FCC Test Report

Product Name ： Dual-band Wireless Range Extender

Trade Name ： ASUS

Model No. ： RP-AC68U

FCC ID. ： MSQ-RP0S01

Applicant ： ASUSTeK COMPUTER INC.

Address ： 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt ： Jan. 30, 2016

Issued Date ： Apr. 06, 2016

Report No. ： 1620106R-RFUSP57V00-B

Report Version ： V1.0

Testing Laboratory
3024

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date: Apr. 06, 2016
Report No. : 1620106R-RFUSP57V00-B

Product Name	:	Dual-band Wireless Range Extender
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer	:	(1) ASKEY COMPUTER CORPORATION
		(2) ASKEY TECHNOLOGY (JIANG SU) LTD.
Model No.	:	RP-AC68U
FCC ID.	:	MSQ-RP0S01
EUT Voltage	:	AC 100-240V, 50-60Hz
Testing Voltage	:	AC 120V/60Hz
Trade Name	:	ASUS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2014
		ANSI C63.10: 2013
Test Lab	:	QuieTek Hsin Chu Laboratory
Test Result	:	Complied

The test results relate only to the samples tested.
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Documented By : Carol Tsai

(Carol Tsai / Senior Engineering Adm. Specialist)

Tested By : JuBo Shen

(JuBo Shen / Senior Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1560497R-RFUSP39V00	V1.0	Initial issue of report	Sep. 24, 2015
1560497R-RFUSP39V00-A	V1.0	Add two Level 6's adapter (AD890326 and ADP-33AW). Add the test data of conducted and radiated emission (under 1GHz).	Nov. 19, 2015
1620106R-RFUSP57V00-B	V1.0	Update WLAN 5G band 4 standard to FCC 15.407. The 2.4G test data, please refer to the 1560497R-RFUSP39V00-A.	Apr. 06, 2016

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 3024**
USA	**:**	**FCC, Registration Number: 365520**
Canada	**:**	**IC, Submission No: 181665 / IC Registration Number: 4075C-4**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:http://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

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1. General Information

1.1. EUT Description

Product Name	Dual-band Wireless Range Extender	
Product Type	WLAN (3TX, 4RX)	
Trade Name	ASUS	
Model No.	RP-AC68U	
Frequency Range/ Channel Number	IEEE 802.11a/ IEEE 802.11n (20MHz)	5745~5825MHz / 5 Channels
	IEEE 802.11n (40MHz)	5755~5795MHz / 2 Channels
	IEEE 802.11ac (80MHz)	5775~5775MHz / 1 Channel
Type of Modulation	IEEE 802.11a/n/ac	Orthogonal Frequency Division Multiplexing
Data Speed	IEEE 802.11a	6Mbps,9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS 23 and bandwidth defined in 802.11n
	IEEE 802.11ac	Support a subset of the combination of GI, MCS 0~MCS 9 and bandwidth defined in 802.11ac
Antenna Gain	Rx (chain A) 120 mm : 5 G: 6.23 dBi Tx/Rx Ant0 (chain B) 225 mm : 4.6 dBi Tx/Rx Ant1 (chain C) 235 mm : 4.45 dBi Tx/Rx Ant2 (chain D) 290 mm : 3.56 dBi	
Antenna Type	Dipole antenna	

Component	
LAN Cable	Non-Shielded, 1.8m
Power Adapter	PIE, AD890326 I/P: 100-240V~ 50/60Hz 0.8A O/P : 19V ⎓ 1.75A Cable Out: Non-Shielded, 1.8m
Power Adapter (Level 6)	PIE, AD890326 I/P: 100-240V~ 50/60Hz 0.8A O/P : 19V ⎓ 1.75A Cable Out: Non-Shielded, 1.8m
Power Adapter	Delta, ADP-33AW I/P: 100-240V~1A 50-60Hz O/P : 19V ⎓ 1.75A Cable Out: Non-Shielded, 1.8m
Power Adapter (Level 6)	Delta, ADP-33AW I/P: 100-240V~1A 50-60Hz O/P : 19V ⎓ 1.75A Cable Out: Non-Shielded, 1.8m

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX			RX		
Mode/ Channel Bandwidth	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
IEEE802.11a	✓			✓		
IEEE802.11n	✓	✓		✓	✓	
IEEE802.11ac	✓	✓	✓	✓	✓	✓

3TX / 4RX

IEEE 802.11n

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
								800ns GI		400ns GI	
				20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0
1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0
2	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0
3	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0
4	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0
5	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0
6	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0
7	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 1 – MCS parameters for TX Antenna number = 1

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
								800ns GI		400ns GI	
				20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
8	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.4	30.0
9	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.9	60.0
10	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.3	90.0
11	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.8	120.0
12	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.7	180.0
13	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.6	240.0
14	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.0	270.0
15	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.4	300.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 2 – MCS parameters for TX Antenna number = 2

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
								800ns GI		400ns GI	
				20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
16	BPSK	1/2	1	156	324	78	162	19.5	40.5	21.7	45.0
17	QPSK	1/2	2	312	648	156	324	39.0	81.0	43.3	90.0
18	QPSK	3/4	2	312	648	234	486	58.5	121.5	65.0	135.0
19	16-QAM	1/2	4	624	1296	312	648	78.0	162.0	86.7	180.0
20	16-QAM	3/4	4	624	1296	468	972	117.0	243.0	130.0	270.0
21	64-QAM	2/3	6	936	1944	624	1296	156.0	324.0	173.3	360.0
22	64-QAM	3/4	6	936	1944	702	1458	175.5	364.5	195.0	405.0
23	64-QAM	5/6	6	936	1944	780	1620	195.0	405.0	216.7	450.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 3 – MCS parameters for TX Antenna number = 3

Symbol	Explanation
R	Code rate
N_{BPSC}	Number of coded bits per single carrier
N_{CBPS}	Number of coded bits per symbol
N_{DBPS}	Number of data bits per symbol
GI	guard interval

IEEE 802.11ac Data Rate

Spatial Streams (Note1)	MCS Index	Modulation type	Coding rate	Data Rate(Mb/s)							
				20 MHz		40 MHz		80 MHz		160 MHz	
				Guard Interval		Guard Interval		Guard Interval		Guard Interval	
				800ns	400ns	800ns	400ns	800ns	400ns	800ns	400ns
1	0	BPSK	1/2	6.5	7.2	13.5	15	29.3	32.5	58.5	65
	1	QPSK	1/2	13	14.4	27	30	58.5	65	117	130
	2	QPSK	3/4	19.5	21.7	40.5	45	87.8	97.5	175.5	195
	3	16-QAM	1/2	26	28.9	54	60	117	130	234	260
	4	16-QAM	3/4	39	43.3	81	90	175.5	195	351	390
	5	64-QAM	2/3	52	57.8	108	120	234	260	468	520
	6	64-QAM	3/4	58.5	65	121.5	135	263.3	292.5	526.5	585
	7	64-QAM	5/6	65	72.2	135	150	292.5	325	585	650
	8	256-QAM	3/4	78	86.7	162	180	351	390	702	780
	9	256-QAM	5/6	N/A	N/A	180	200	390	433.3	780	866.7
2	0	BPSK	1/2	13	14.4	27	30	58.6	65	117	130
	1	QPSK	1/2	26	28.8	54	60	117	130	234	260
	2	QPSK	3/4	39	43.4	81	90	175.6	195	351	390
	3	16-QAM	1/2	52	57.8	108	120	234	260	468	520
	4	16-QAM	3/4	78	86.6	162	180	351	390	702	780
	5	64-QAM	2/3	104	115.6	216	240	468	520	936	1040
	6	64-QAM	3/4	117	130	243	270	526.6	585	1053	1170
	7	64-QAM	5/6	130	144.4	270	300	585	650	1170	1300
	8	256-QAM	3/4	156	173.4	324	360	702	780	1404	1560
	9	256-QAM	5/6	N/A	N/A	360	400	780	866.6	1560	1733.4
3	0	BPSK	1/2	19.5	21.6	40.5	45	87.9	97.5	175.5	195
	1	QPSK	1/2	39	43.2	81	90	175.5	195	351	390
	2	QPSK	3/4	58.5	65.1	121.5	135	263.4	292.5	526.5	585
	3	16-QAM	1/2	78	86.7	162	180	351	390	702	780
	4	16-QAM	3/4	117	129.9	243	270	526.5	585	1053	1170
	5	64-QAM	2/3	156	173.4	324	360	702	780	1404	1560
	6	64-QAM	3/4	175.5	195	364.5	405	789.9	877.5	1579.5	1755
	7	64-QAM	5/6	195	216.6	405	450	877.5	975	1755	1950
	8	256-QAM	3/4	234	260.1	486	540	1053	1170	2106	2340
	9	256-QAM	5/6	N/A	N/A	540	600	1170	1299.9	2340	2600.1

IEEE 802.11a & IEEE 802.11n (20MHz) & IEEE 802.11ac (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz						

IEEE 802.11n (40MHz) & IEEE 802.11ac (40MHz)

Working Frequency of Each Channel			
Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

IEEE 802.11ac (80MHz)

Working Frequency of Each Channel	
Channel	Frequency
155	5775 MHz

Note:

1. This device is a Dual-band Wireless Range Extender including 2.4GHz b/g/n (3x4) and 5GHz a/n/ac (3x4) transmitting and receiving function.
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart E Paragraph 15.407.
3. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. The function of the 2.4GHz & 5.2GHz transmitting is measured and makes a test report of the report number: 1560497R-RFUSP39V00-A and 1560497R-RFUSP56V00-A.
5. This device has USB and Ethernet ports, which can be connected to computer. It is a Class B personal computer and peripheral. Its test report number is 1560497R-RFUSP01V00-A.

1.2. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit_CDD Mode_AD890326 Mode 2: Transmit_Beamforming Mode_AD890326 Mode 3: Transmit_ADP-33AW Mode 4: Transmit_AD890326 (Level 6) Mode 5: Transmit_ADP-33AW (Level 6)

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	11ac(80MHz)	155	0+1+2	N/A
99 % & 26dB Bandwidth	11a	149/ 157/ 165	0/1/2	N/A
	11n(20MHz)	149/ 157/ 165	0/1/2	N/A
	11n(40MHz)	151/ 159	0/1/2	N/A
	11ac(80MHz)	155	0/1/2	N/A
Peak Transmit Output	11a	149/ 157/ 165	0+1+2	N/A
	11n(20MHz)	149/ 157/ 165	0+1+2	N/A
	11n(40MHz)	151/ 159	0+1+2	N/A
	11ac(80MHz)	155	0+1+2	N/A
Peak Power Spectrum Density	11a	149/ 157/ 165	0+1+2	Complies
	11n(20MHz)	149/ 157/ 165	0+1+2	Complies
	11n(40MHz)	151/ 159	0+1+2	Complies
	11ac(80MHz)	155	0+1+2	Complies

Test Items	Modulation	Channel	Antenna	Result
Radiated Emission	11a	149/ 157/ 165	0+1+2	N/A
	11n(20MHz)	149/ 157/ 165	0+1+2	N/A
	11n(40MHz)	151/ 159	0+1+2	N/A
	11ac(80MHz)	155	0+1+2	N/A
Band Edge	11a	149/ 157/ 165	0+1+2	N/A
	11n(20MHz)	149/ 157/ 165	0+1+2	N/A
	11n(40MHz)	151/ 159	0+1+2	N/A
	11ac(80MHz)	155	0+1+2	N/A
RF antenna conducted test	11a	149/ 157/ 165	0+1+2	N/A
	11n(20MHz)	149/ 157/ 165	0+1+2	N/A
	11n(40MHz)	151/ 159	0+1+2	N/A
	11ac(80MHz)	155	0+1+2	N/A
Frequency Stability	11a	149/ 157/ 165	0/1/2	Complies
	11n(20MHz)	149/ 157/ 165	0/1/2	Complies
	11n(40MHz)	151/ 159	0/1/2	Complies
	11ac(80MHz)	155	0/1/2	Complies

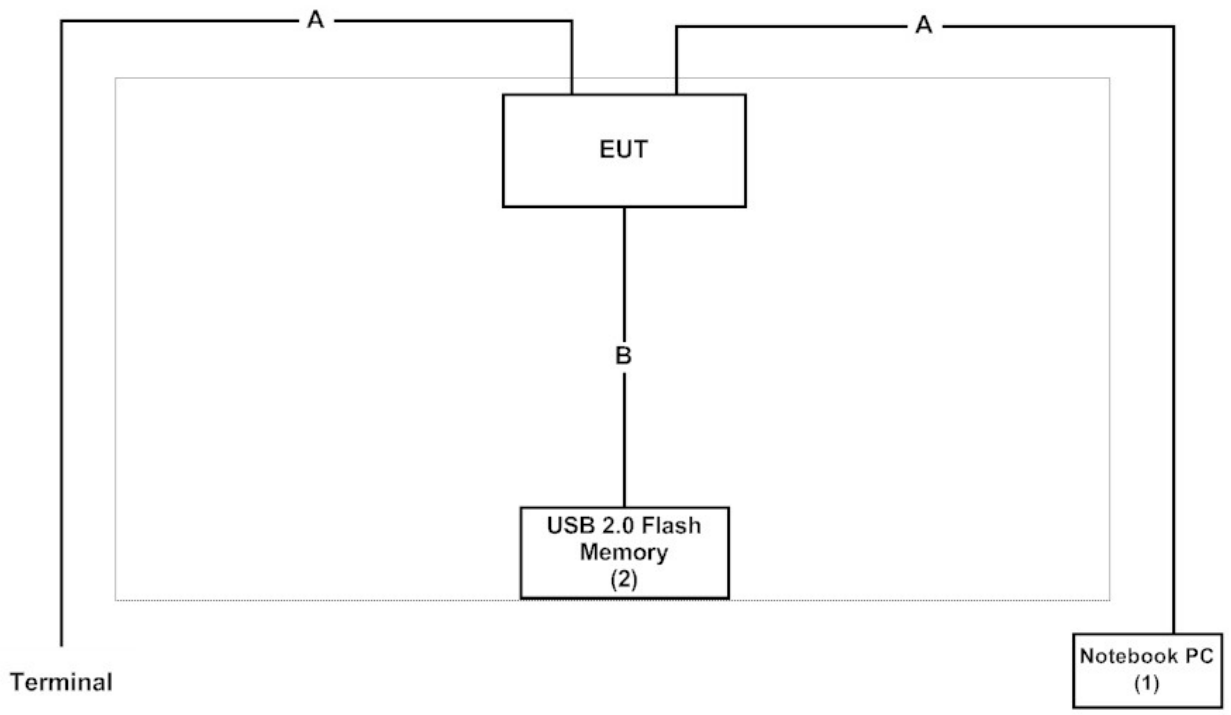
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	ACER	MS2296	LUSCV021391150332C2000	DoC	Non-Shielded, 2.5m one ferrite core bonded
2	USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--

1.4. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Shielded, 2m
B	USB 2.0 Flash Memory Cable	Non-Shielded, 1m

1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4
2	Execute the MP Tool on the EUT.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Peak Power Spectrum Density	15 - 35	25°C
Humidity (%RH)		25 - 75	45%RH
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Frequency Stability	15 - 35	25°C
Humidity (%RH)		25 - 75	45%RH
Barometric pressure (mbar)		860 - 1060	950-1000

2. Peak Power Spectrum Density

2.1. Test Equipment

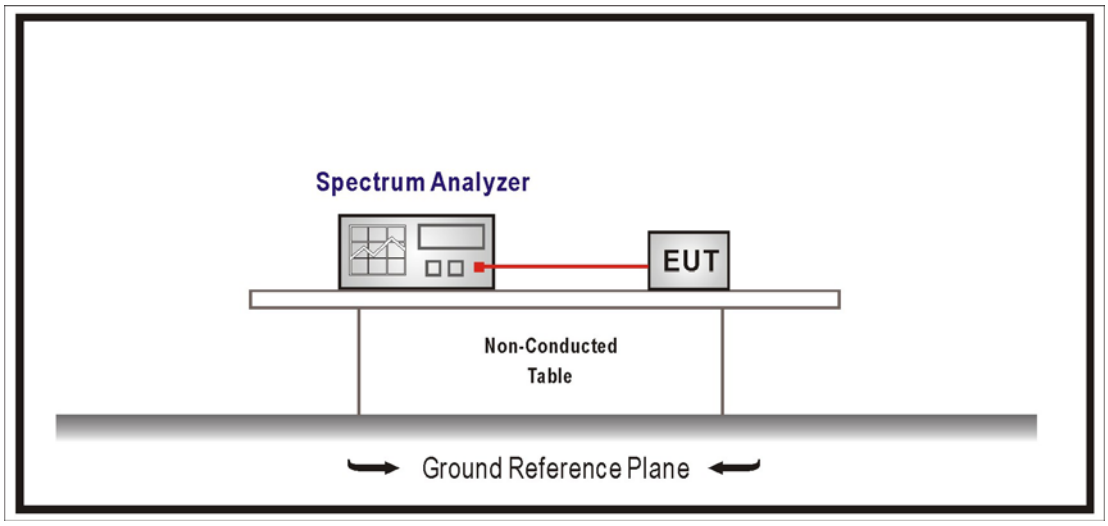
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2016/07/13

Note: All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 17 dBm in any 1MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

2.4. Test Procedure

The EUT was setup to ANSI C63.10:2013; tested to U-NII test procedure of 789033 D02 V01R01 for compliance to FCC 47CFR Subpart E requirements.

For Band1 : Set RBW=1MHz, VBW=3MHz with RMS detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

For Band4 : Set RBW=500KHz, VBW=1.5MHz with RMS detector. The PPSD is the highest level found across the emission in any 500KHz band after 100 sweeps of averaging.

2.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

2.6. Test Result

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

IEEE 802.11a (ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-4.131	12.859	≦28.40
157	5785	-5.965	11.025	≦28.40
165	5825	-5.943	11.047	≦28.40

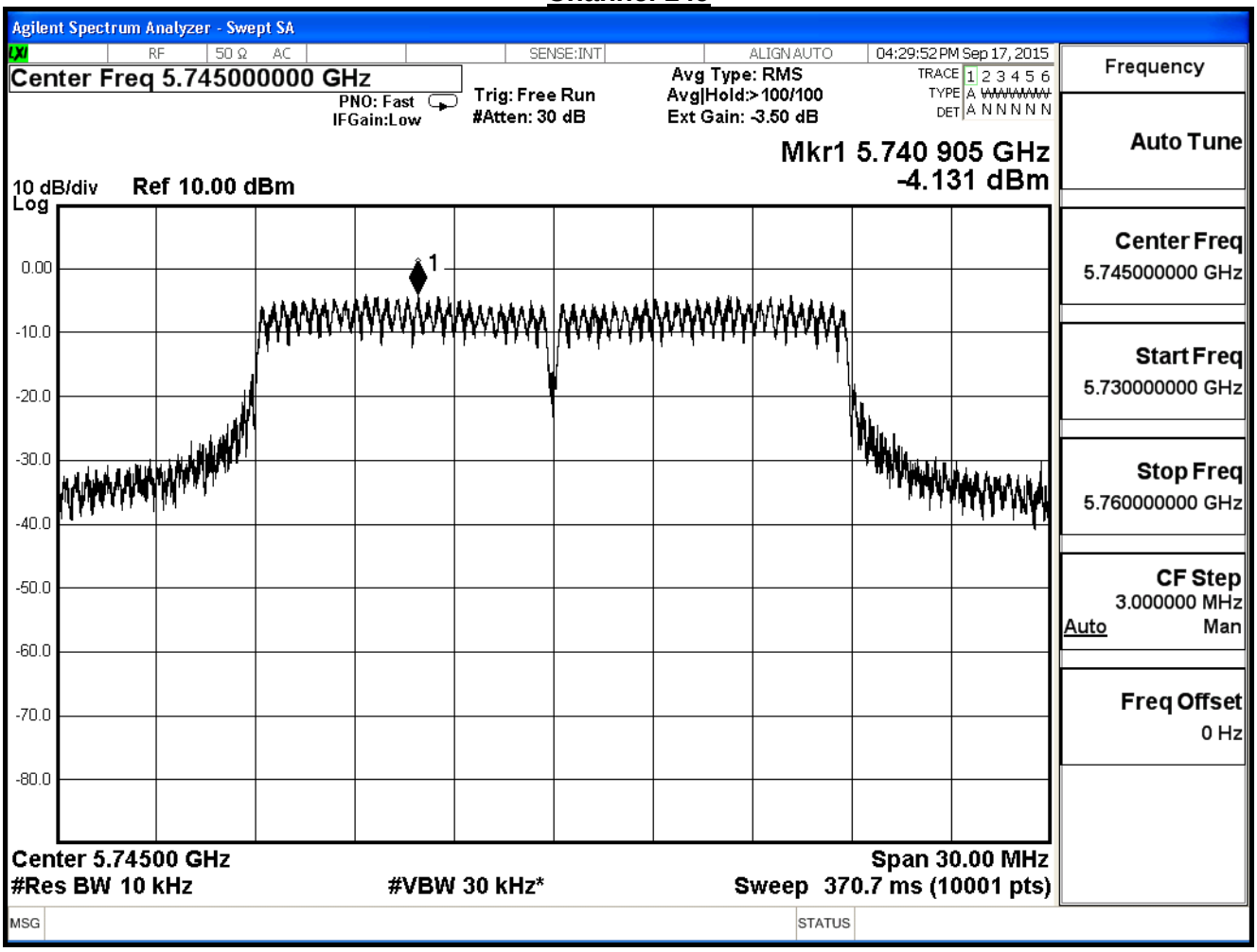
Note:

