDD	6	2.95	-5.80
	HT20-2Tx-1S	OFDM/CDD	MCS0	2.95	-5.81
	HT20-2Tx-2S	OFDM/SM	MCS8	5.96	-5.96
157/5785	.11a - 2Tx	OFDM/CDD	6	2.95	-6.33
	HT20-2Tx-1S	OFDM/CDD	MCS0	2.95	-6.09
	HT20-2Tx-2S	OFDM/SM	MCS8	5.96	-6.39
165/5825	.11a - 2Tx	OFDM/CDD	6	2.95	-5.54
	HT20-2Tx-1S	OFDM/CDD	MCS0	2.95	-4.69
	HT20-2Tx-2S	OFDM/SM	MCS8	5.96	-6.68

Table 4.6.2 PPSD at Antenna Ports for 5.8GHz ISM 40MHz Carrier

Ch No/ Freq (MHz)	Mode	Modulation	Data Rate (Mbps)	Total PPSD Limit for HG Antenna (dBm/3kHz)	Total PPSD (dBm/3kHz)
151 /5755	HT40-2Tx-1S	OFDM/CDD	MCS0	2.95	-8.78
	HT40-2Tx-2S	OFDM/SM	MCS8	5.96	-8.65
159/5795	HT40-2Tx-1S	OFDM/CDD	MCS0	2.95	-8.25
	HT40-2Tx-2S	OFDM/SM	MCS8	5.96	-9.53

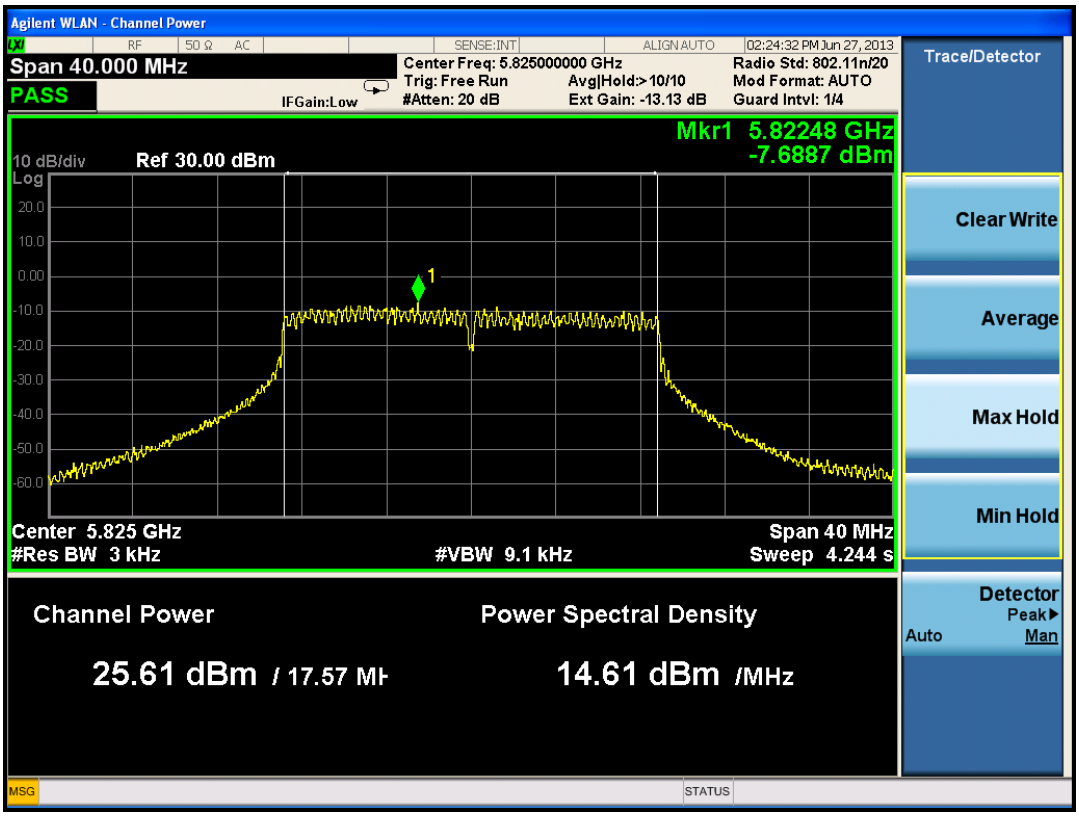


Figure 4.6.1 The PPSD Measured (-7.69dBm/3kHz) for 802.11n (20MHz-2Tx-1S) Carrier at Channel 165/5825MHz, 18dBm Setting (Both Medium Gain and High Gain Antenna), OFDM/CDD, MCS0, Port 1.