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

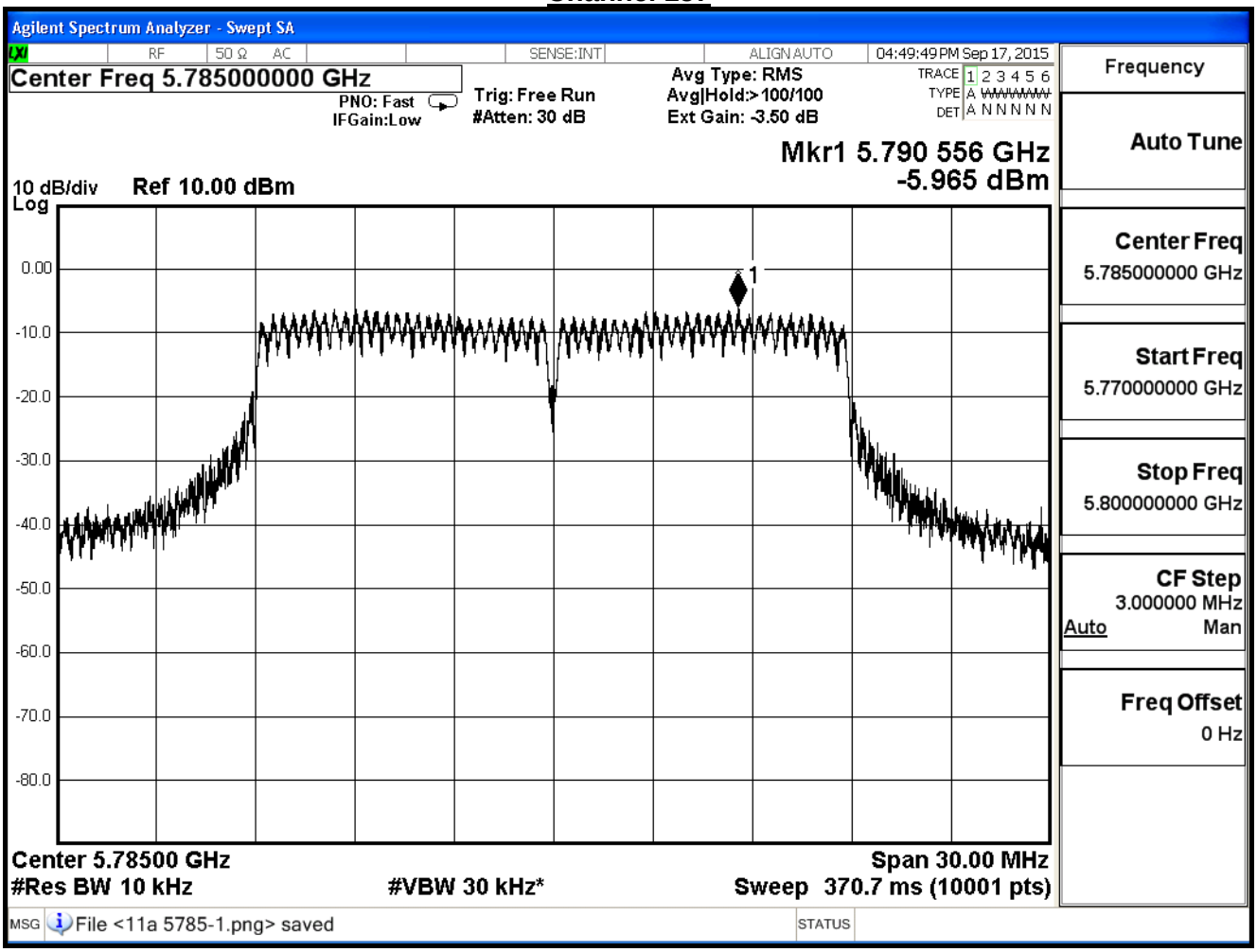
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

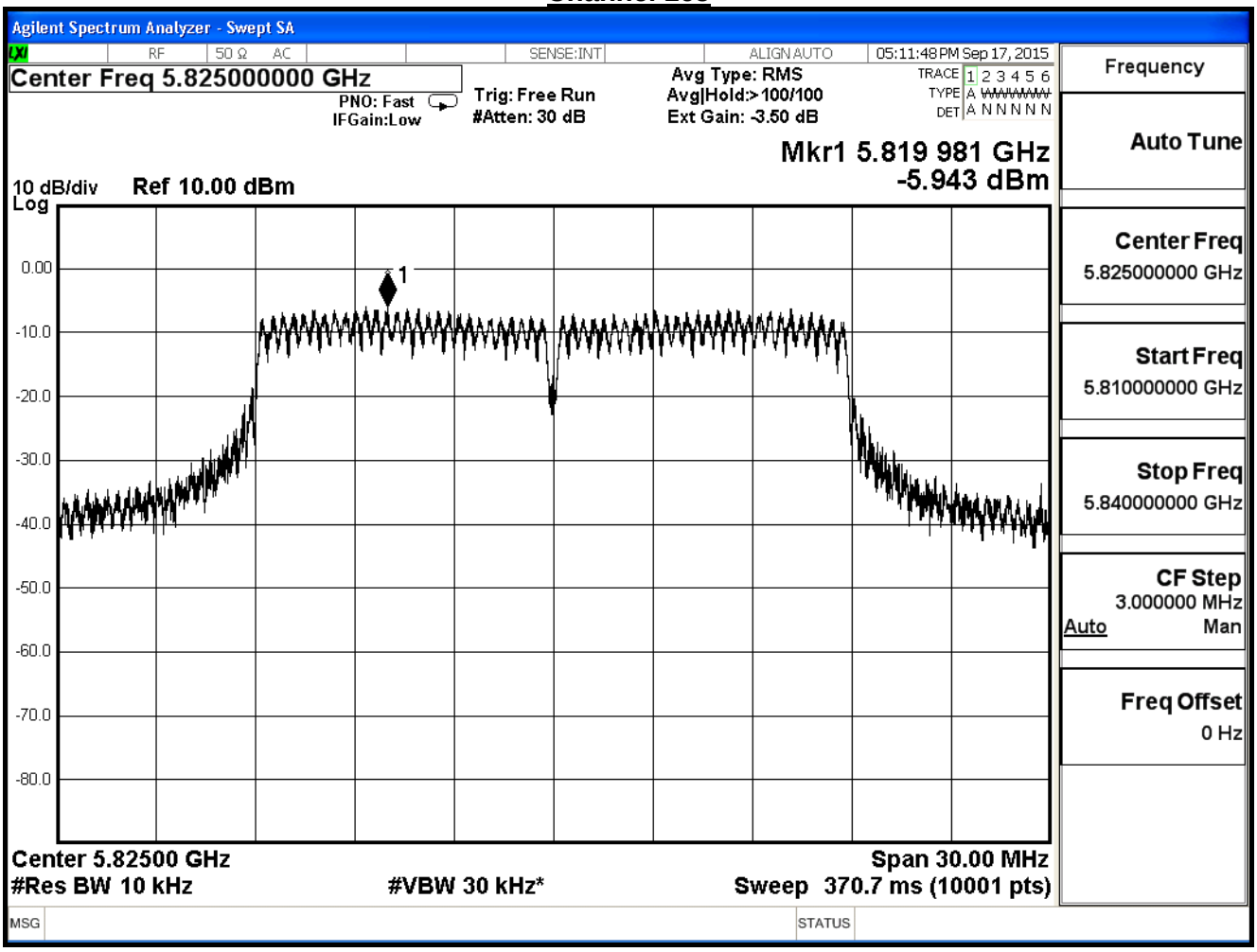
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:29:52 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.740 905 GHz
-4.131 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.745000000 GHz
Start Freq
5.730000000 GHz
Stop Freq
5.760000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:49:49 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.790 556 GHz
-5.965 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
File <11a 5785-1.png> saved
STATUS

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:11:48 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.819 981 GHz
-5.943 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.810000000 GHz
Stop Freq
5.840000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

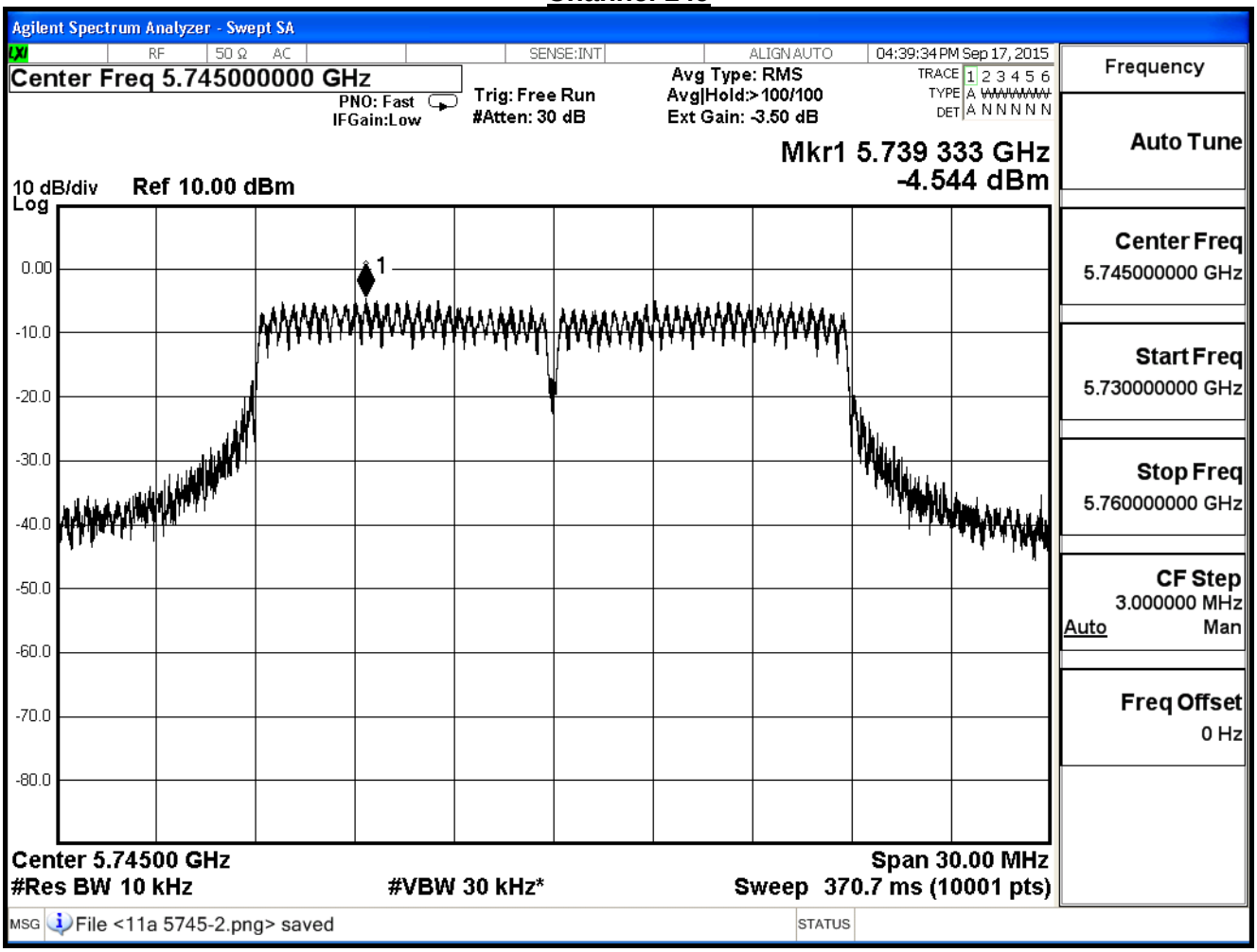
IEEE 802.11a (ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-4.544	12.446	≦28.40
157	5785	-5.467	11.523	≦28.40
165	5825	-4.935	12.055	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

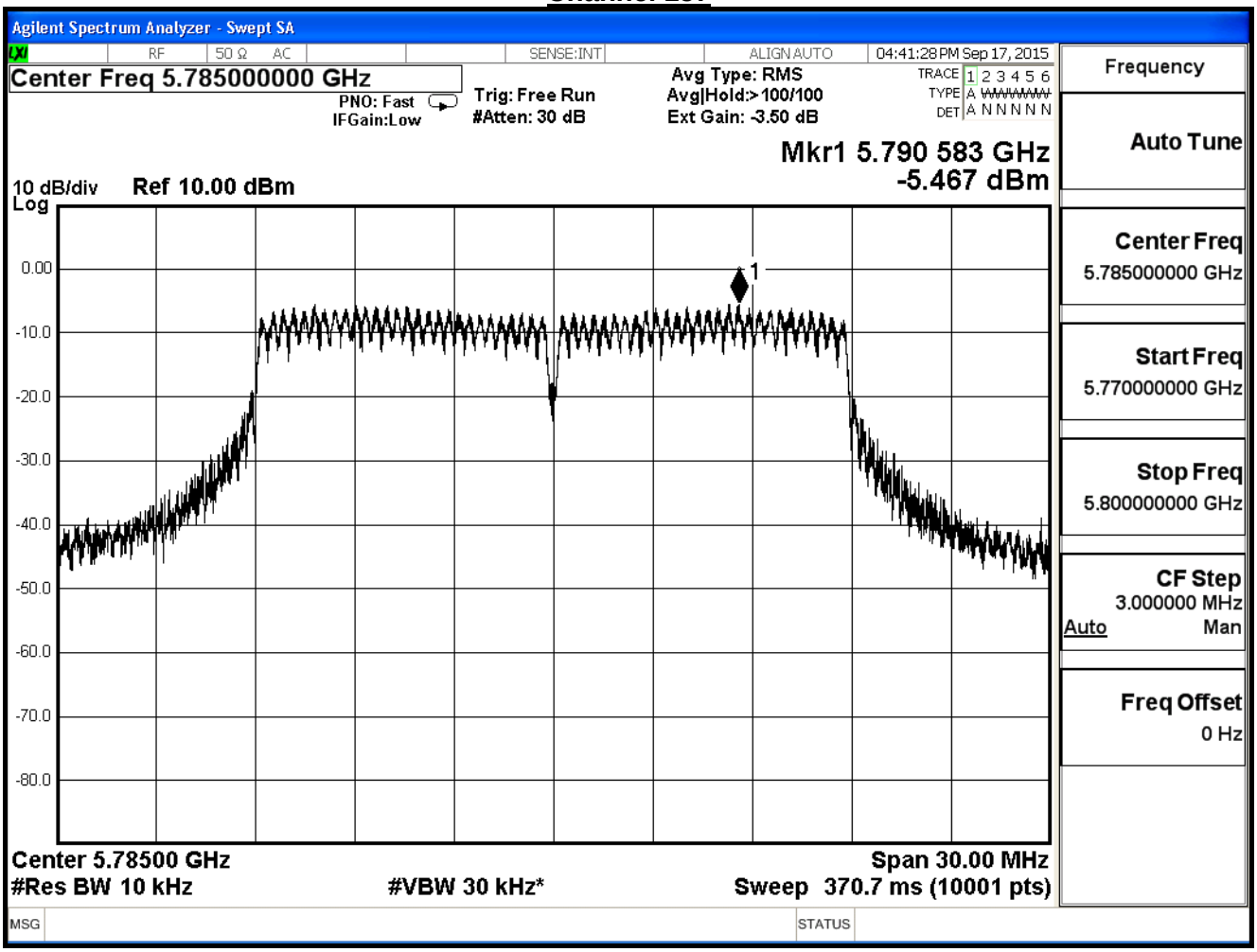
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

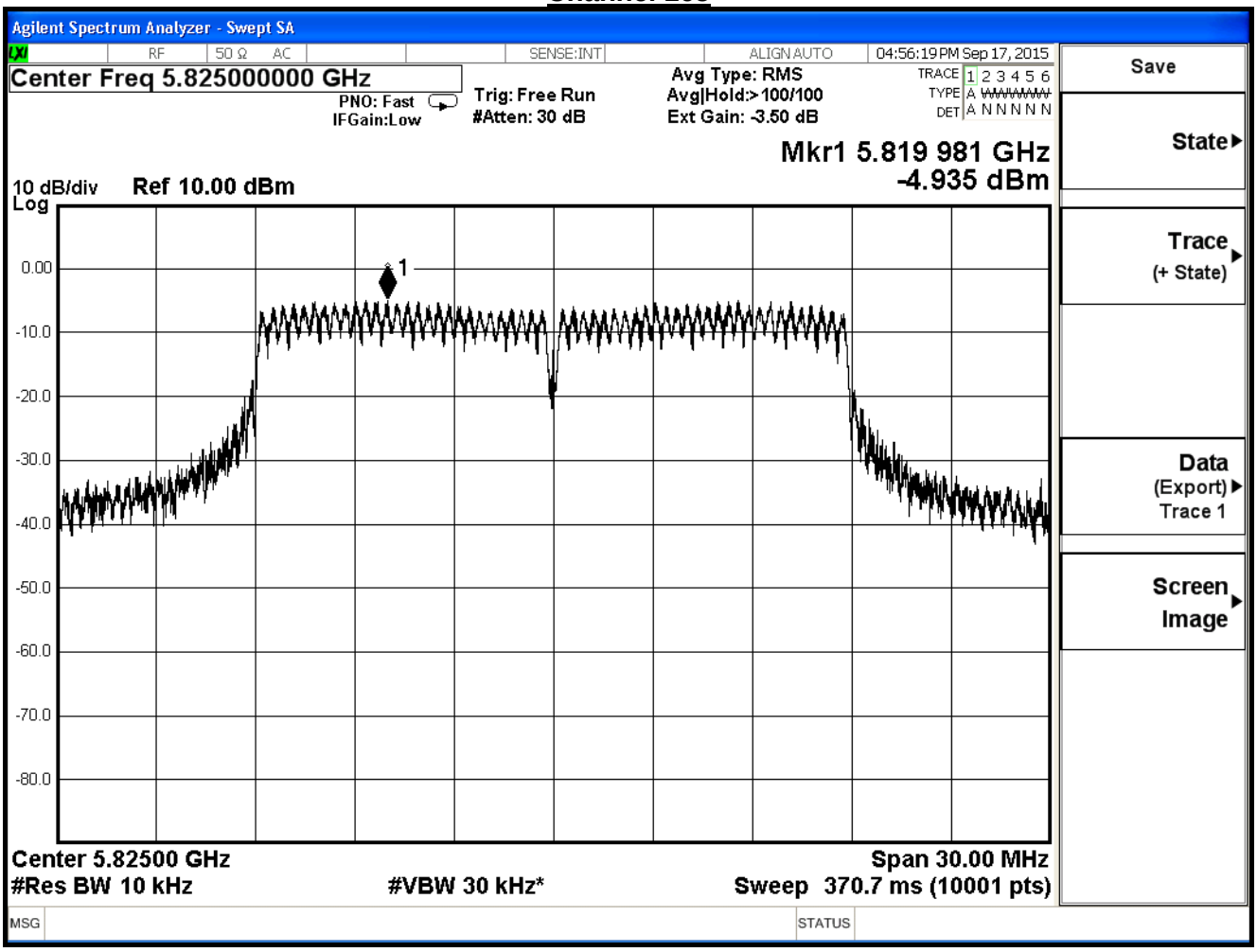
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:39:34 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.739 333 GHz
-4.544 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
5.745000000 GHz
Start Freq
5.730000000 GHz
Stop Freq
5.760000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
File <11a 5745-2.png> saved
STATUS

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:41:28 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.790 583 GHz
-5.467 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:56:19 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.819 981 GHz
-4.935 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

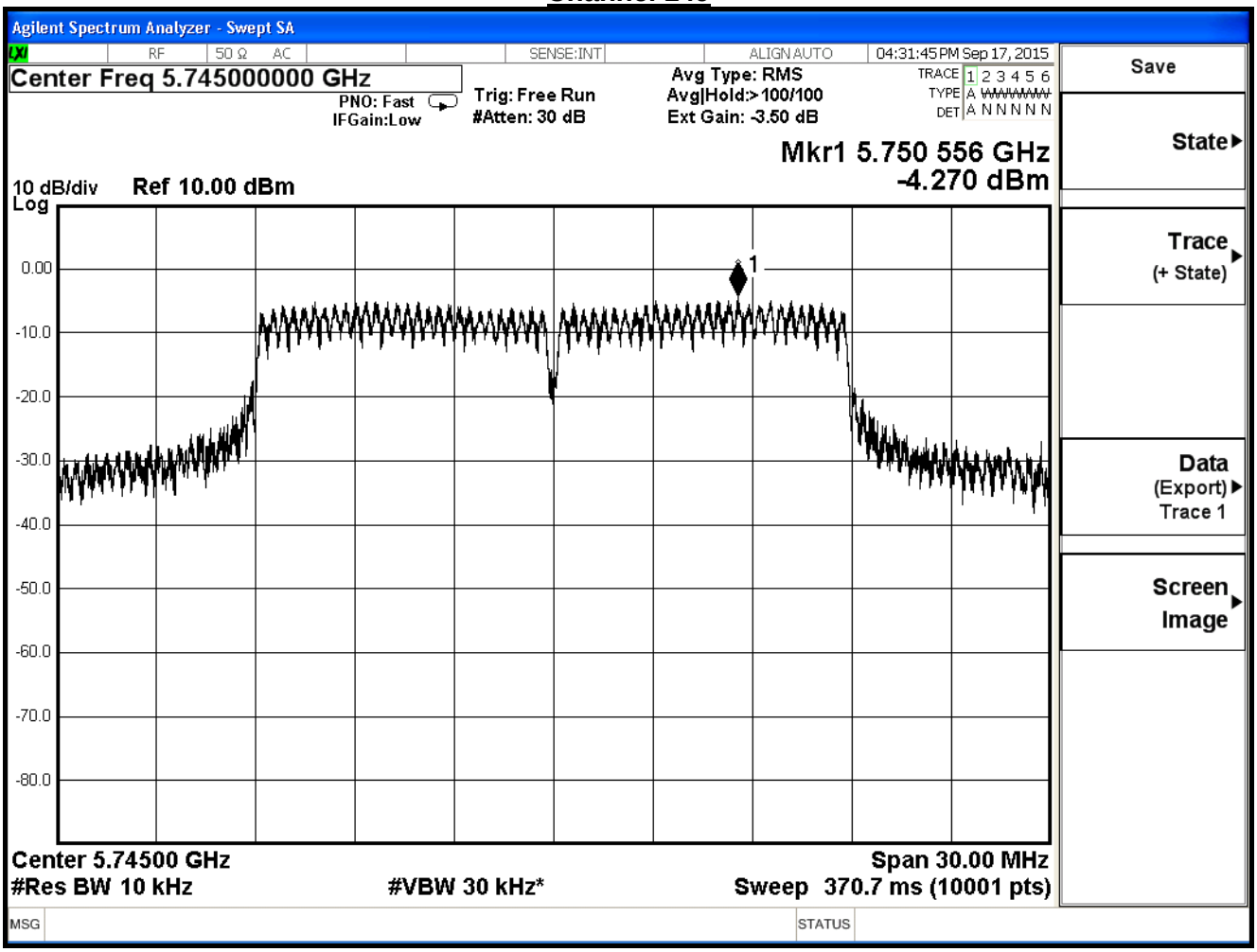
IEEE 802.11a (ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-4.270	12.720	≦28.40
157	5785	-5.339	11.651	≦28.40
165	5825	-5.355	11.635	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

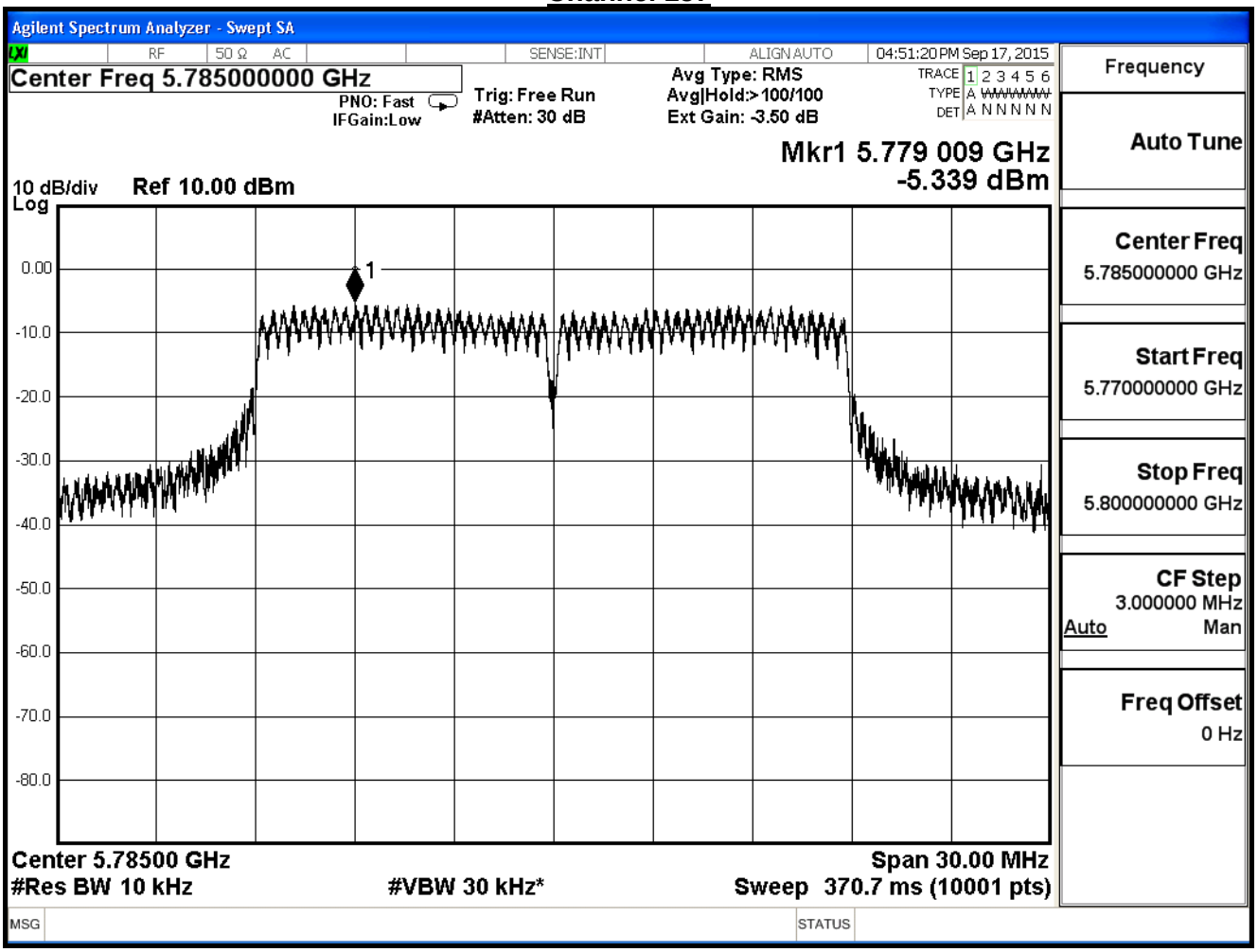
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

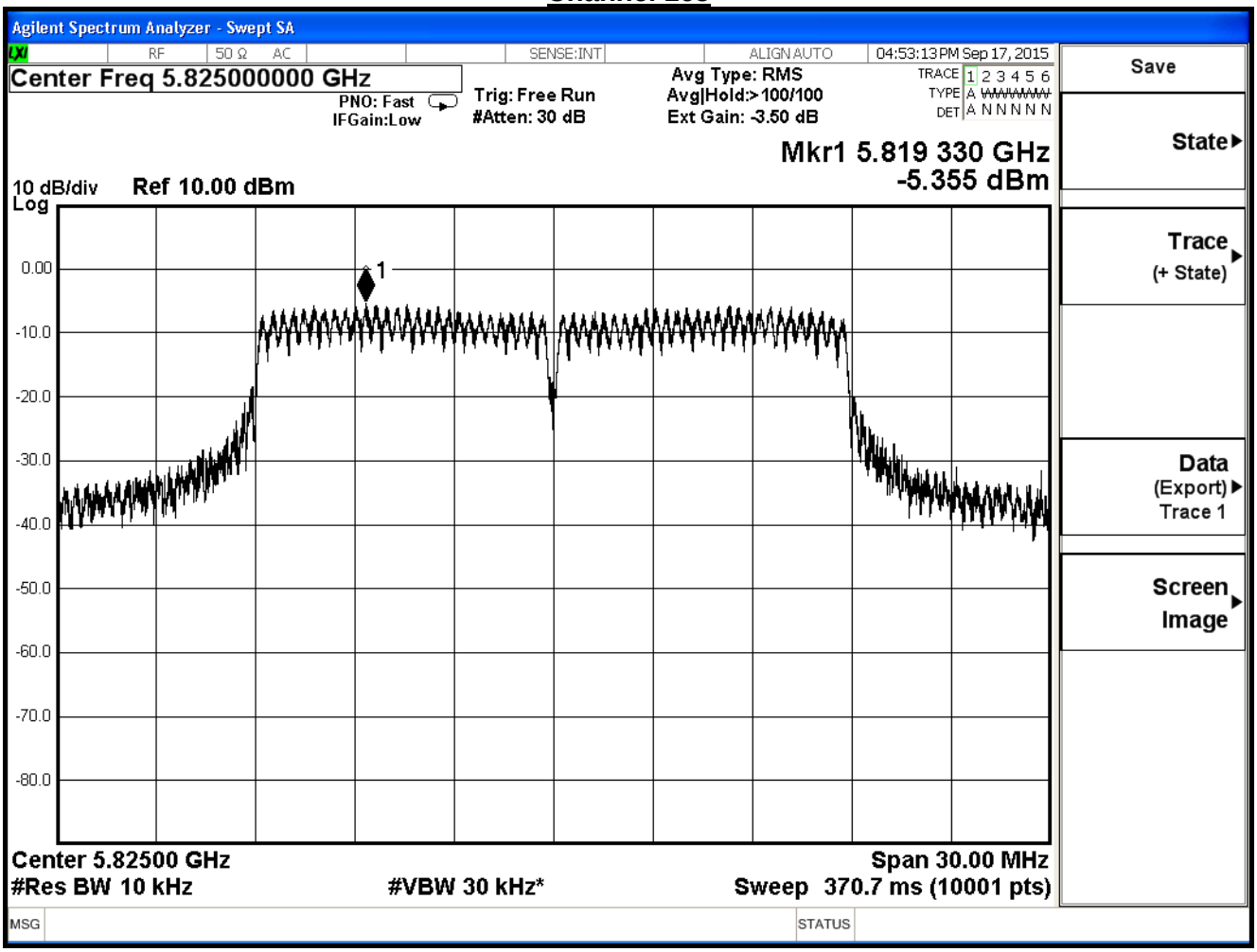
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:31:45 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.750 556 GHz
-4.270 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
04:51:20 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.779 009 GHz
-5.339 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:53:13 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.819 330 GHz
-5.355 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

IEEE 802.11a (ANT 0+1+2)			
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
149	5745	17.450	≦28.40
157	5785	16.179	≦28.40
165	5825	16.405	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

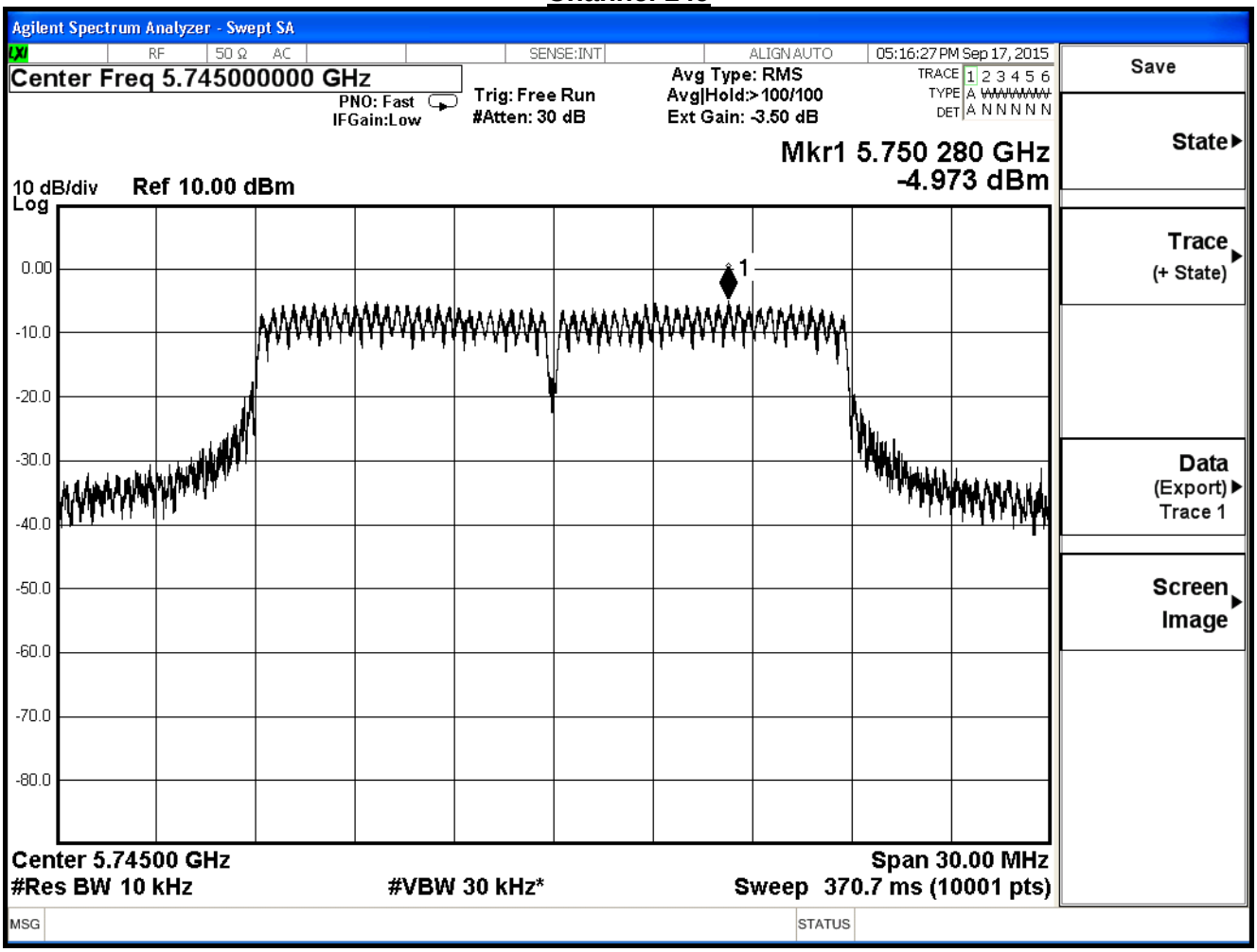
IEEE802.11n_20MHz_(ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-4.973	12.017	≦28.40
157	5785	-3.458	13.532	≦28.40
165	5825	-3.766	13.224	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

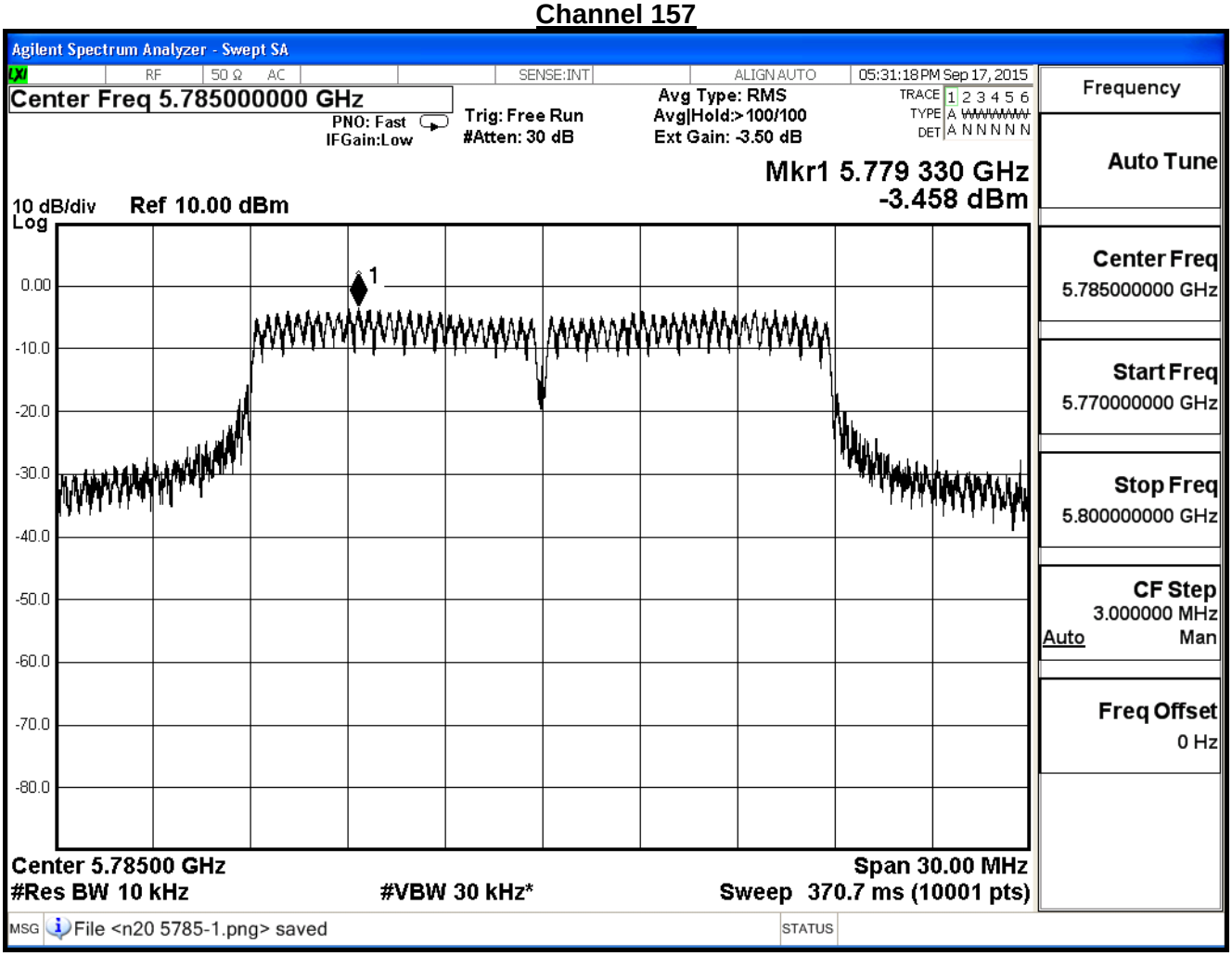
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

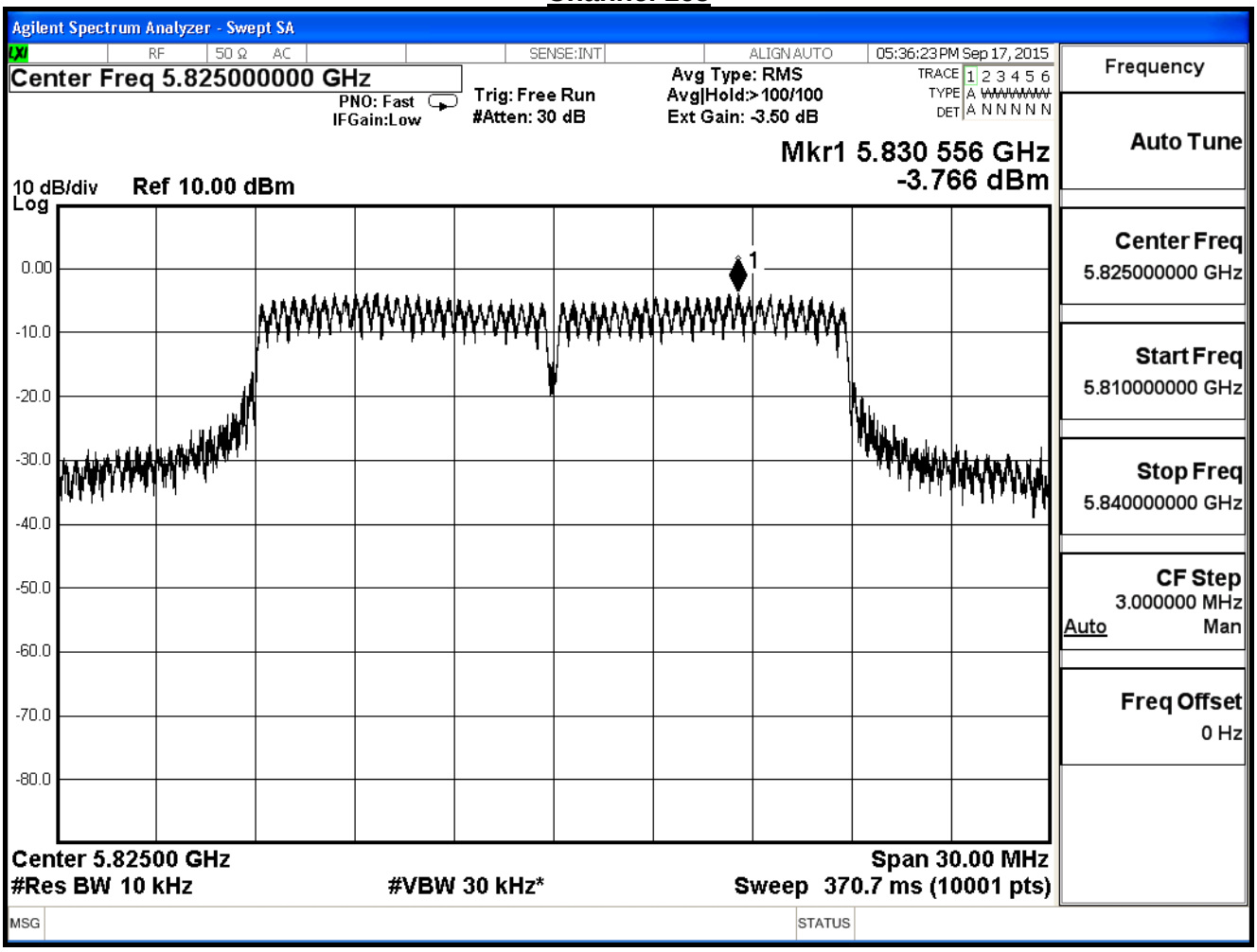
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:16:27 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.750 280 GHz
-4.973 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:31:18 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.779 330 GHz
-3.458 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
File <n20 5785-1.png> saved
STATUS
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:36:23 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.830 556 GHz
-3.766 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.810000000 GHz
Stop Freq
5.840000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

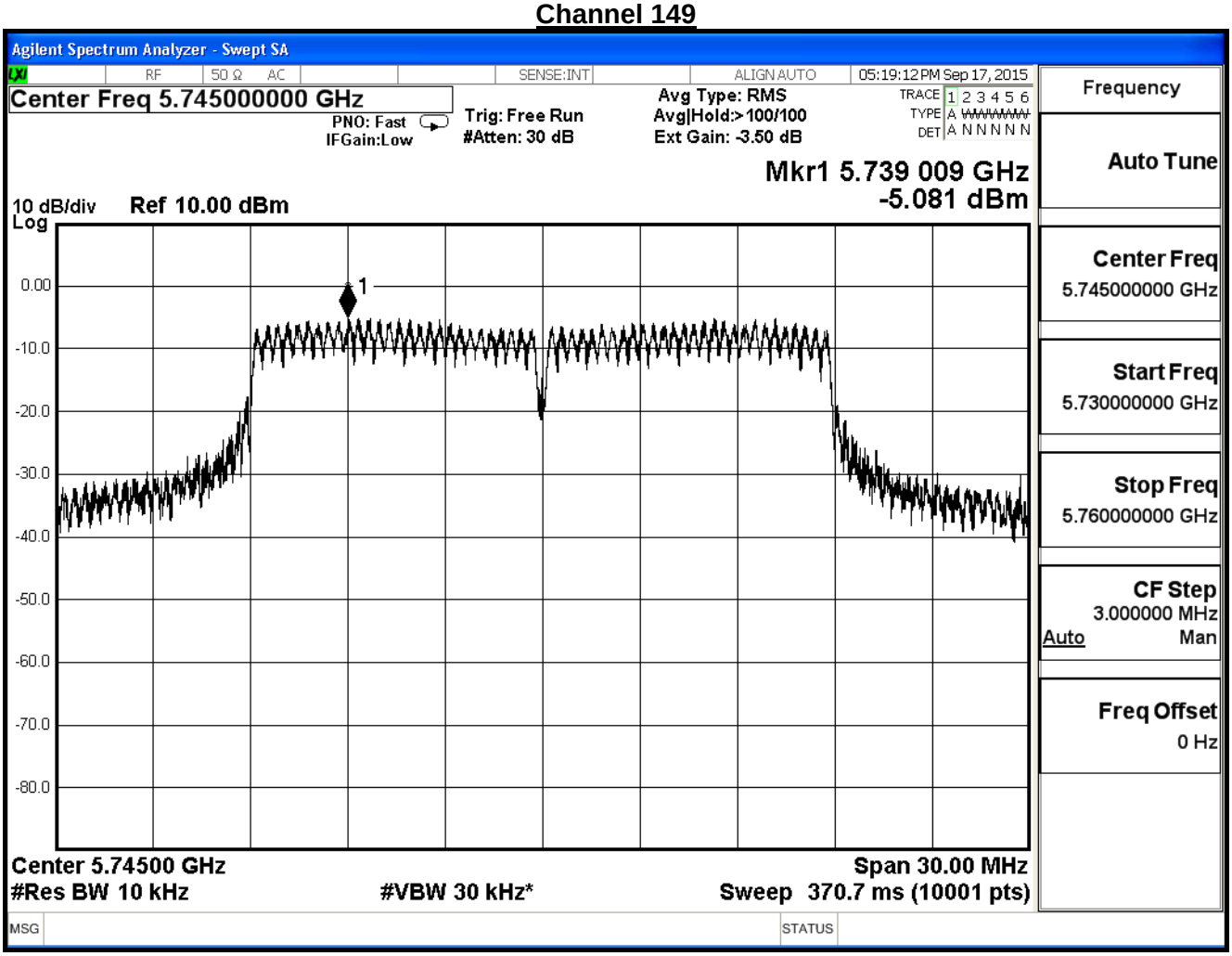
IEEE802.11n_20MHz_(ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-5.081	11.909	≦28.40
157	5785	-3.212	13.778	≦28.40
165	5825	-3.120	13.870	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