Results:

The PPSD of the EUT at its antenna transmitting terminal across the 5.8GHz ISM band for all operation modes are below the FCC required limits for both high and medium gain antennas and are in full compliance with the Rules of the Commission.

4.7. MEASUREMENT REQUIRED: UNWANTED OUT-OF-BAND EMISSIONS IN NON-RESTRICTED BAND CONDUCTED – FCC SECTION 15.247 (d)

Per FCC Section 15.247(d) (see Section 4.1), the out-of-band emissions in the non-restricted band must be 20dBc/100kHz below the maximum in-band peak PSD if the maximum peak conducted output power is used or 30dBc/100kHz below the maximum in-band average PSD if the maximum average conducted output power is used.

The out-of-band emissions were measured per the measurement procedures provided by KDB guidance.

The maximum in-band peak PSD was measured first as the reference level, where RBW = 100 kHz, VBW = 300 kHz, span = 1.5 x DTS channel bandwidth and peak detector with max hold were used. The maximum in-band PSD was determined by the peak search function. Then the limit line is 20dB below the maximum in-band peak PSD value. The out-of-band emissions were measured with the same setting. The emissions near the band edges (5725MHz or 5850MHz) were zoomed in to ensure their compliance. If the standard approach fails, then use the marker-delta method or integration method specified in the KDB to remeasure the emissions near the band edges.

The peak out-of-band emissions were measured at the antenna port 1 with the configurations and power levels given in Tables 4.3.1 and 4.3.2 for the lowest and highest available channels listed in Table 4.2.2.

For both 20MHz and 40 MHz carriers, the minimum margin for the out-of-band emissions away from band edges is more than 20dB. Therefore, there exist no reportable data for the out-of-band emissions away from band edges. The out-of-band emissions near the band edges (5725MHz and 5850MHz) with the minimum margins for 20MHz and 40MHz carriers are provided below.

Figure 4.7.1 The Worst Peak Out-of-Band Emissions Near Band Edge for 20MHz Carriers, 802.11n (20MHz-2Tx-1S) Carrier at Channel 149/5745MHz, 18dBm Setting (both Medium Gain and High Gain Antenna), OFDM/CDD, MCS0, Port 1.

Figure 4.7.2 The Worst Out-of-Band Emissions Near Band Edge for 40MHz Carriers, 802.11n (40MHz-2Tx-1S) Carrier at Channel 151/5755MHz, 18dBm Setting (Both Medium Gain and High Gain Antenna), OFDM/CDD, MCS0, Port 1.

Results:

The peak out-of-band emissions in the non-restricted band of the EUT at its antenna transmitting terminal for all operation modes are below the FCC required limits for both high and medium gain antennas and are in full compliance with the Rules of the Commission.

4.8. MEASUREMENT REQUIRED: UNWANTED RADIATED EMISSIONS – FCC SECTION 15.247 (d)

The FCC requirements specified in 15.247(d) are provided in Section 4.1(IV), where FCC states that the attenuation of unwanted emissions below the general emission limits in 15.209(a) is not required and the radiated emissions must be in compliance with the general field strength limits set forth in 15.209(a) in the restricted bands 15.205(a, b, c).

The spurious emissions in 15.205 (a) restricted bands must meet 15.209 (a) limits which are given in Table 4.8.1. The restricted bands of operation given in 15.205(a) are provided in Table 4.8.2.

Table 4.8.1. FCC 15.209 Radiated Emissions Limits

Frequency (MHz)	Field Stength at 3m (dB uV/m)		RBW (kHz)	Detector
	FCC 15.109 Class B	FCC 15.209		
10 - 30		49.5	9	QP
30 - 88	40	40	120	QP
88 - 216	43.5	43.5		
216 - 230	46	46		
230 - 960	46	46		
960 - 1000	54	54		
1000 - 3000	54	54	1000	Ave.
	74	74		Peak
> 3000 - 5 f_c	54	54	1000	Ave.
	74	74		Peak
5 f_c - 10 f_c / 40GHz		54	1000	Ave.
		74		Peak

Table 4.8.2 FCC 15.205 Restricted Bands of Operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

Since the 9764 MCO Wi-Fi AP module is an optional component attached to a 9764 MCO Outdoor in public places for high-density hotspots, both 9764 MCO Wi-Fi AP (EUT) and the MCO were evaluated together for radiated emissions. The 9764 Wi-Fi AP was installed on the bottom of the Alcatel-Lucent 1900 LTE -48VDC Metro Cell Metro Dock (Gigabit Ethernet) which represents the worst case scenario for radiated emissions in real deployment. The Metro Cell was transmitting a 5MHz LTE carrier at A Block Ch50 1932.5MHz. The EUT with high gain antennas equipped, which gave the worst case, transmitted at both ports in the 5.8GHz ISM band with the configurations and power levels given in Tables 4.3.1 and 4.3.2 for all lower and upper edge channels listed in Table 4.2.2. When measuring the emissions in the restricted bands, the nominal carrier frequency was adjusted as close to the upper and lower frequency block edges as the design of the equipment permits. The lowest oscillator frequency in the AP is 25MHz. The emissions were investigated from 25MHz to 40GHz per FCC Sections 15.205 and 15.209. The recommendations of ANSI C63.4–2003 were followed for EUT testing setup and cabling. The measurement guidance given in KDB 558074 was followed.