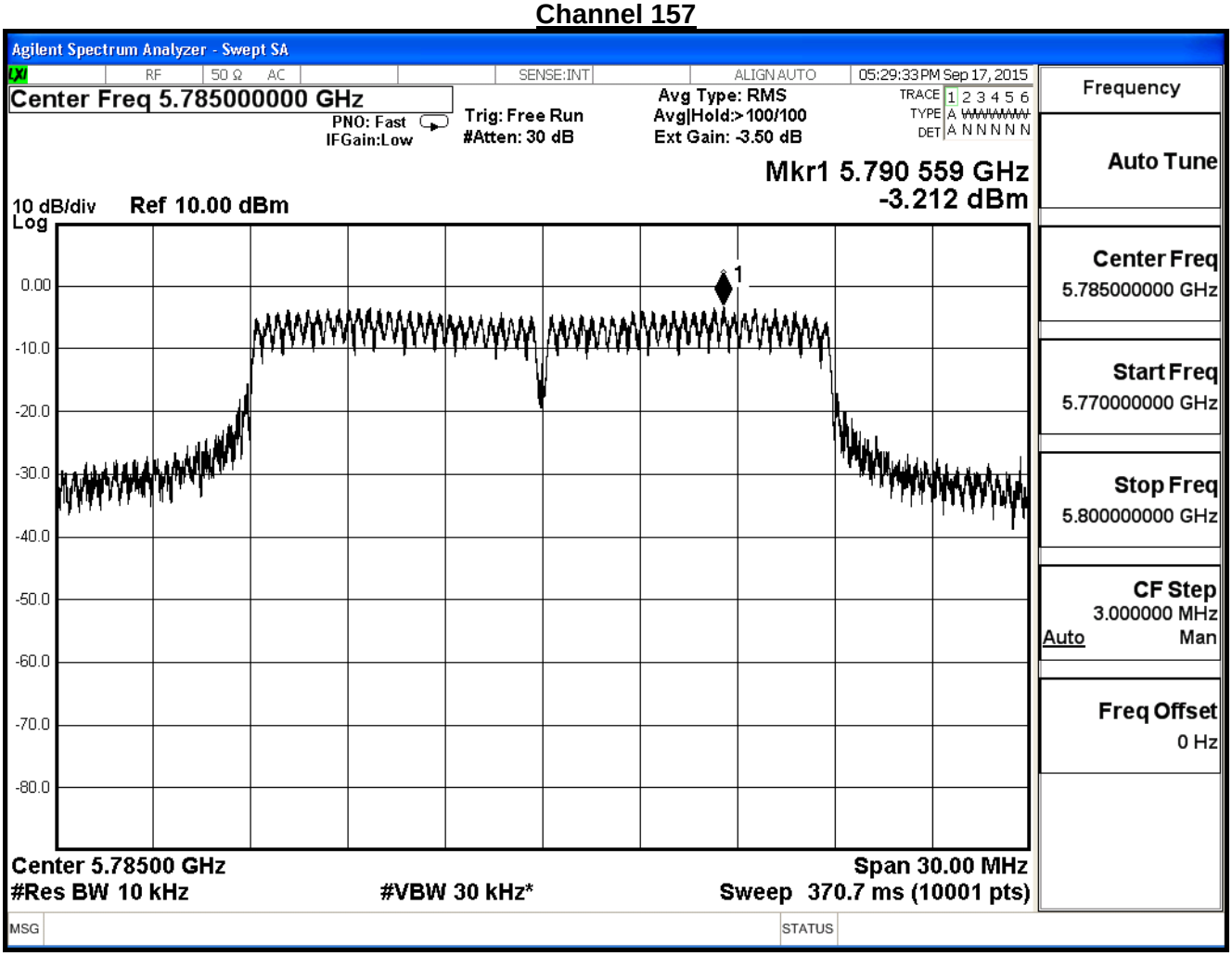
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

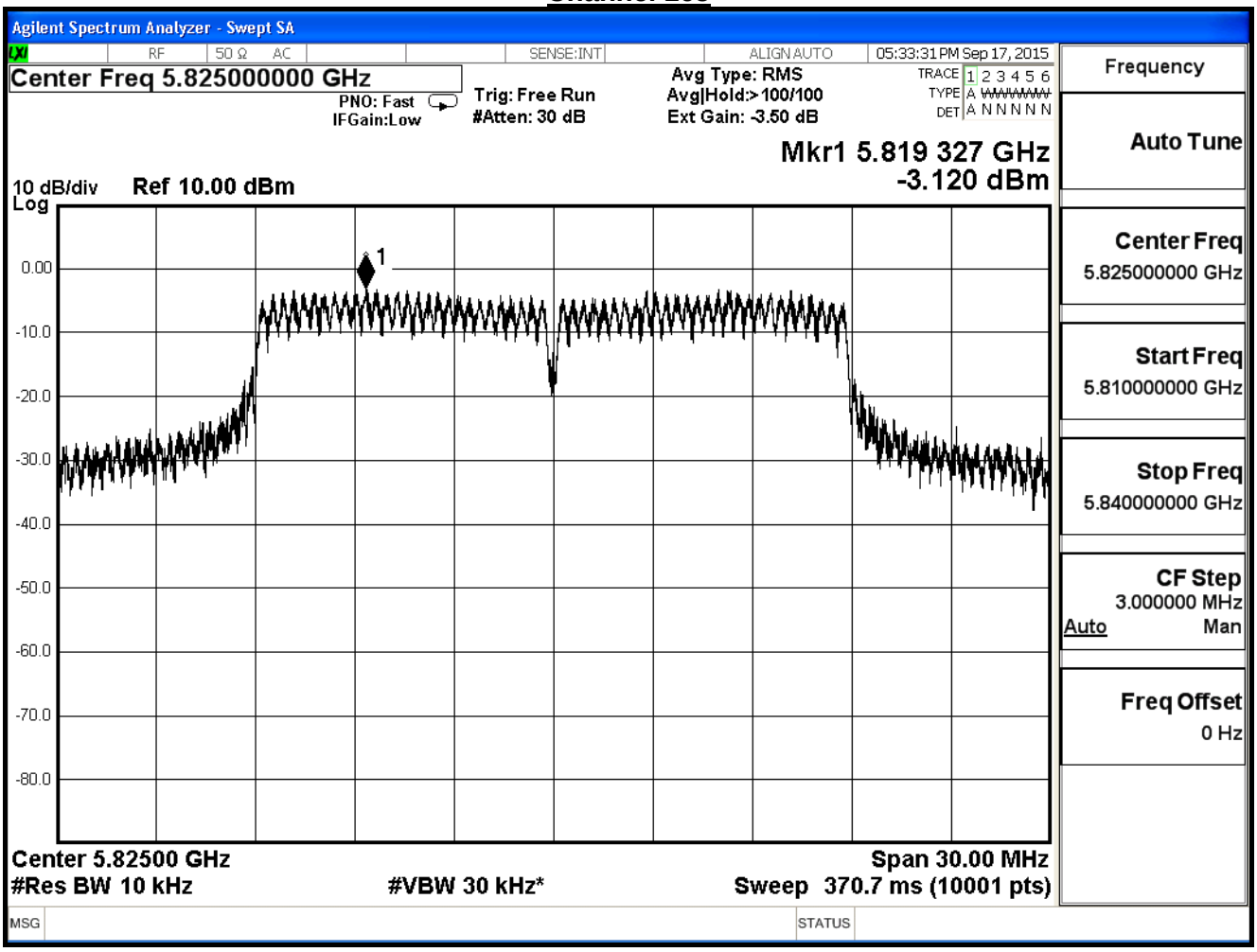
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:19:12 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.739 009 GHz
-5.081 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.745000000 GHz
Start Freq
5.730000000 GHz
Stop Freq
5.760000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:29:33 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.790 559 GHz
-3.212 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:33:31 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.819 327 GHz
-3.120 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.810000000 GHz
Stop Freq
5.840000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

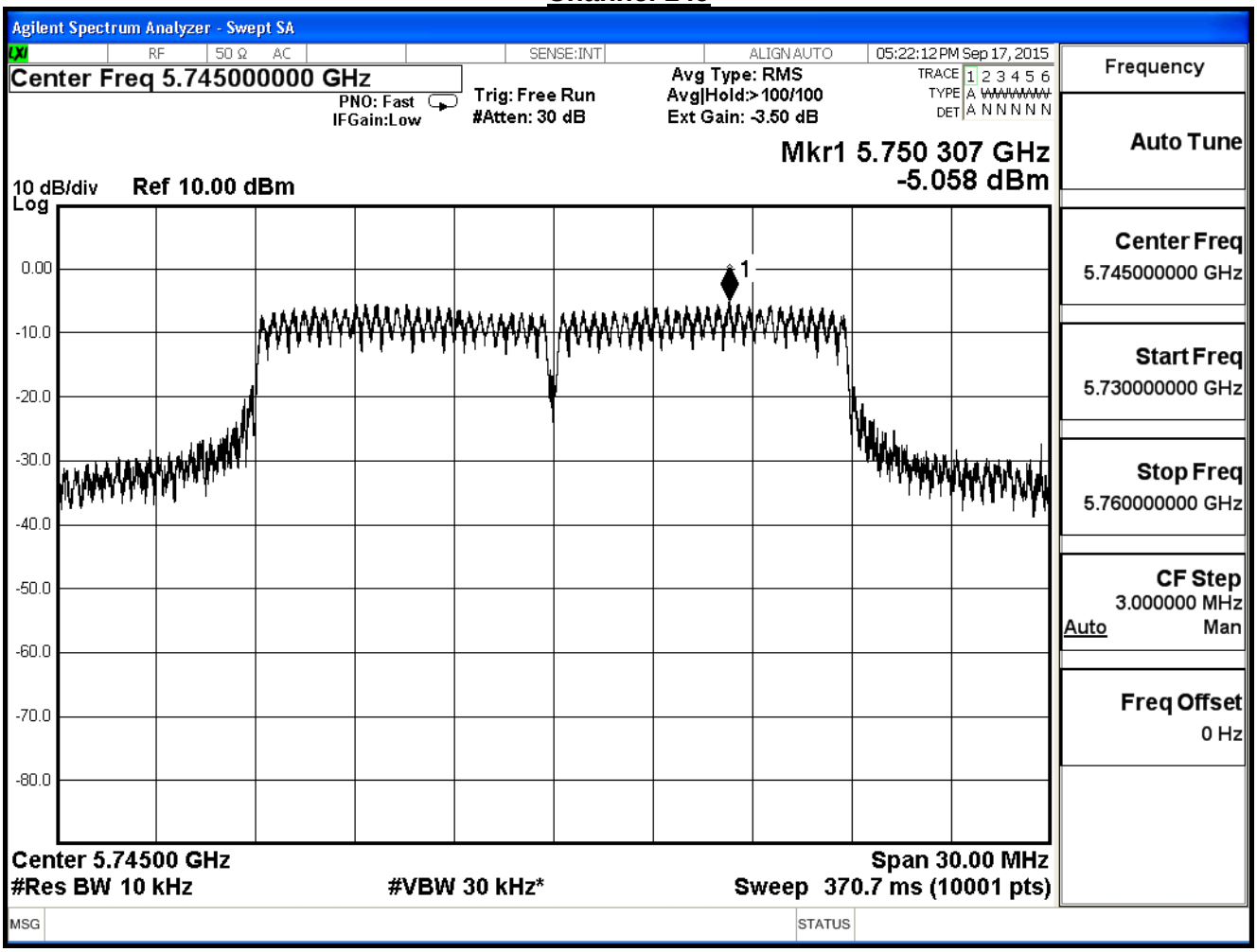
IEEE802.11n_20MHz_(ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-5.058	11.932	≦28.40
157	5785	-3.613	13.377	≦28.40
165	5825	-3.247	13.743	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

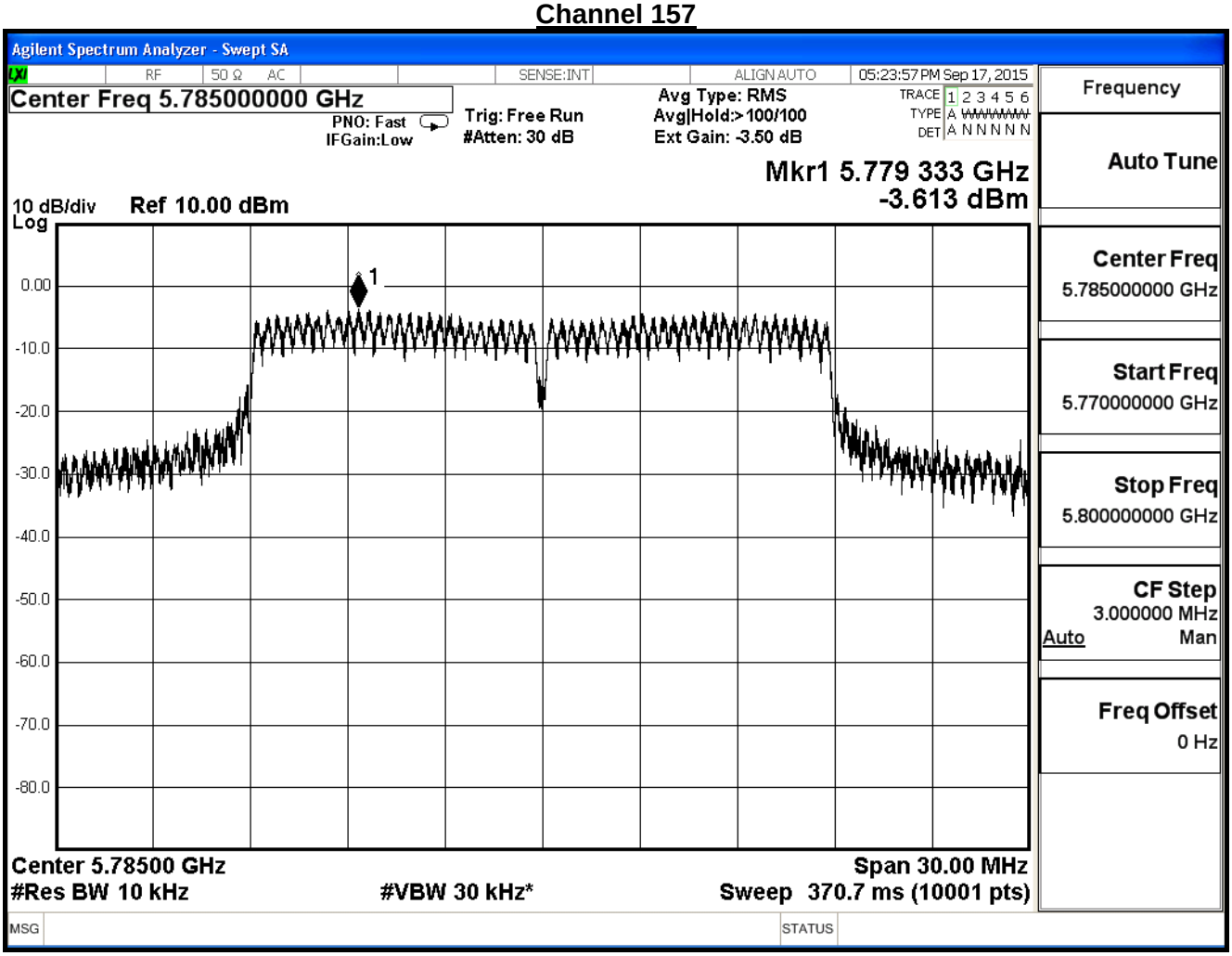
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

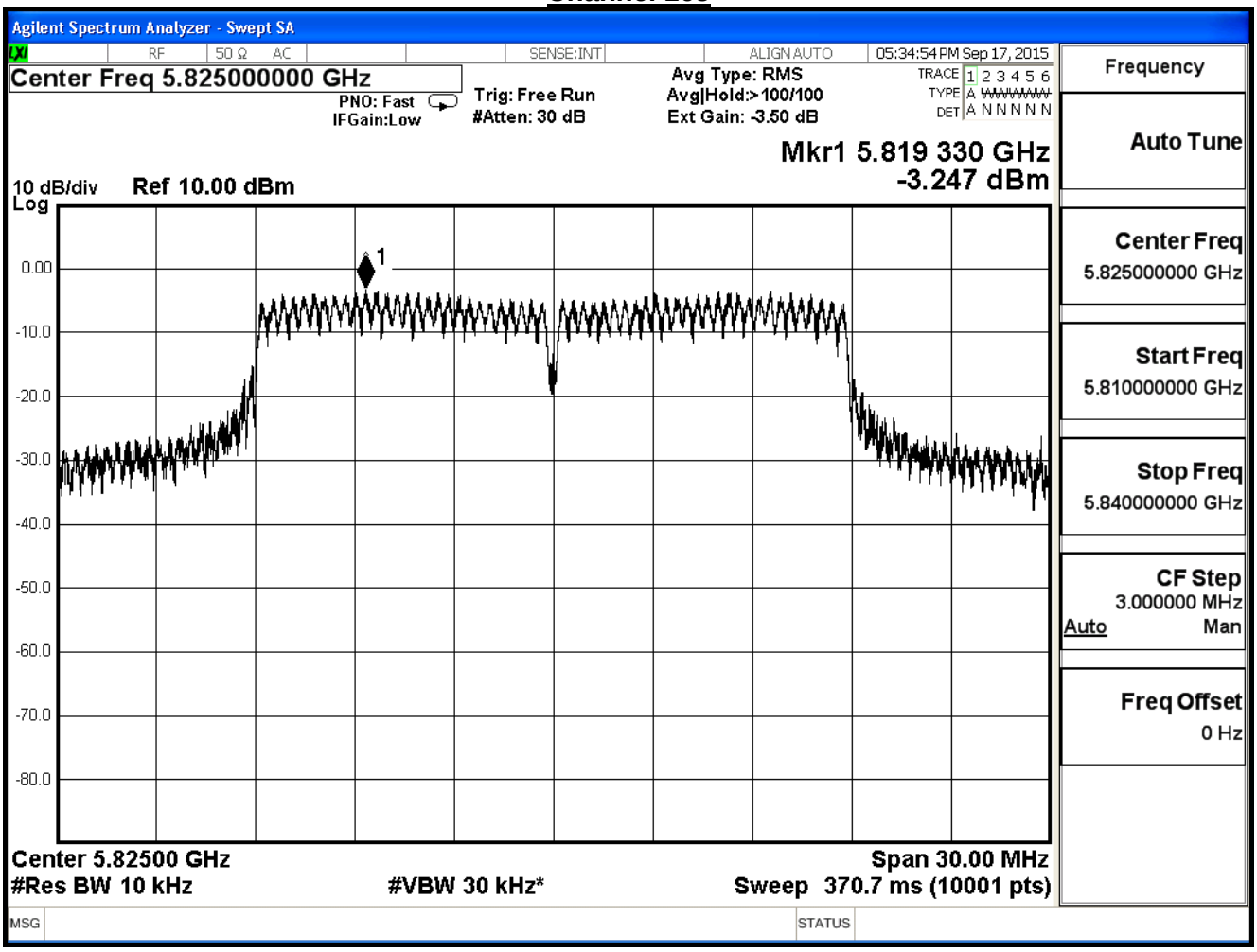
Channel 149


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:22:12 PM Sep 17, 2015
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.750 307 GHz
-5.058 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.74500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.745000000 GHz
Start Freq
5.730000000 GHz
Stop Freq
5.760000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 157


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:23:57 PM Sep 17, 2015
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.779 333 GHz
-3.613 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.78500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.785000000 GHz
Start Freq
5.770000000 GHz
Stop Freq
5.800000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 165


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:34:54 PM Sep 17, 2015
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.819 330 GHz
-3.247 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 5.82500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 30.00 MHz
Sweep 370.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.810000000 GHz
Stop Freq
5.840000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

IEEE802.11n 20MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
149	5745	16.724	≦28.40
157	5785	18.337	≦28.40
165	5825	18.392	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB]
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

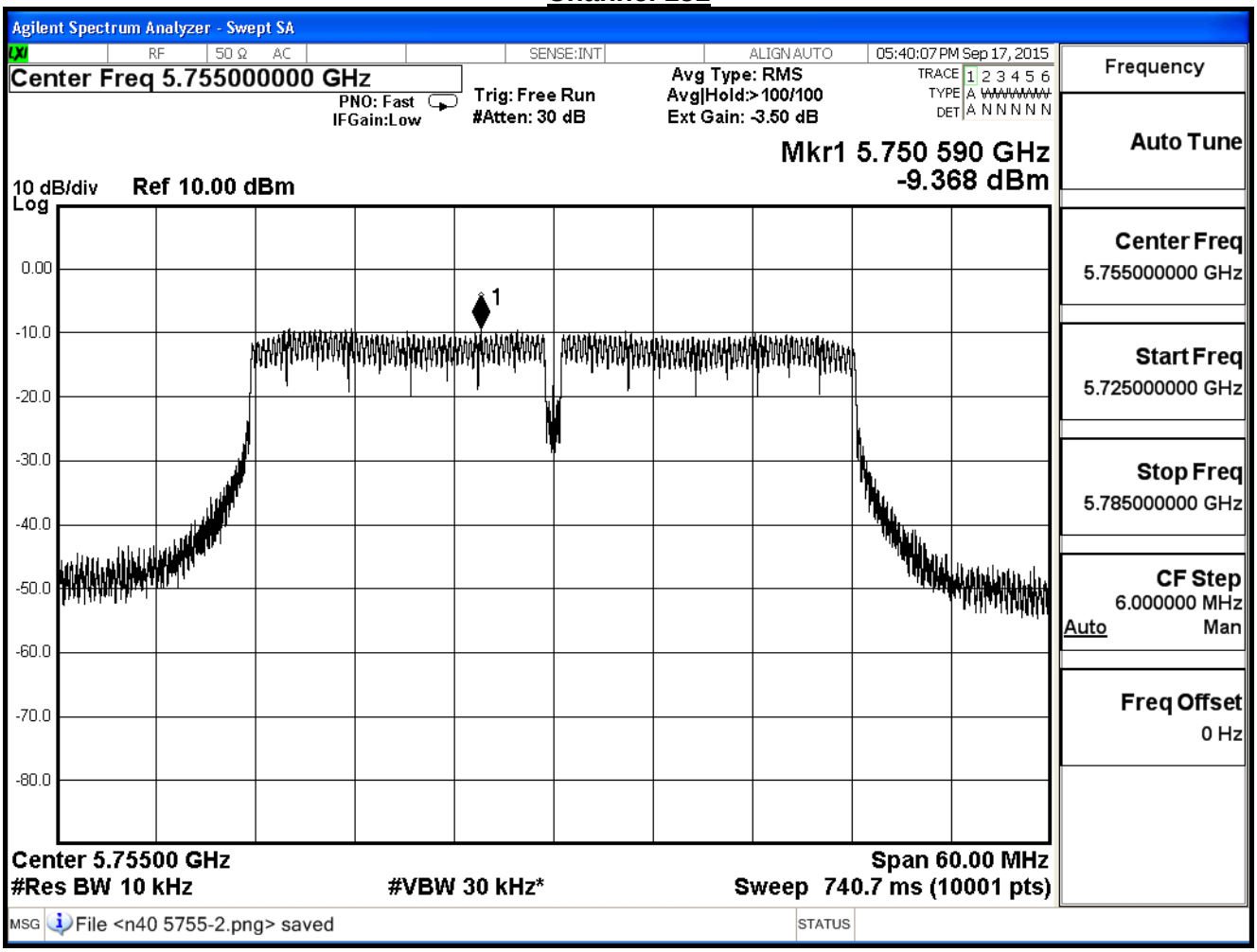
IEEE 802.11n_40MHz (ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-9.368	7.622	≦28.40
159	5795	-5.157	11.833	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

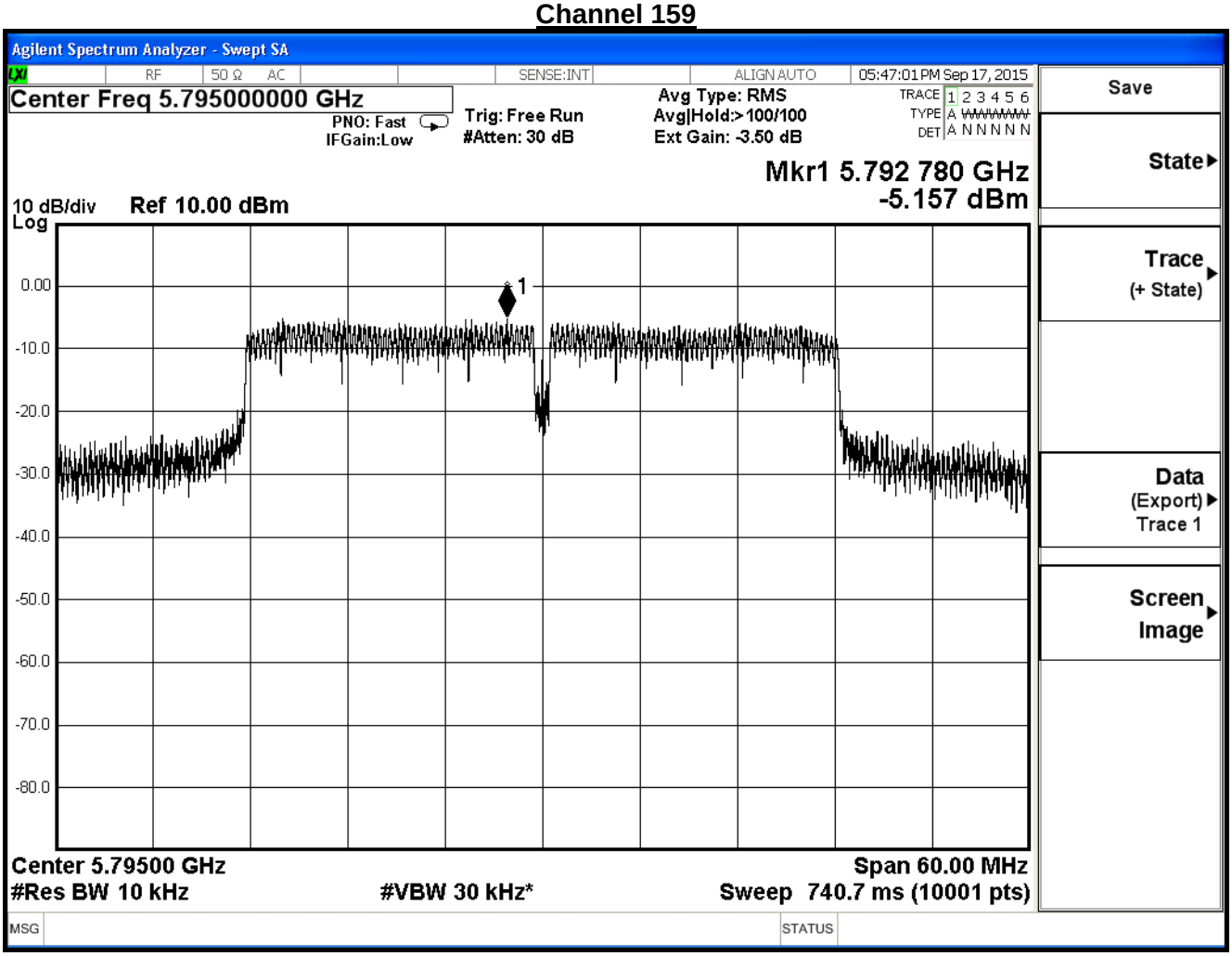
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:40:07 PM Sep 17, 2015
Center Freq 5.755000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.750 590 GHz
-9.368 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.75500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
File <n40 5755-2.png> saved
STATUS
Frequency
Auto Tune
Center Freq
5.755000000 GHz
Start Freq
5.725000000 GHz
Stop Freq
5.785000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 159


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:47:01 PM Sep 17, 2015
Center Freq 5.795000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.792 780 GHz
-5.157 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.79500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

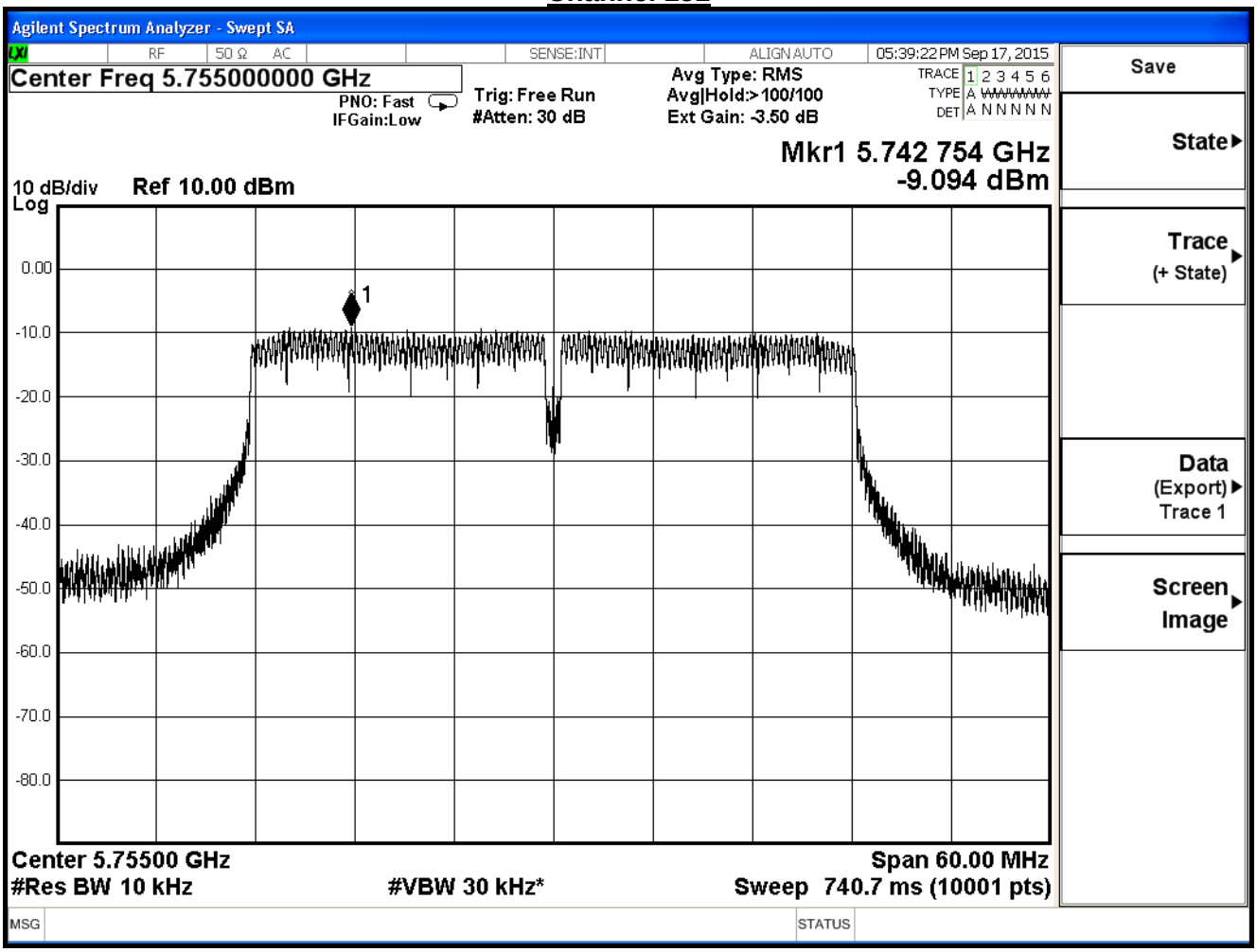
IEEE 802.11n_40MHz (ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-9.094	7.896	≦28.40
159	5795	-5.08	11.910	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

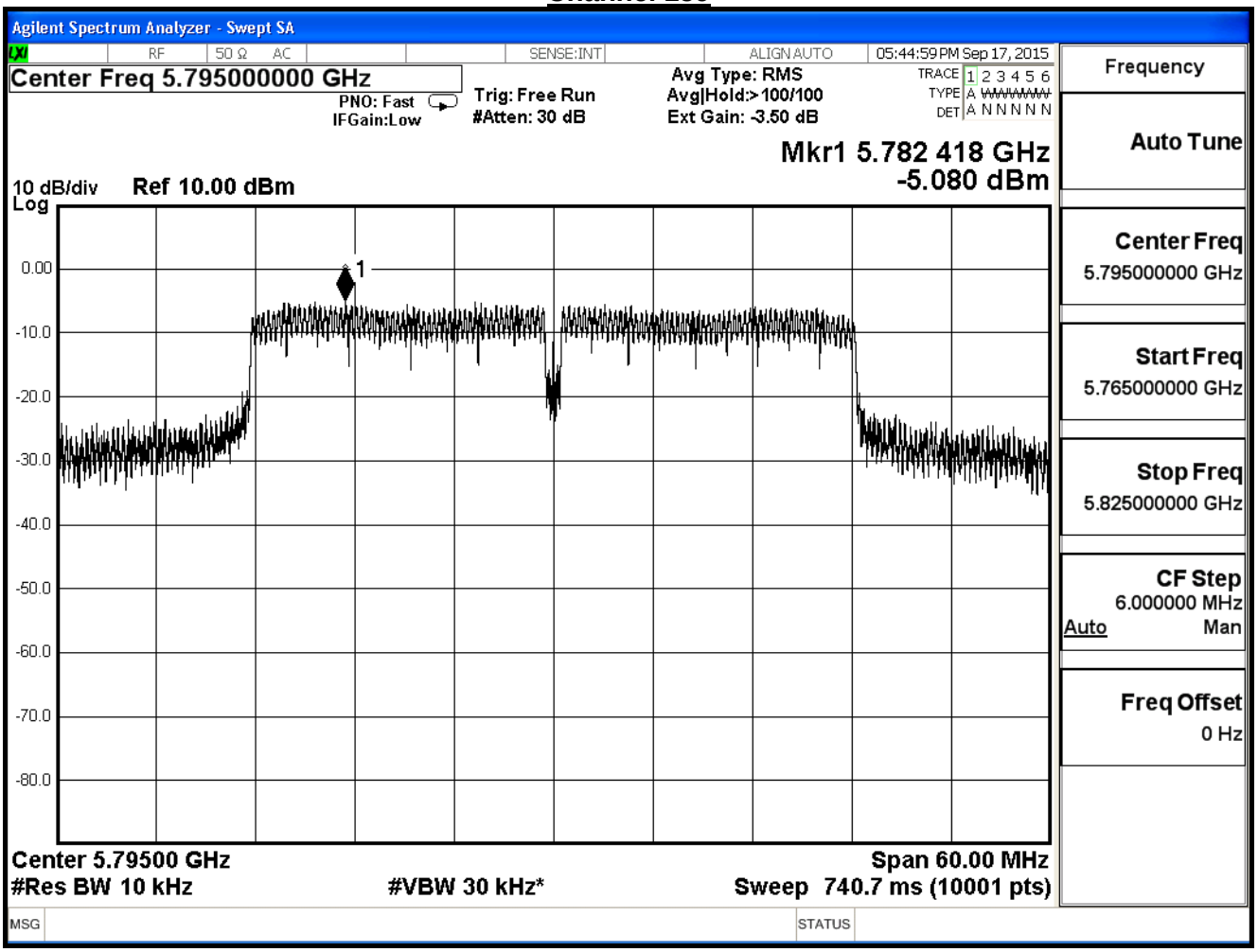
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:39:22 PM Sep 17, 2015
Center Freq 5.755000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.742 754 GHz
-9.094 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.75500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Channel 159


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:44:59 PM Sep 17, 2015
Center Freq 5.795000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.782 418 GHz
-5.080 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 5.79500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.795000000 GHz
Start Freq
5.765000000 GHz
Stop Freq
5.825000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

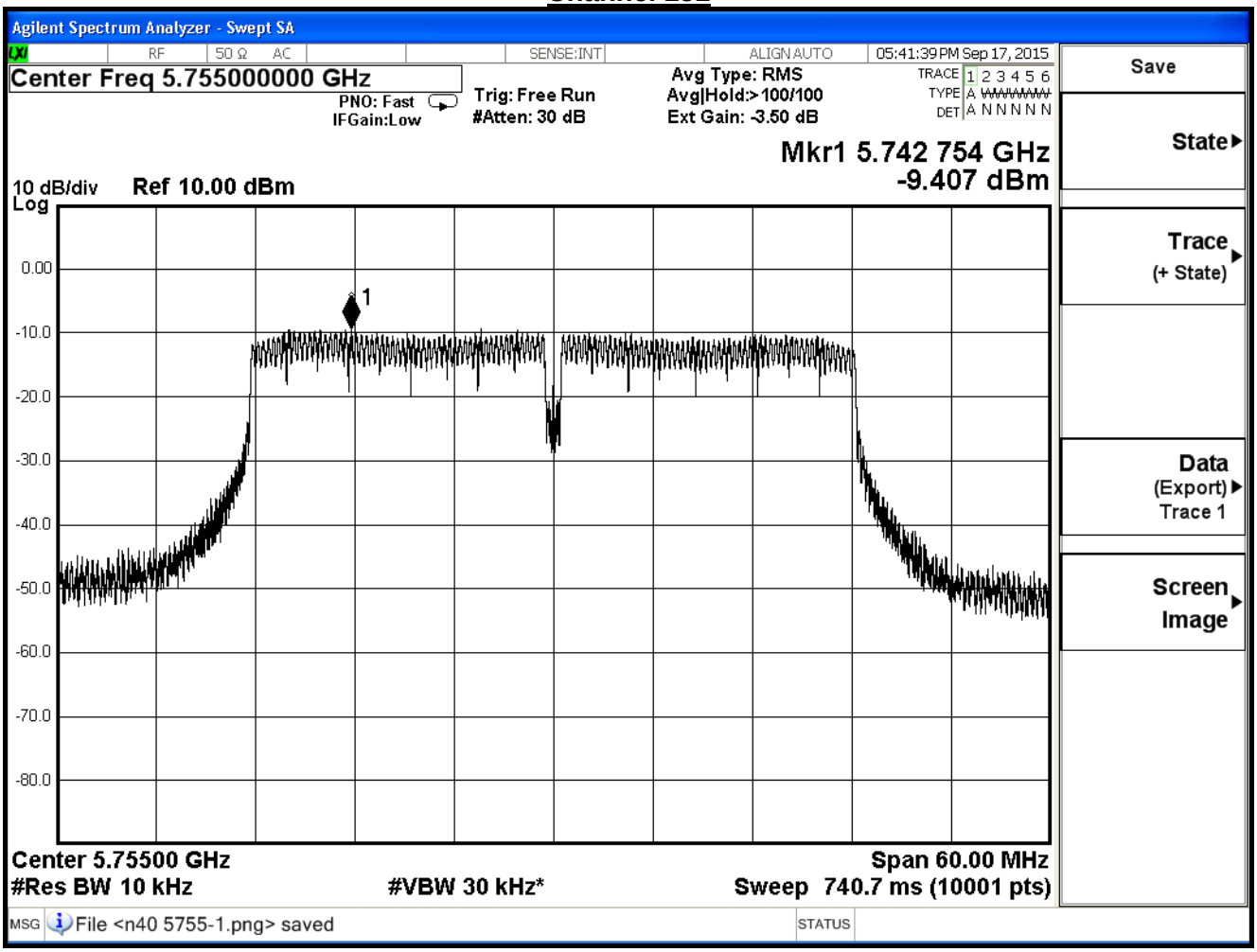
IEEE 802.11n_40MHz (ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-9.407	7.583	≦28.40
159	5795	-4.94	12.050	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

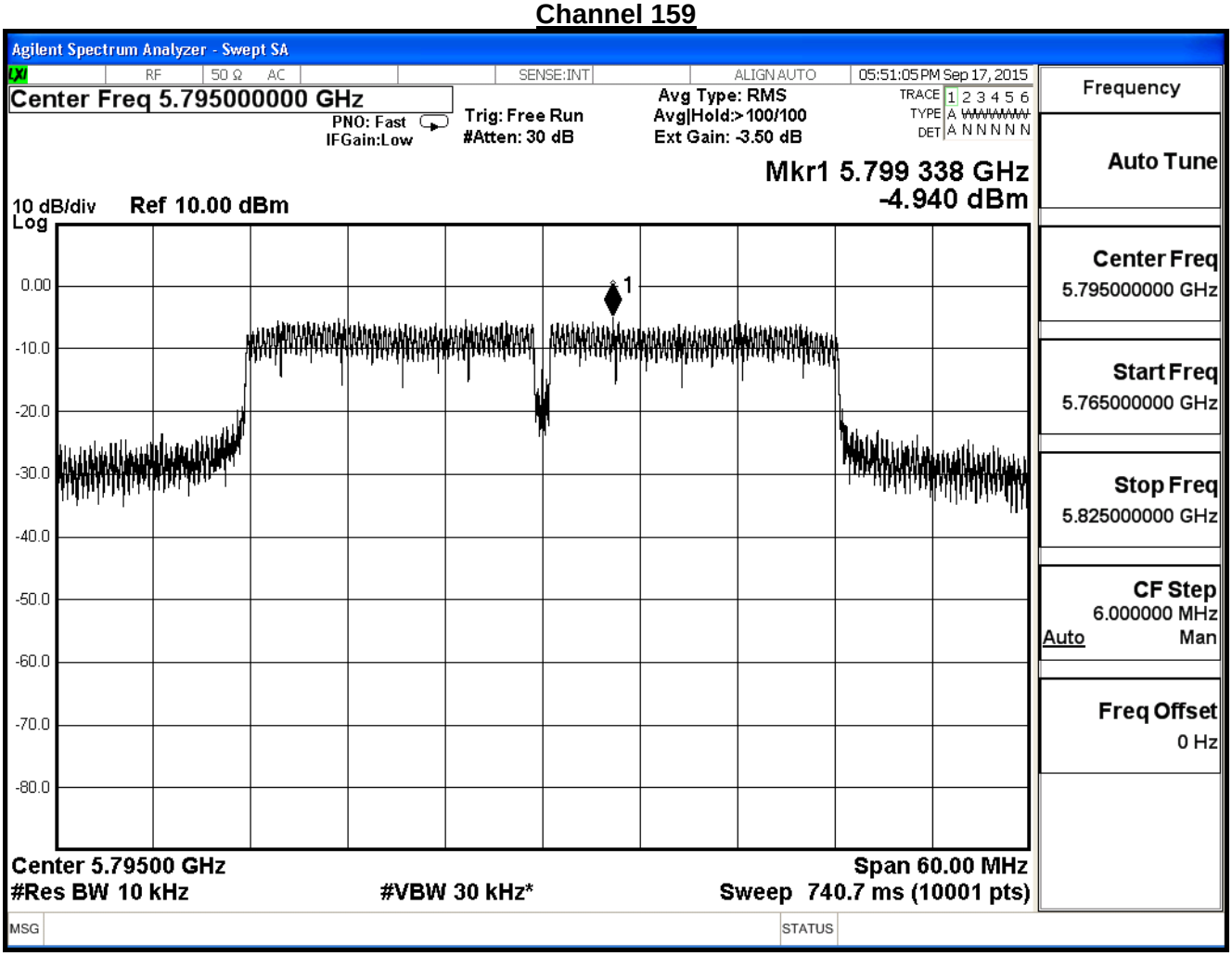
Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:41:39 PM Sep 17, 2015
Center Freq 5.755000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.742 754 GHz
-9.407 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.75500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
File <n40 5755-1.png> saved
STATUS
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image

Channel 159


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:51:05 PM Sep 17, 2015
Center Freq 5.795000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.799 338 GHz
-4.940 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.79500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 60.00 MHz
Sweep 740.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.795000000 GHz
Start Freq
5.765000000 GHz
Stop Freq
5.825000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

IEEE802.11n 40MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
151	5755	12.474	≦28.40
159	5795	16.703	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

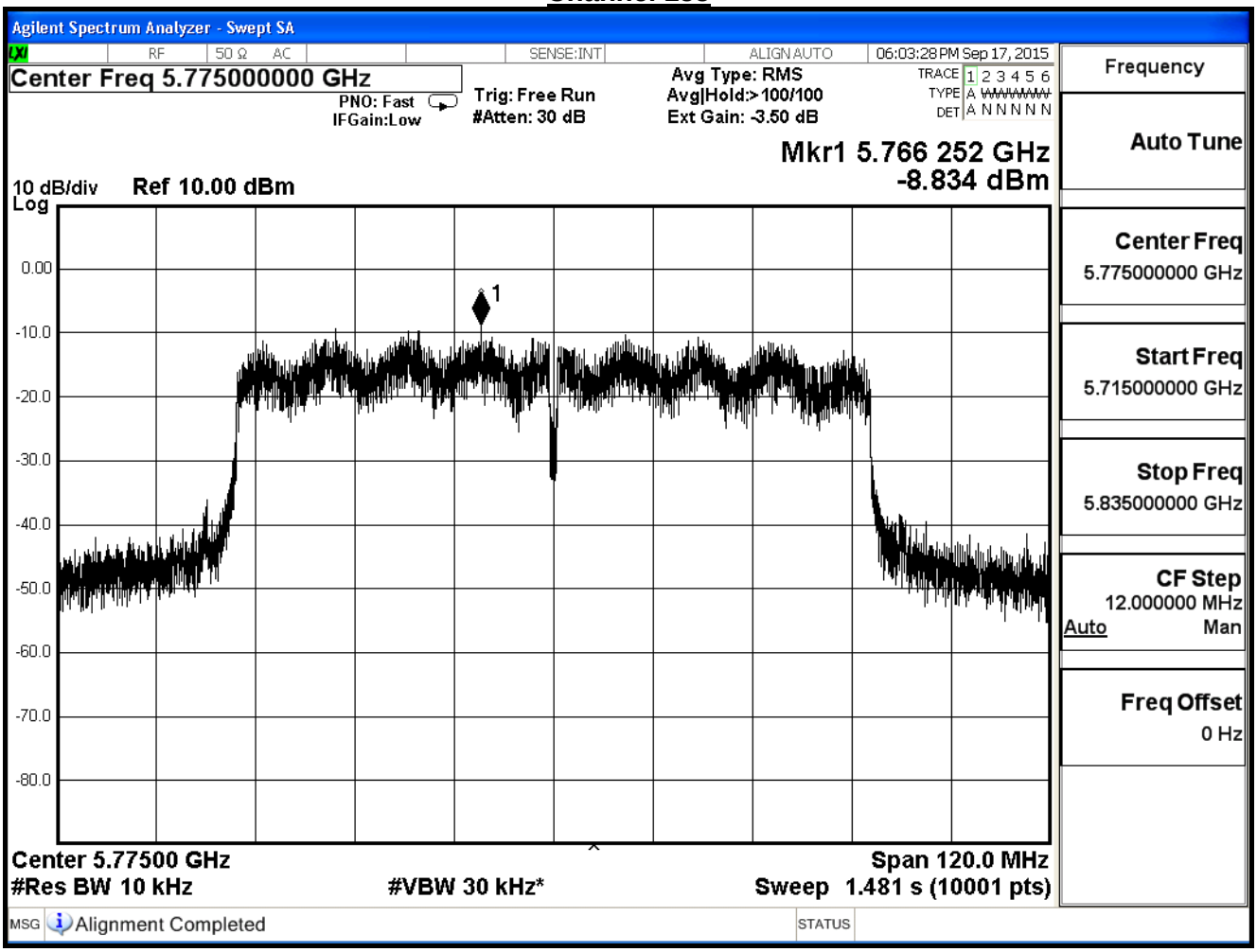
IEEE 802.11ac_80MHz (ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-8.834	8.156	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
06:03:28 PM Sep 17, 2015
Center Freq 5.775000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.766 252 GHz
-8.834 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.77500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 120.0 MHz
Sweep 1.481 s (10001 pts)
MSG
Alignment Completed
STATUS
Frequency
Auto Tune
Center Freq
5.775000000 GHz
Start Freq
5.715000000 GHz
Stop Freq
5.835000000 GHz
CF Step
12.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