The test setup diagram is given in Section 4.3.

The radiated spurious emissions were measured with both 2.4GHz ISM and 5.8 GHz ISM carriers transmitting simultaneously. In each band (5.8GHz ISM band or 2.4GHz ISM band), two carriers were transmitting in MIMO (Multiple Input Multiple Output). The compliance for the restricted bands near the transmitting band was closely examined with the carriers placed near to that band edge as well. The compliance of radiated emissions with FCC Sections 15.205, 15.209 and 15.109 have been demonstrated in the original filing for 5.8GHz UNII-3 band (5725-5825MHz) with the EUT equipped high gain antenna and transmitting at 18dBm. Therefore, only the emissions from the carrier at 165/5825MHz were closely examined here.

The FCC 15.109 Class B limits are identical to the 15.209 limits between 30MHz and 30GHz. The radiated emissions measured in the restricted bands for all operation modes and carrier bandwidths were all below 15.109 and 15.209 limits. The worst case plot, where the minimum margin from the MCO Wi-Fi AP operating in 5.8GHz ISM is 0.55dB at 40GHz, is provided in Figure 4.8.1.

Therefore, the MCO Wi-Fi AP is in compliance with both 15.247 (d) requirements for intentional radiators and the 15.109 Class B requirements for unintentional radiators.

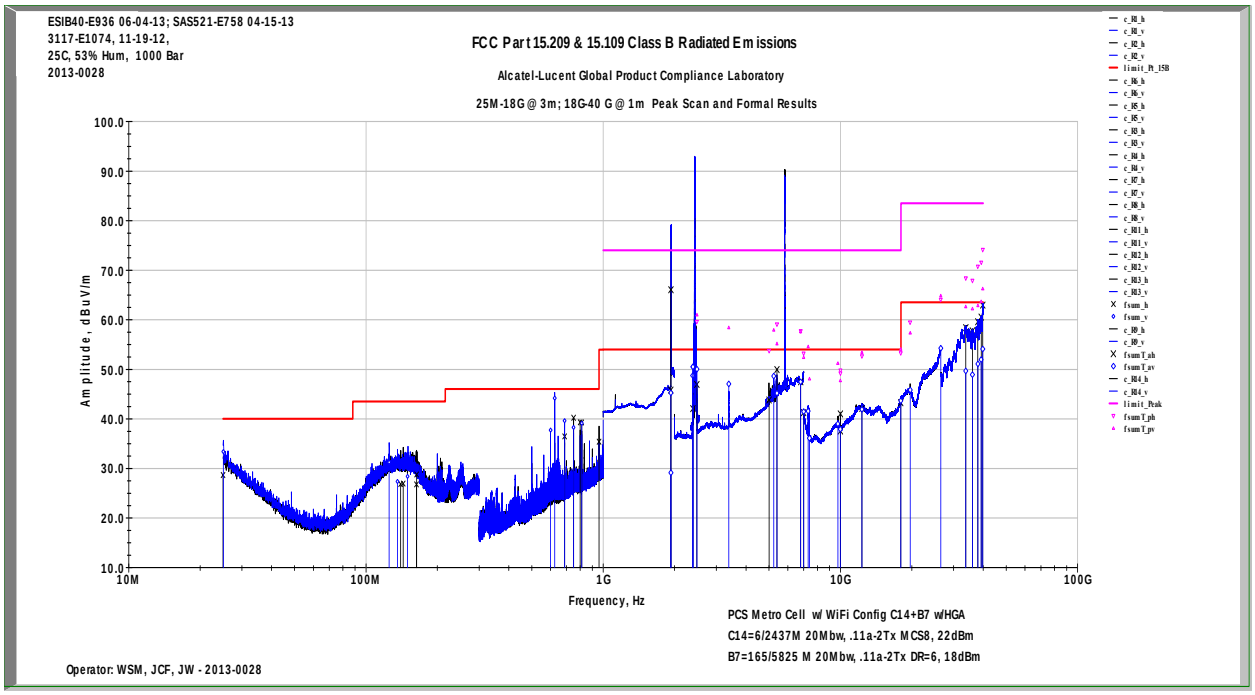


Figure 4.8.1 The Radiated Emissions Measured with Peak and Quasi-Peak/Average Values from 25MHz to 40GHz for 802.11a (20MHz-2Tx) Carrier at Channel 165/5825MHz, 18dBm, OFDM/CDD, High Gain Antennas, 6Mbps, against FCC Part 15.209 and 15.109 Class B Limits.