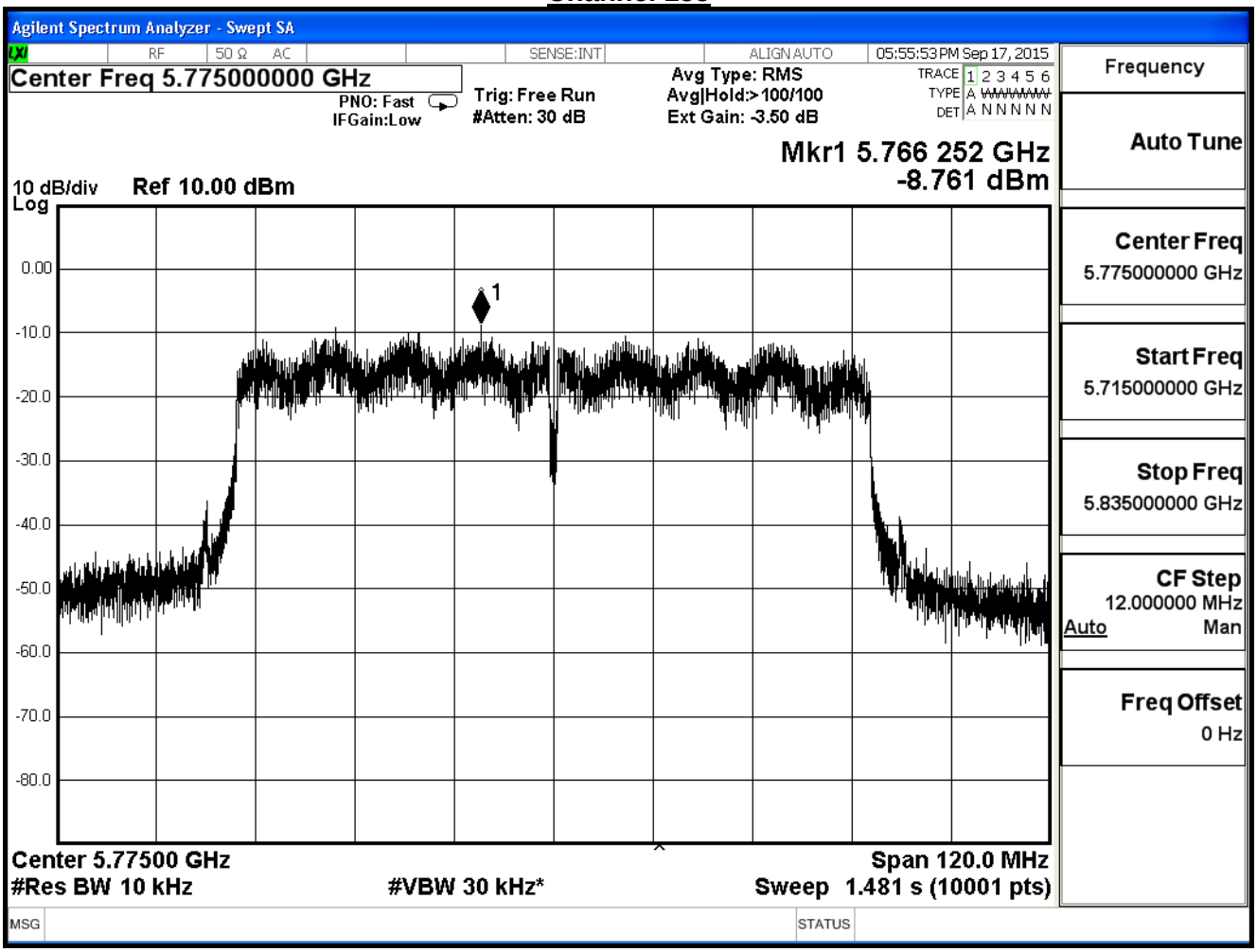
IEEE 802.11ac_80MHz (ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-8.761	8.229	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:55:53 PM Sep 17, 2015
Center Freq 5.775000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.766 252 GHz
-8.761 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.77500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 120.0 MHz
Sweep 1.481 s (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
5.775000000 GHz
Start Freq
5.715000000 GHz
Stop Freq
5.835000000 GHz
CF Step
12.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

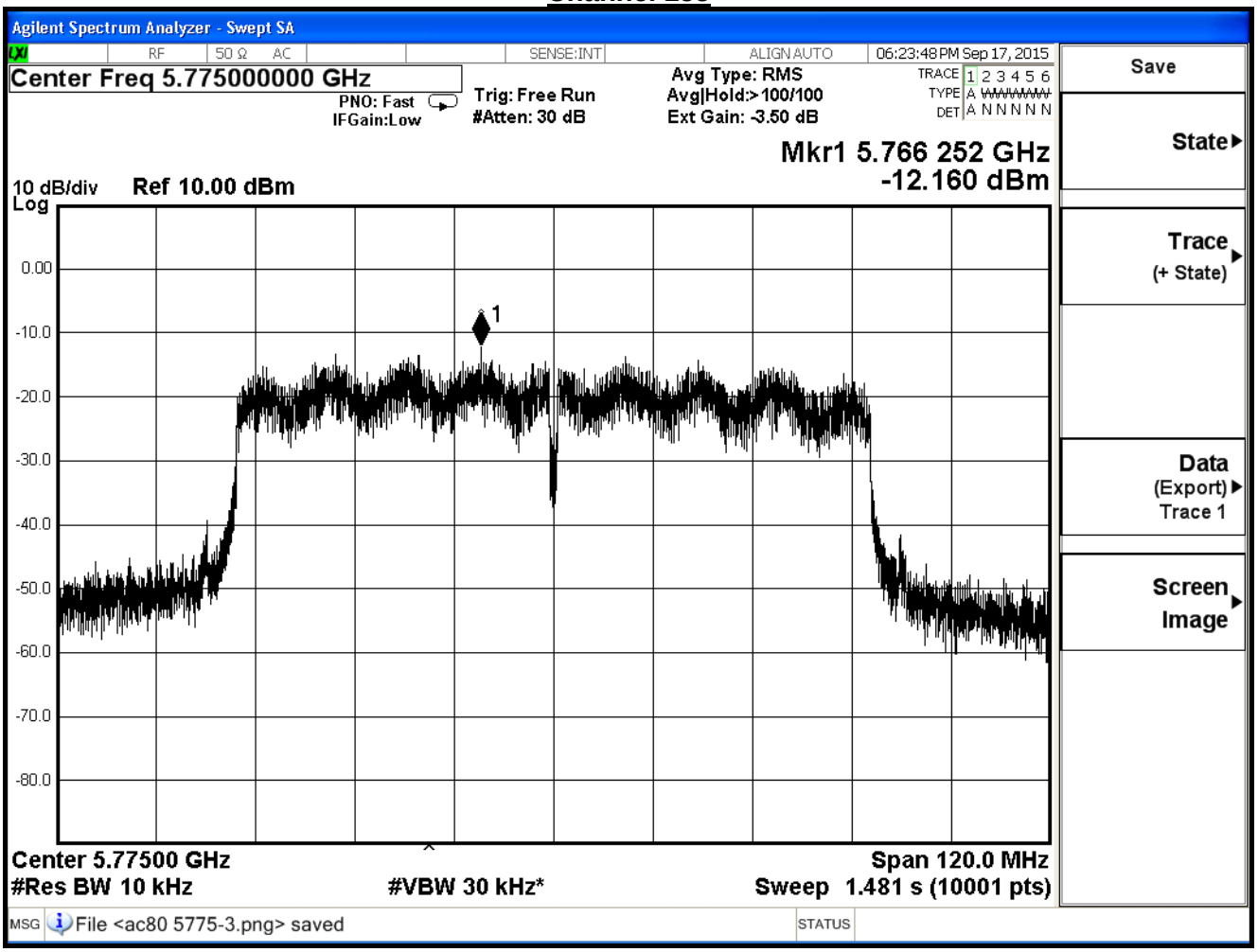
IEEE 802.11ac_80MHz (ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-12.16	4.830	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
06:23:48 PM Sep 17, 2015
Center Freq 5.775000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -3.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 5.766 252 GHz
-12.160 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Center 5.77500 GHz
#Res BW 10 kHz
#VBW 30 kHz*
Span 120.0 MHz
Sweep 1.481 s (10001 pts)
Save
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image
MSG
File <ac80 5775-3.png> saved
STATUS

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 1: Transmit_CDD Mode_AD890326		
Date of Test	2015/09/17	Test Site	SR7

IEEE802.11ac 80MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
155	5775	12.104	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

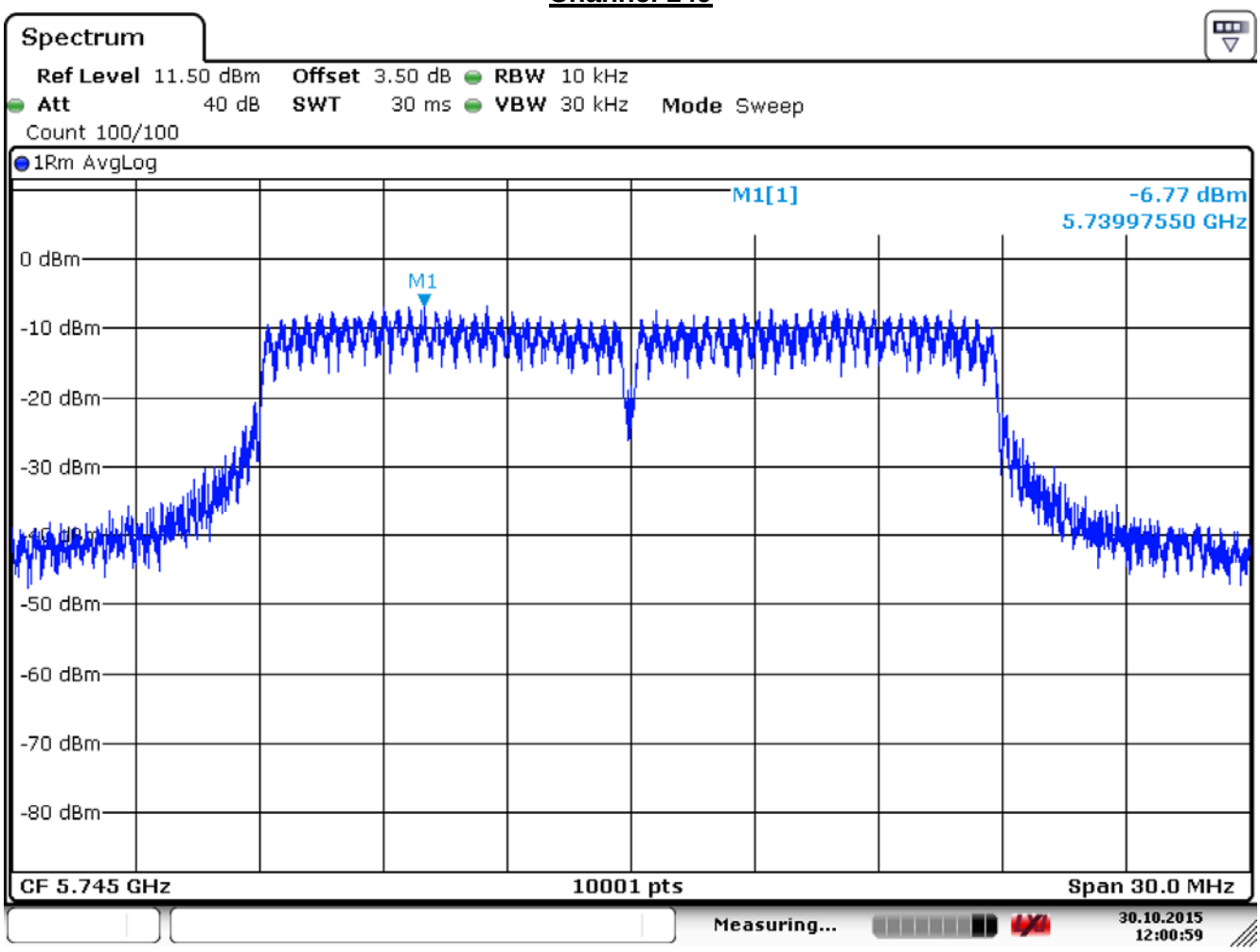
IEEE802.11n_20MHz_(ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-6.77	10.22	≦28.40
157	5785	-5.14	11.85	≦28.40
165	5825	-5.56	11.43	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

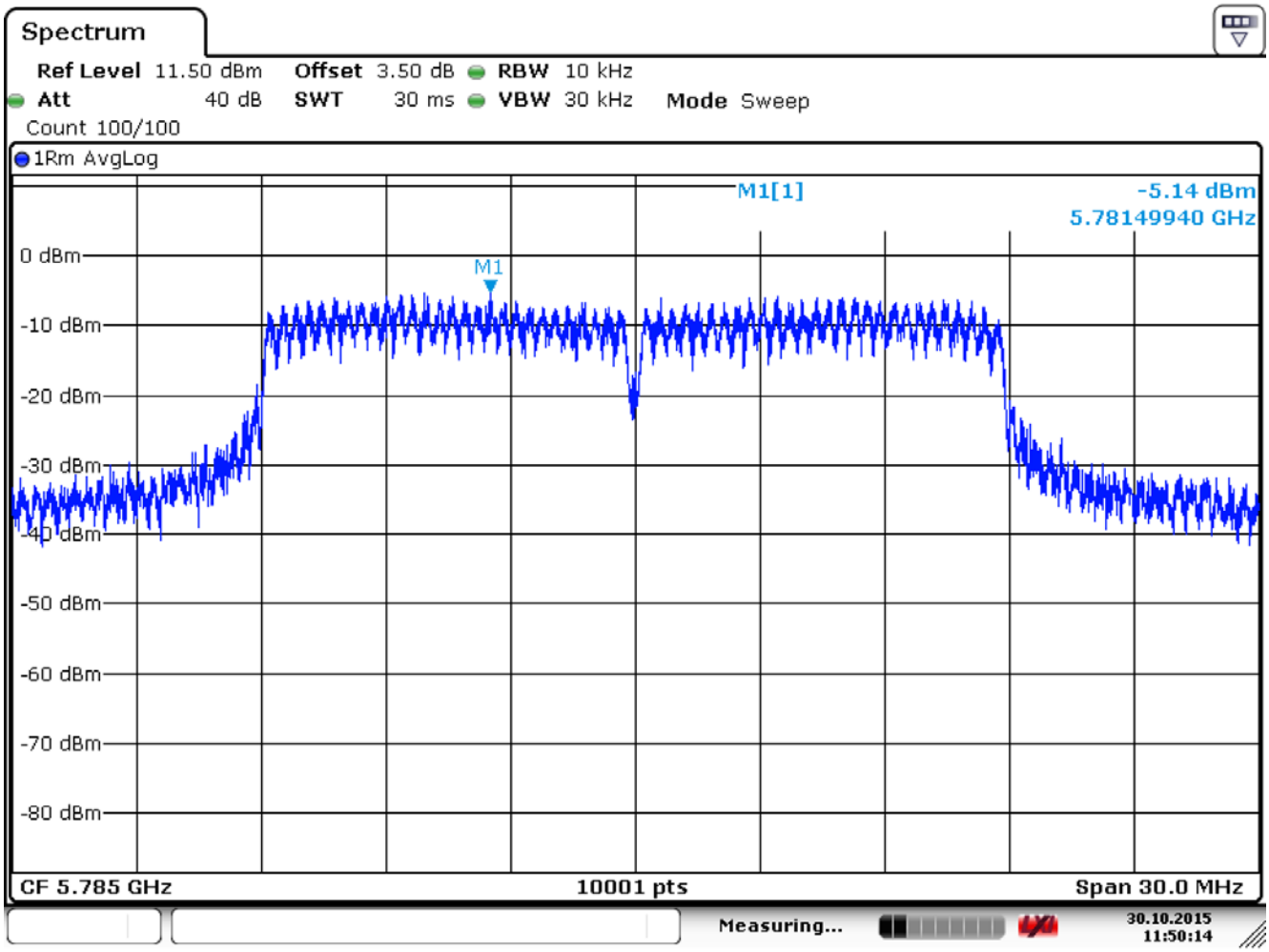
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 149



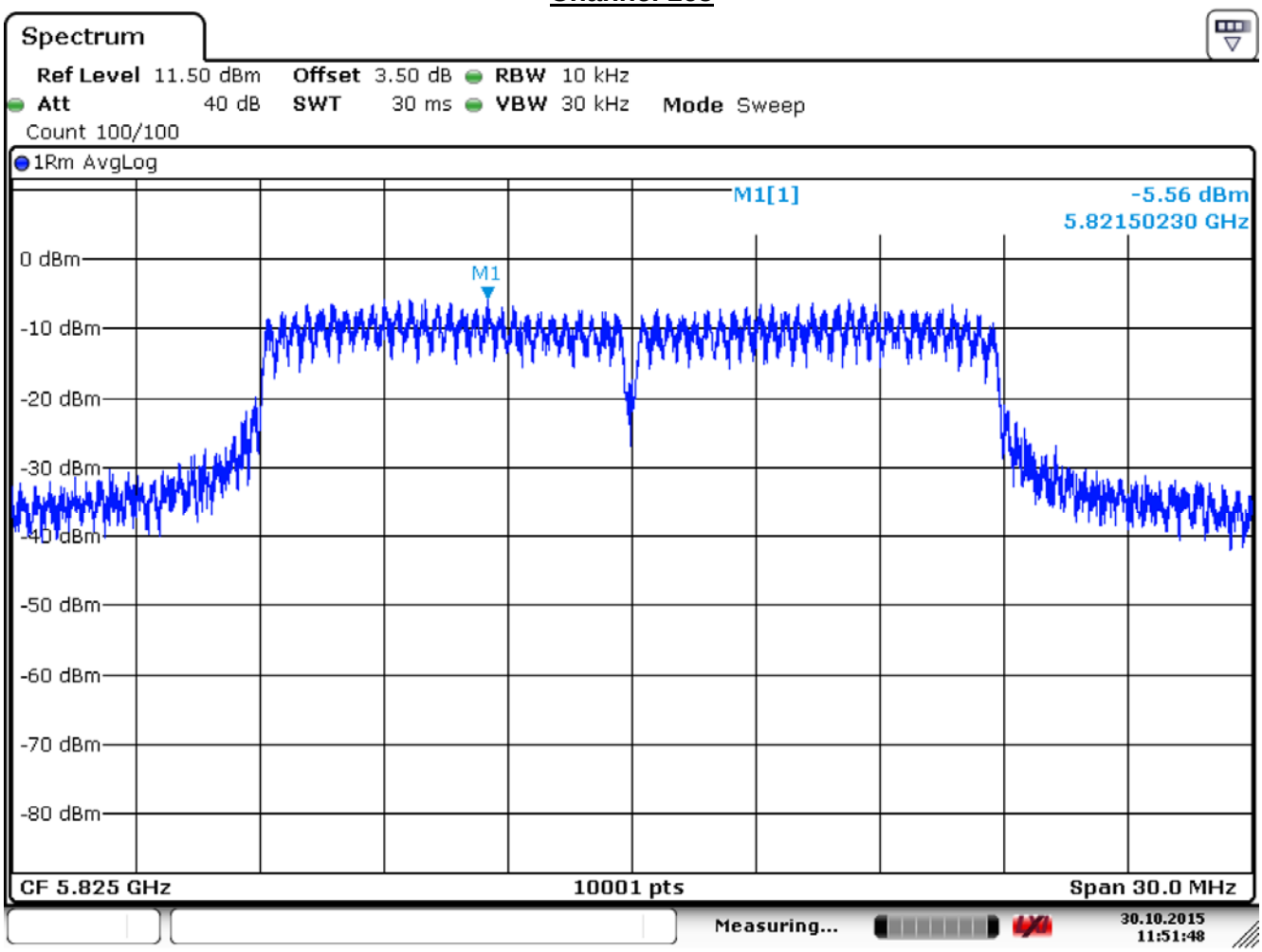
Date: 30.OCT.2015 12:00:59

Channel 157



Date: 30.OCT.2015 11:50:14

Channel 165



Date: 30.OCT.2015 11:51:48

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

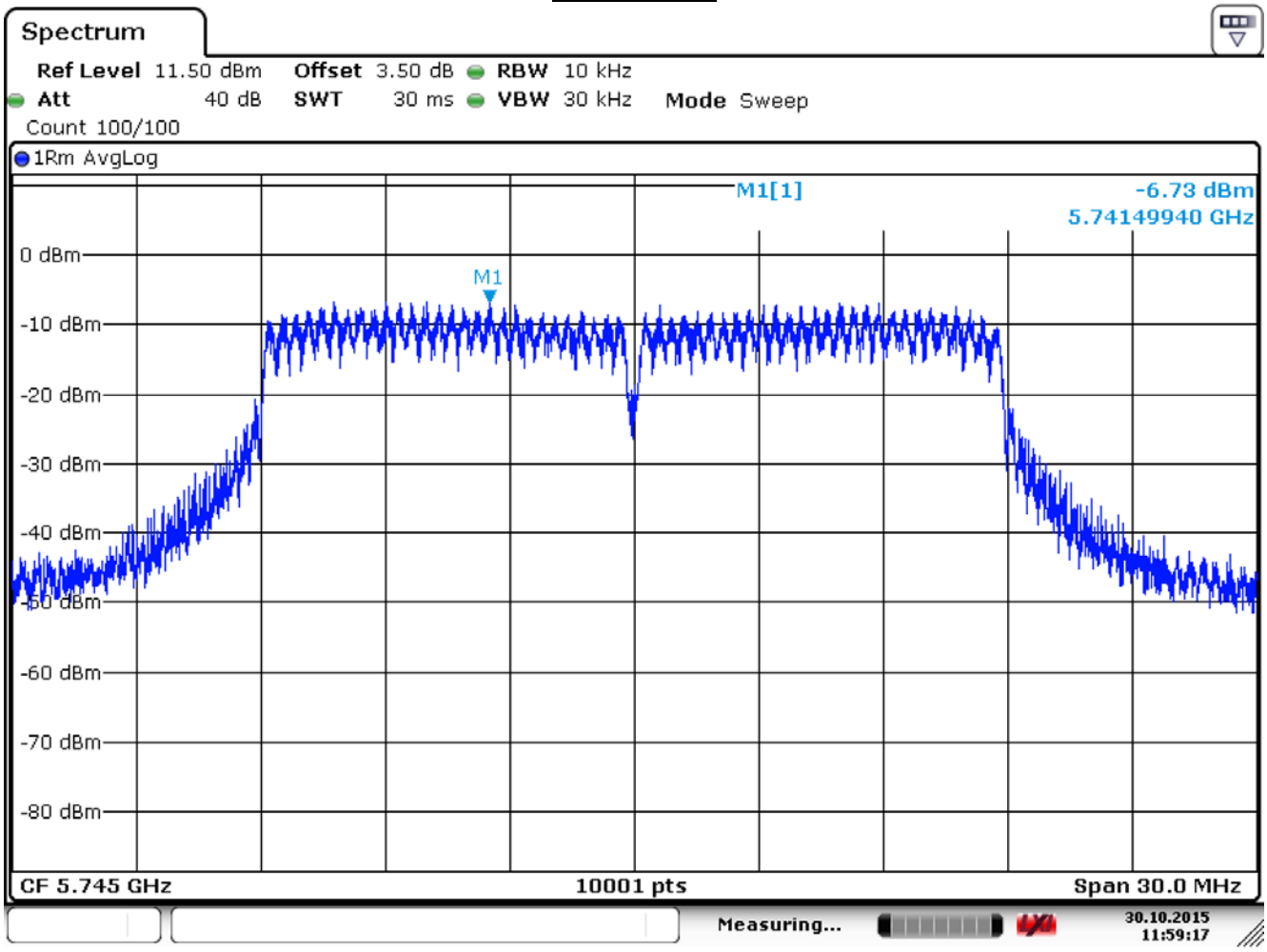
IEEE802.11n_20MHz_(ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-6.73	10.26	≦28.40
157	5785	-5.36	11.63	≦28.40
165	5825	-5.36	11.63	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

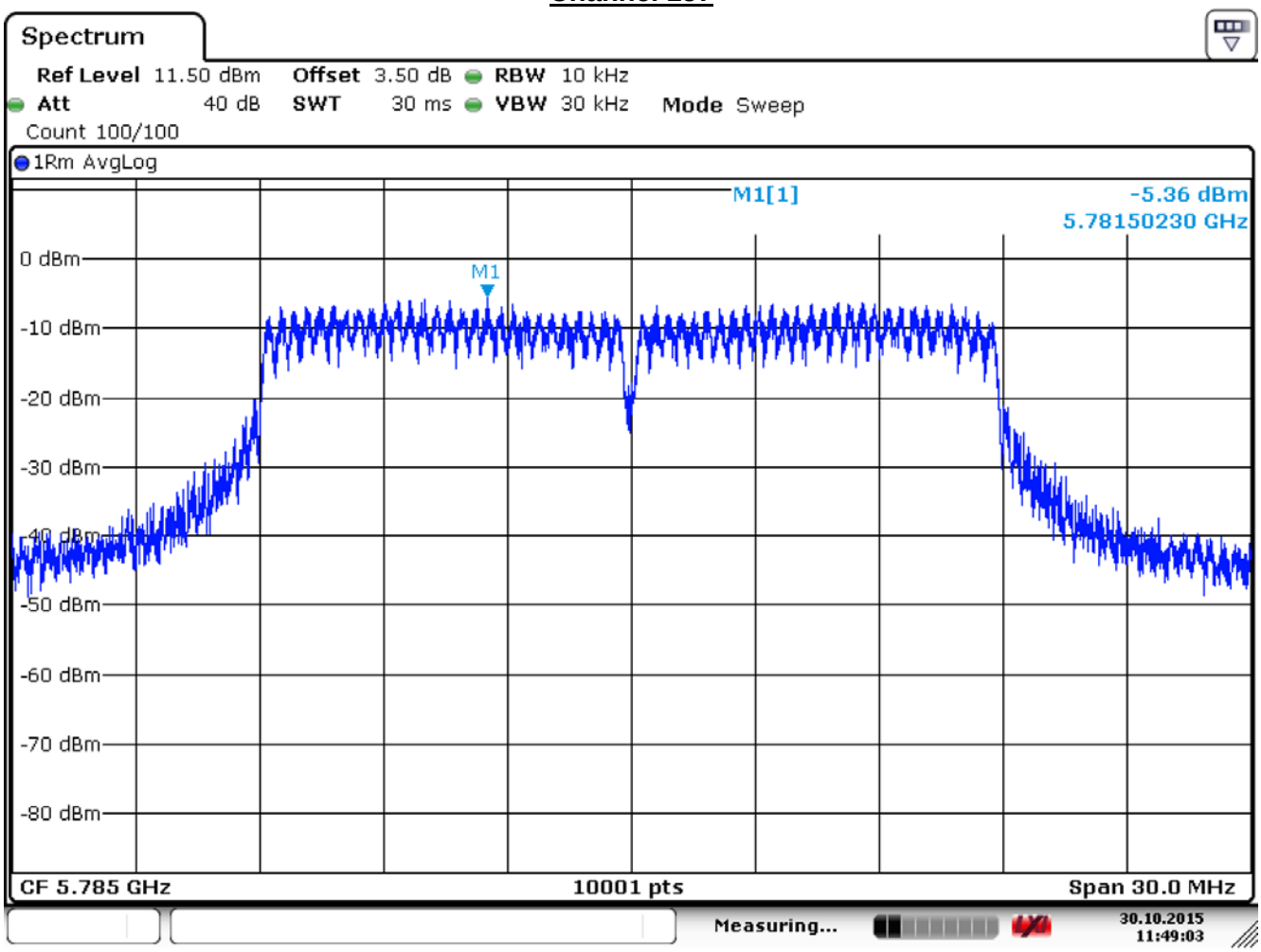
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 149



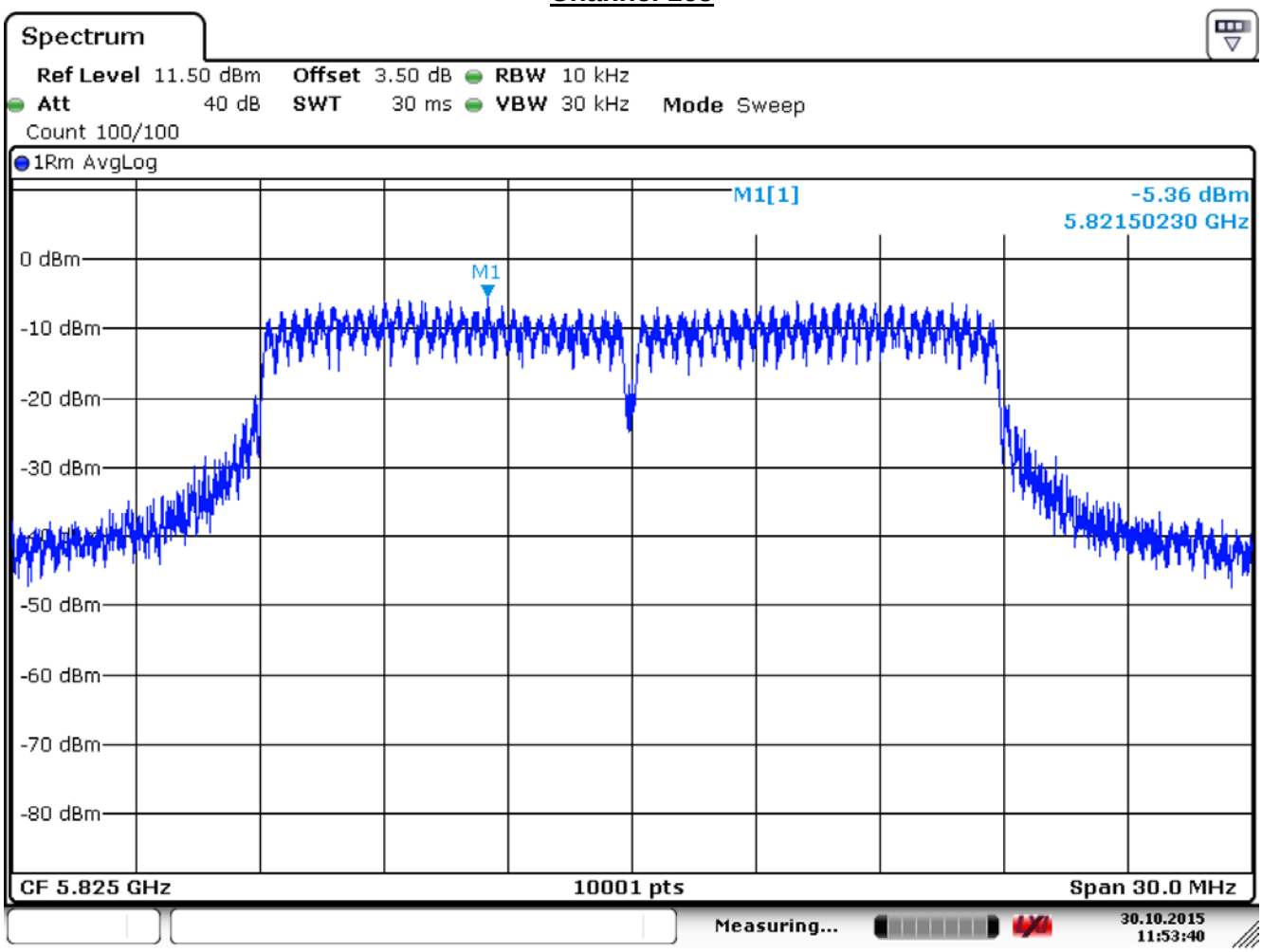
Date: 30.OCT.2015 11:59:17

Channel 157



Date: 30.OCT.2015 11:49:04

Channel 165



Date: 30.OCT.2015 11:53:40

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

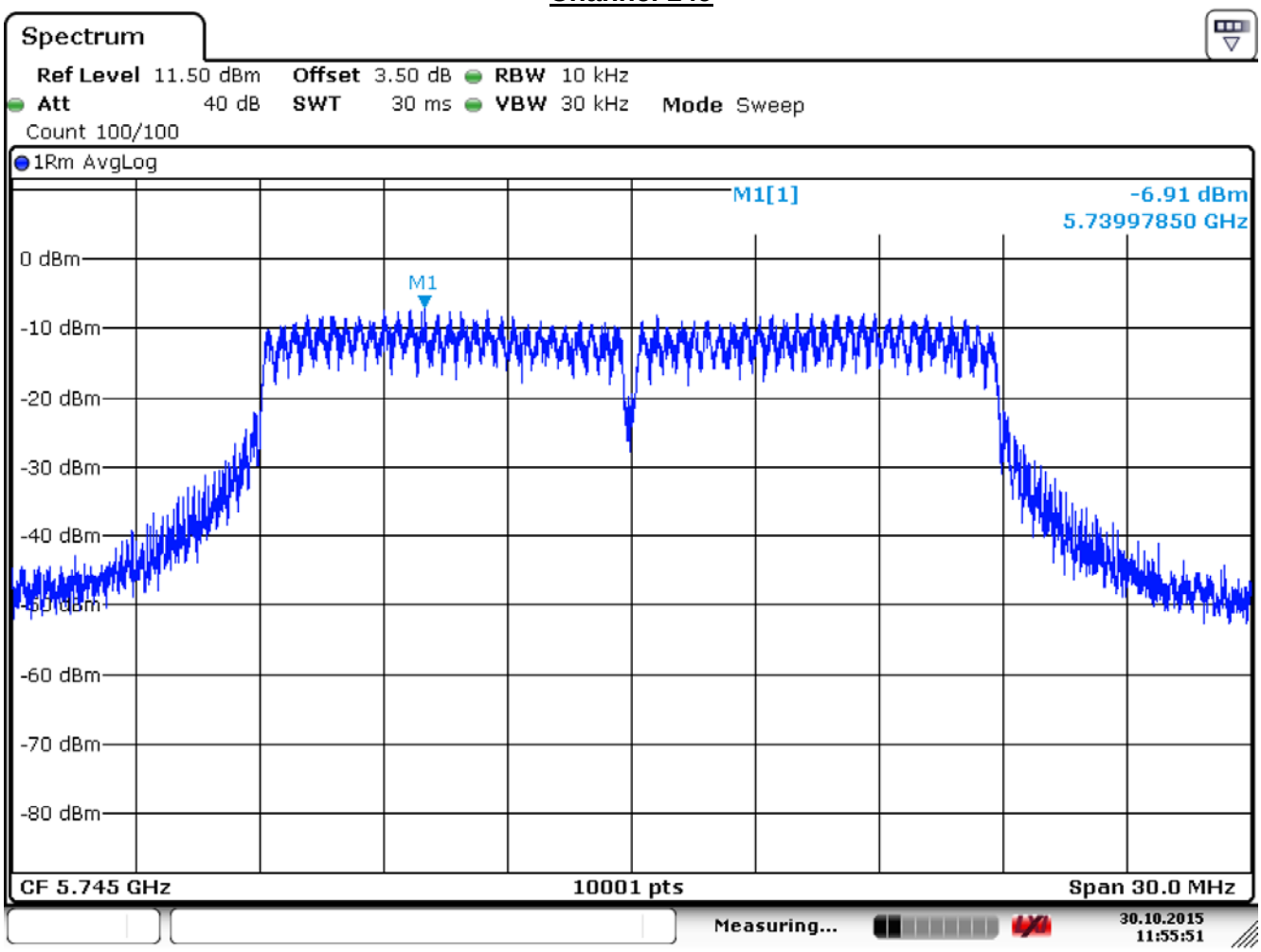
IEEE802.11n_20MHz_(ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
149	5745	-6.91	10.08	≦28.40
157	5785	-5.96	11.03	≦28.40
165	5825	-5.55	11.44	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

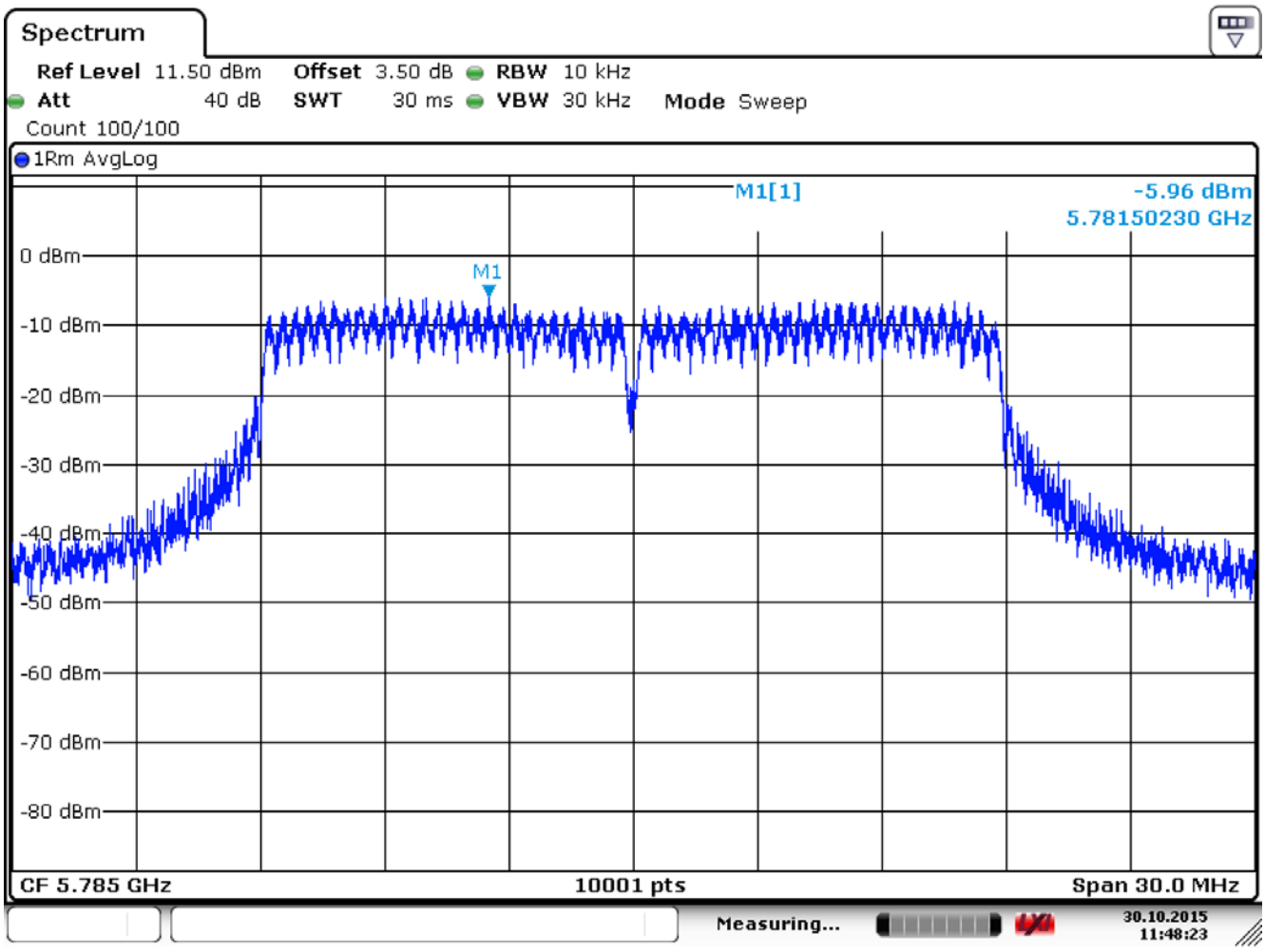
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 149



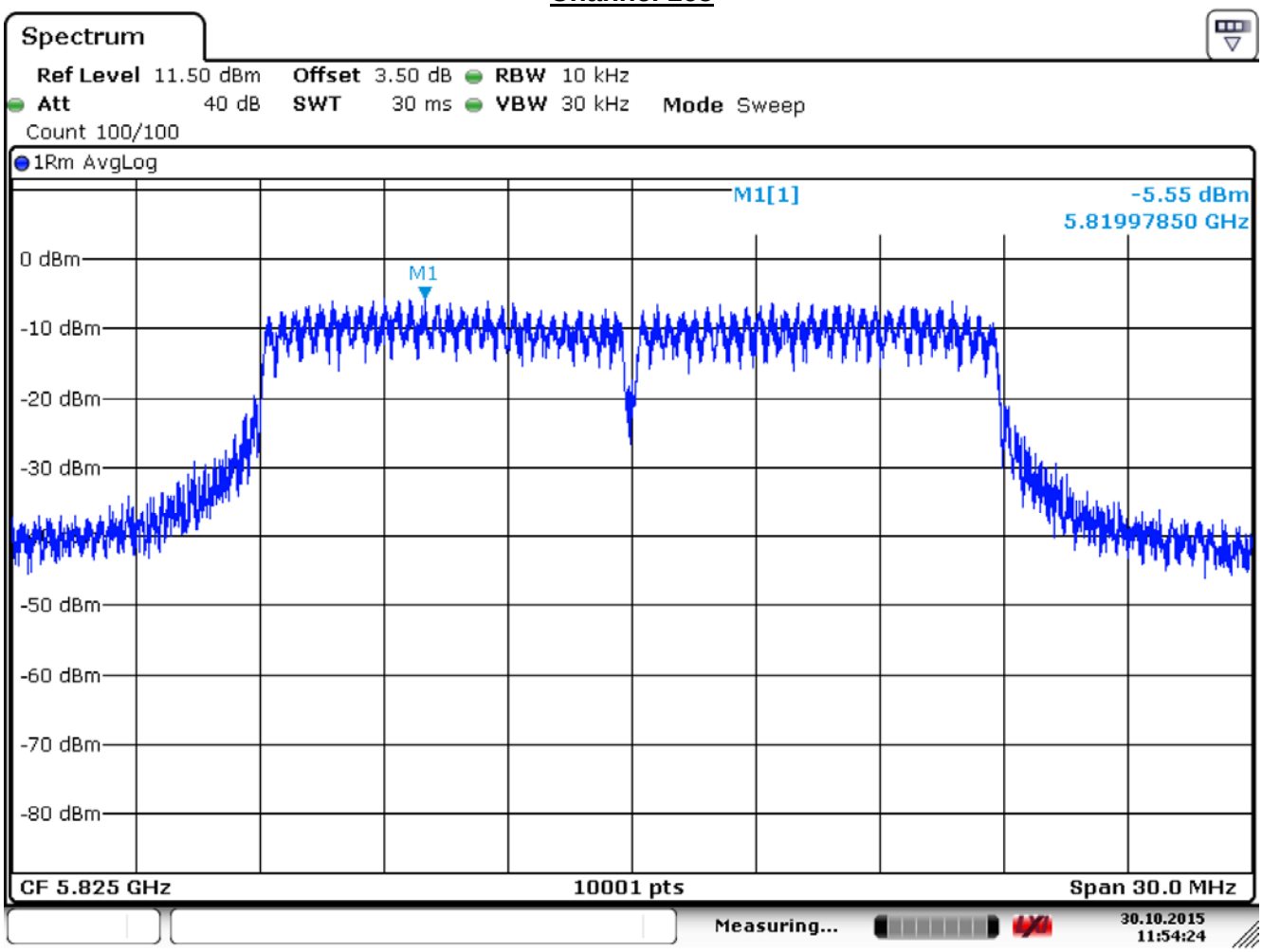
Date: 30.OCT.2015 11:55:51

Channel 157



Date: 30.OCT.2015 11:48:22

Channel 165



Date: 30.OCT.2015 11:54:24

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

IEEE802.11n 20MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
149	5745	14.96	≦28.40
157	5785	16.29	≦28.40
165	5825	16.27	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