5. LIST OF TEST EQUIPMENT

Table 5.1 List of Test Equipment Used

Equipment	Manufacturer	Model	Serial #	Last Cal Date	Cal Cycle
MXA Signal Analyzer (20Hz-26.5GHz)	Agilent	N9020A	MY48011791	9/14/2012	15 mos
Power Supply (0-150V, 0-3.5A)	Kepco	JQE 0-150V 0-3.5A	H90565		
10 dB Attenuator (DC – 18 GHz)	N/A-CCM	6193-10	2082	N/A	N/A
RF Power Meter	Hewlett Packard	437B	3110A03795	6/12/2013	12 mos
RF Power Meter	Agilent	N1912A-P	E949	1/2/2013	12 mos
Power Sensor (0.05-18 GHz Wideband)	Agilent	N1912A	E950	1/30/2013	12 mos
EMC Receiver / SA	Rohde & Schwarz	ESIB-40	E906 / 100101	6/4/2013	12 mos
Code Domain Analyzer	Agilent	E4440A PSA	E1055	5/9/2013	24 mos
6 dB Attenuator (DC-18GHz, 5 Watt)	Weinschel	2-6dB	E890	6/5/2013	12 mos
Preamplifier (1-26.5 GHz, 30dB)	Hewlett Packard	8449B	E377	7/26/2013	12 mos
Preamplifier (26.5-40 GHz, 30dB)	MiTek	JS4-26004000-27-10P	1814238	5/29/2013	12 mos
EMI Test Receiver (20Hz to 40 GHz)	Rohde & Schwarz	ESIB40	E936	6/4/2013	12 mos
Double-Ridged Horn (1-18 GHz)	ETS Lindgren	3117	E1074	11/19/2012	24 mos
Double-Ridged Horn (18-26.5 GHz)	ETS Lindgren	3116	E520	12/26/2012	24 mos
Standard Horn (26.5-40GHz)	A.H. Systems	SAS-200/573	82-11300580 E526	5/29/2013	24 mos
Bilogical Antenna (25-2000MHz)	A.H. Systems	SAS-521-2	E758	4/15/2013	24 mos
High Pass Filter (1.99-20GHz)	Trilithic	18050-1.8-KK	E989PCS HPF-12	5/15/2013	12 mos
High Pass Filter (2.85-18GHz)	Trilithic	5HC2850/18050-1.8-KK	E988/PCS-HPF-11	8/6/2013	12 mos
High Pass Filter 84300-80039	Hewlett Packard	HPF 8.2GHz	R9812-009	8/6/2013	12 mos
Low Pass Filter (10MHz-2GHz)	Trilithic	10LC1790-3-AA	E980PCS LPF-12	5/15/2013	12 mos
Directional Coupler (2-18GHz)	Hewlett Packard	HP 772D	772D	5/15/2013	12 mos

6 dB Attenuator (DC-18GHz, 5W)	Weinschel		E890	6/5/2013	12 mos
10 dB Attenuator	JFW	50F-010	SG 1	N/A	N/A
2 Attenuators (10W, 10dB)	Radiall	R415.710.000	N/A	N/A	N/A
Attenuator (10dB)	Radiall	R412710000	9812	N/A	N/A
Attenuator (10dB)	Radiall	R412710000	9825	N/A	N/A
EMC Receiver / SA	Rohde & Schwarz	ESIB-40	E907 / 100101	9/20/2013	12 mos
LISN 50µH 0.25 µF	Solar Electronics	9348-50-R-24-BNC	E589/018809	2/26/2013	12 mos
Attenuator, Variable, DC-18 GHz	Hewlett Packard	HP 8494B	MY42140028	N/A	N/A
Attenuator, Variable, DC-18 GHz	Hewlett Packard	HP 8495B	MY42140034	N/A	N/A
Attenuator, Fixed, 25W	MCE/Weinschel	6530-6-34 LIM	BN3226	N/A	N/A
High Pass Filter	Solar Electronics	7801-10	SM1	N/A	N/A

6. FACILITIES AND ACCREDEIATION

All measurement facilities used to collect the measurement data under normal condition are located at 600-700 Mountain Avenue, Murray Hill, New Jersey 07974-0636 USA. The field strength measurements of radiated spurious emissions are made in a FCC and IC registered 10 meter semi-anechoic chamber AR8 (FCC Site Registration Number: 328881, IC Filing Number: 6933F-8). The sites were constructed and are continuously in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.