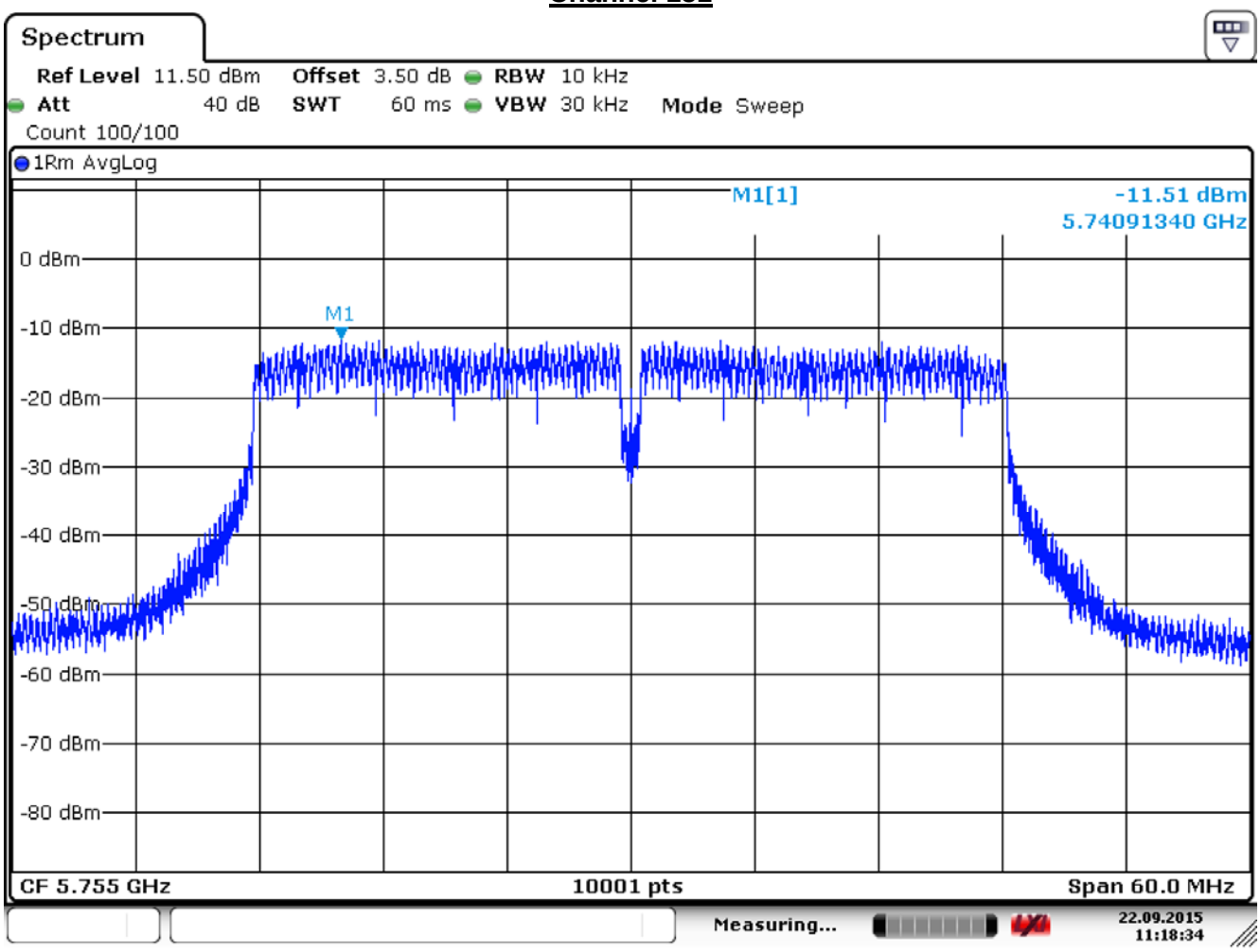
IEEE 802.11n_40MHz (ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-11.51	5.48	≦28.40
159	5795	-9.59	7.40	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

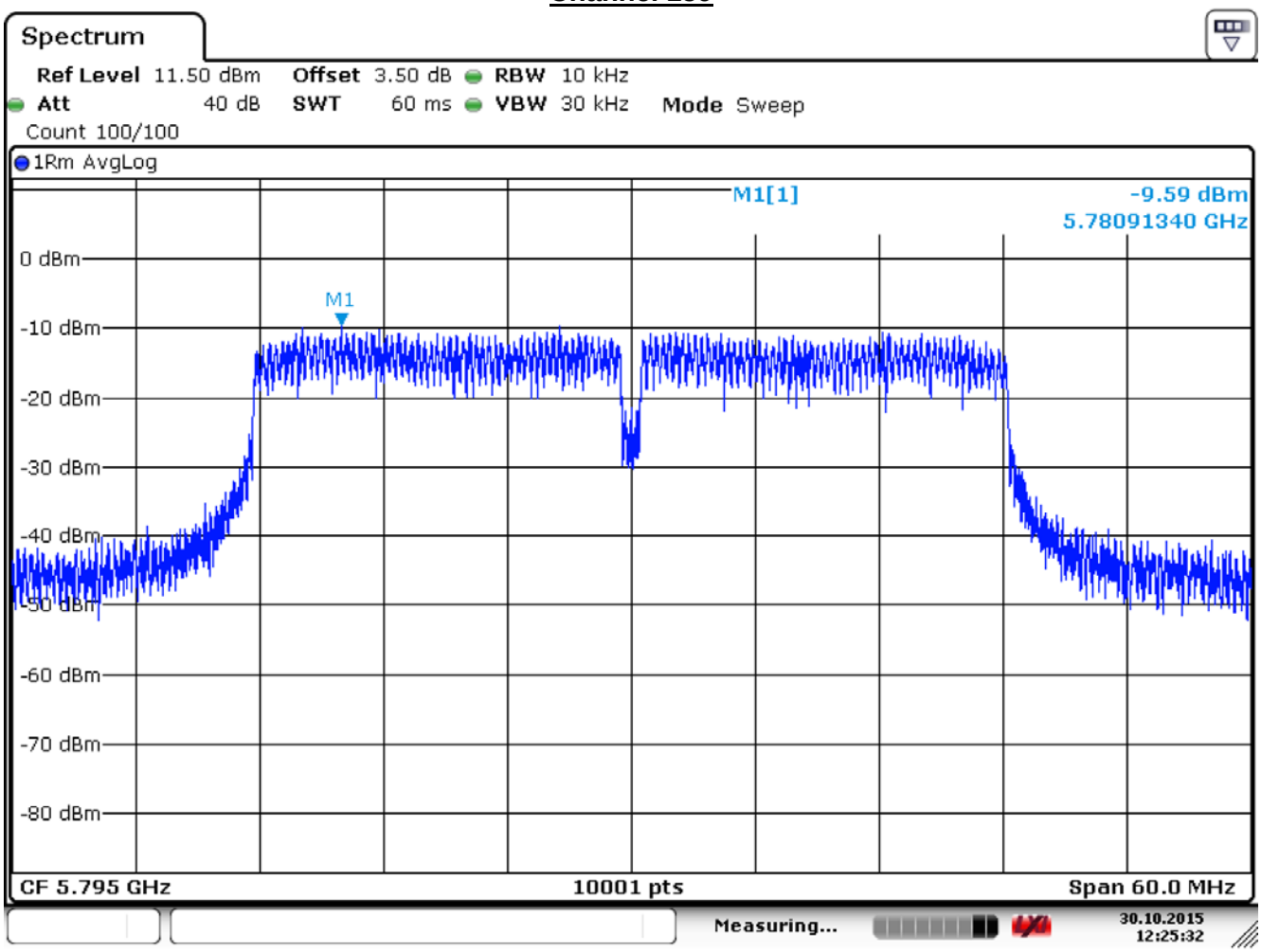
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151



Date: 22.SEP.2015 11:18:34

Channel 159



Date: 30.OCT.2015 12:25:32

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

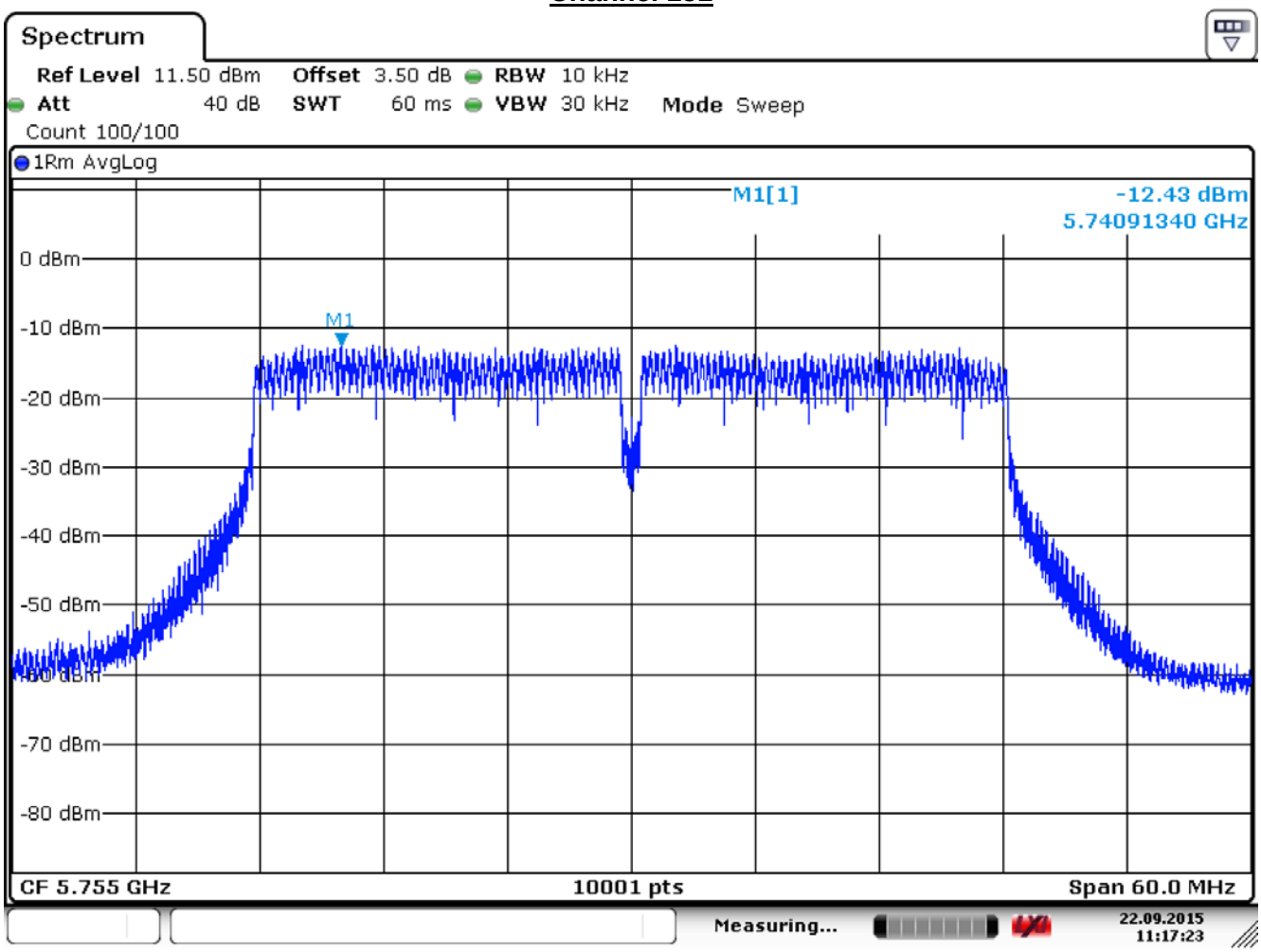
IEEE 802.11n_40MHz (ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-12.43	4.56	≦28.40
159	5795	-9.56	7.43	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

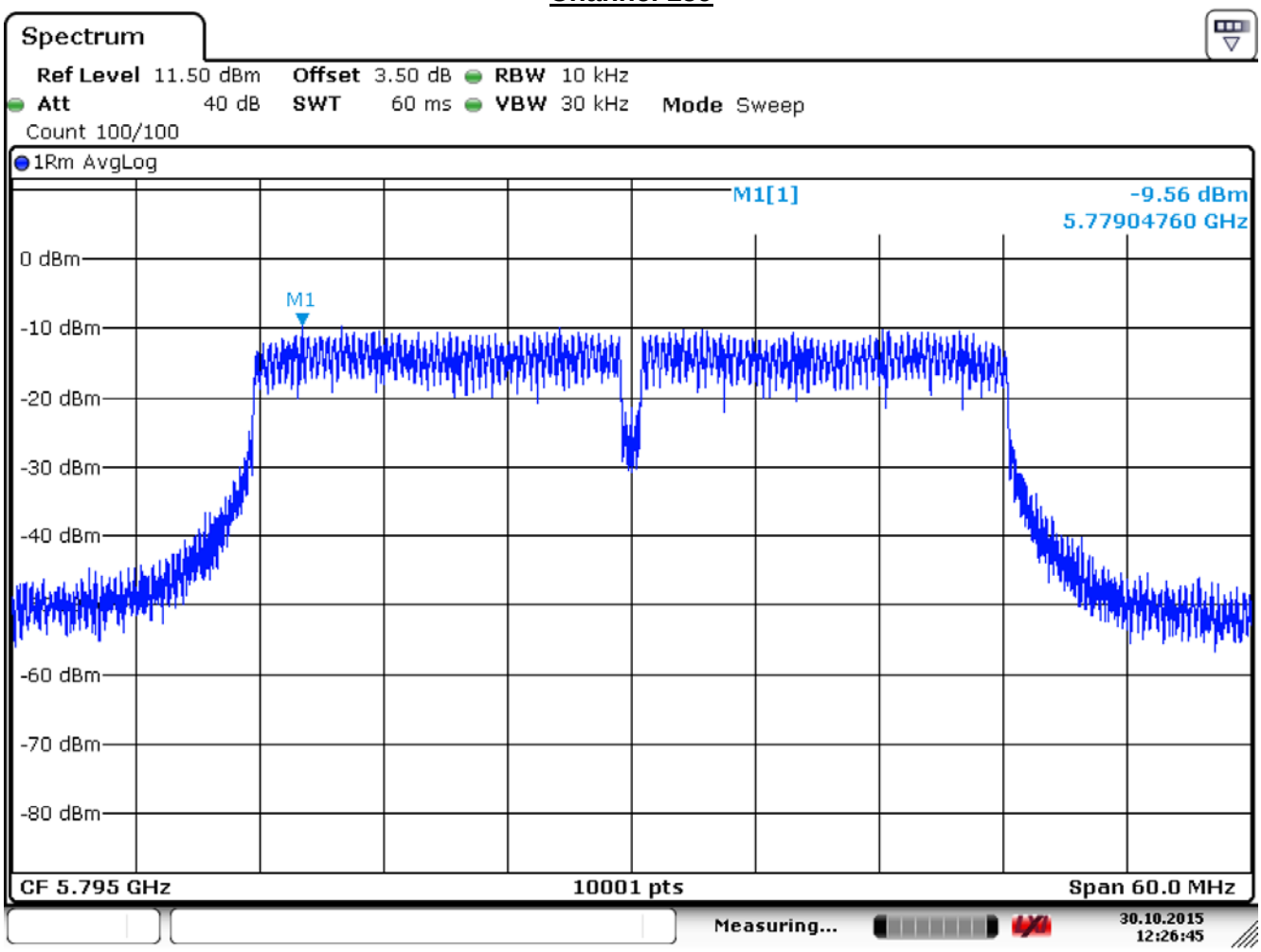
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151



Date: 22.SEP.2015 11:17:22

Channel 159



Date: 30.OCT.2015 12:26:44

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

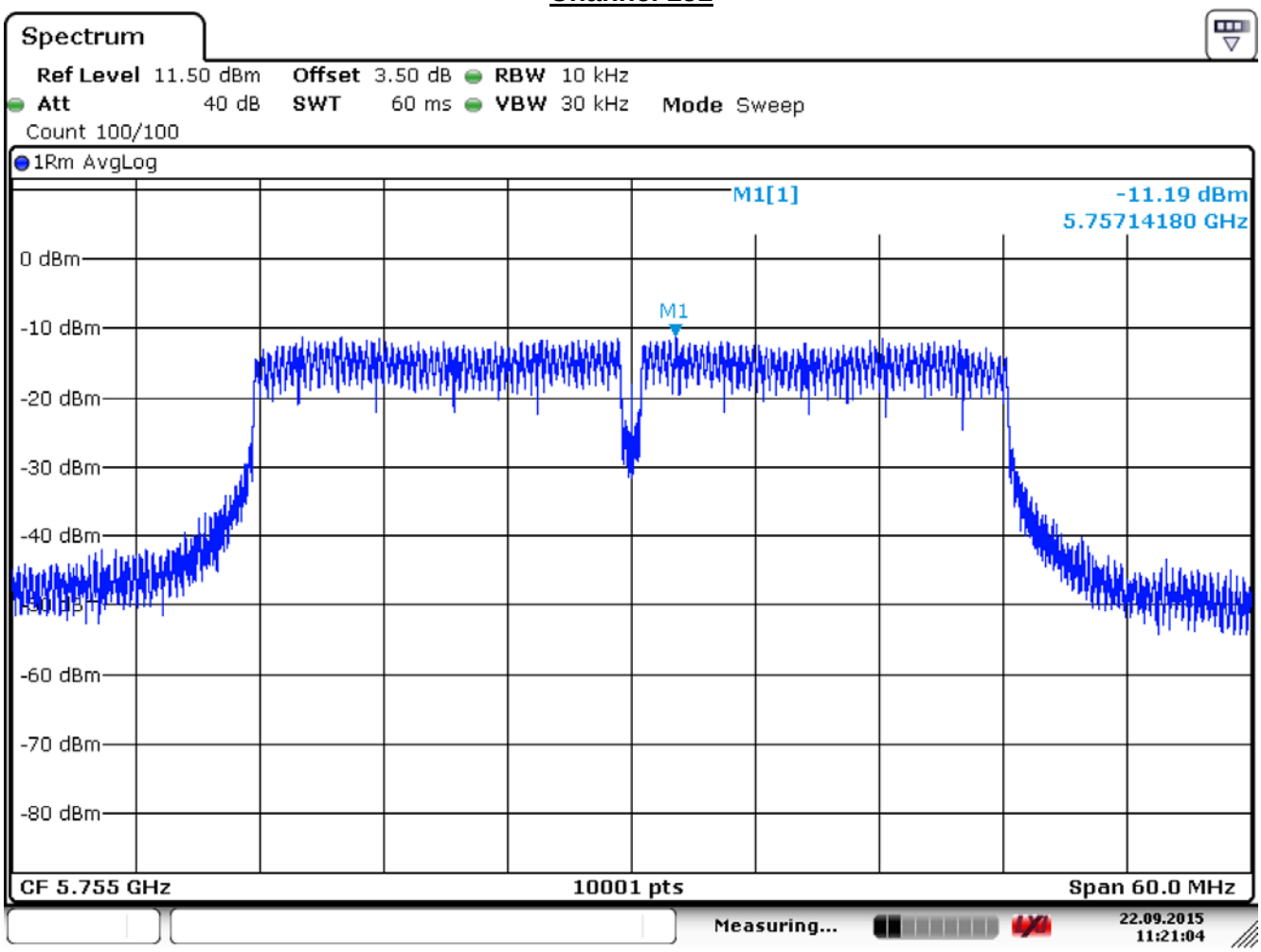
IEEE 802.11n_40MHz (ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
151	5755	-11.19	5.80	≦28.40
159	5795	-9.5	7.49	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

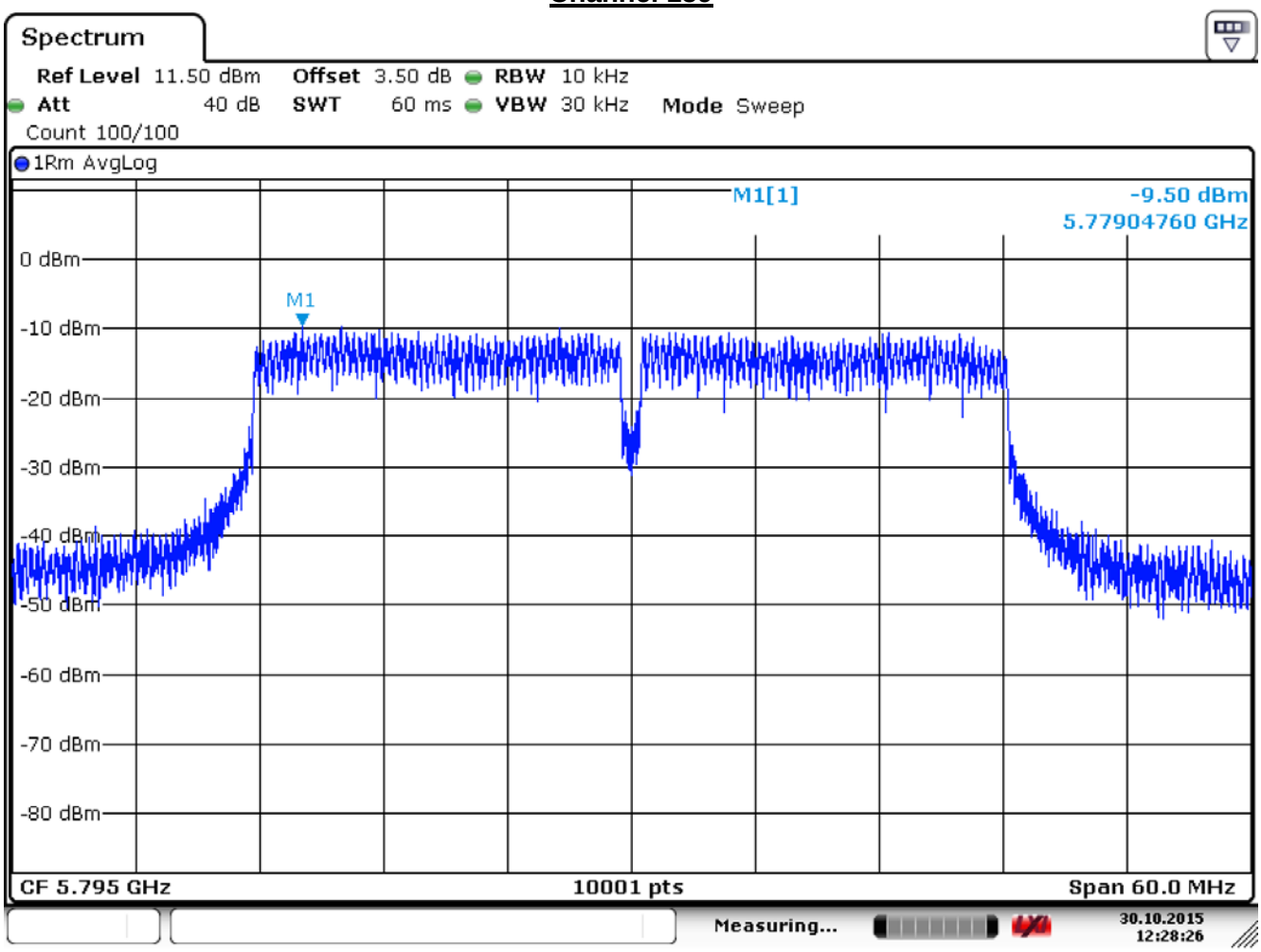
Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 151



Date: 22.SEP.2015 11:21:04

Channel 159



Date: 30.OCT.2015 12:28:26

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

IEEE802.11n 40MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
151	5755	10.08	≦28.40
159	5795	12.21	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

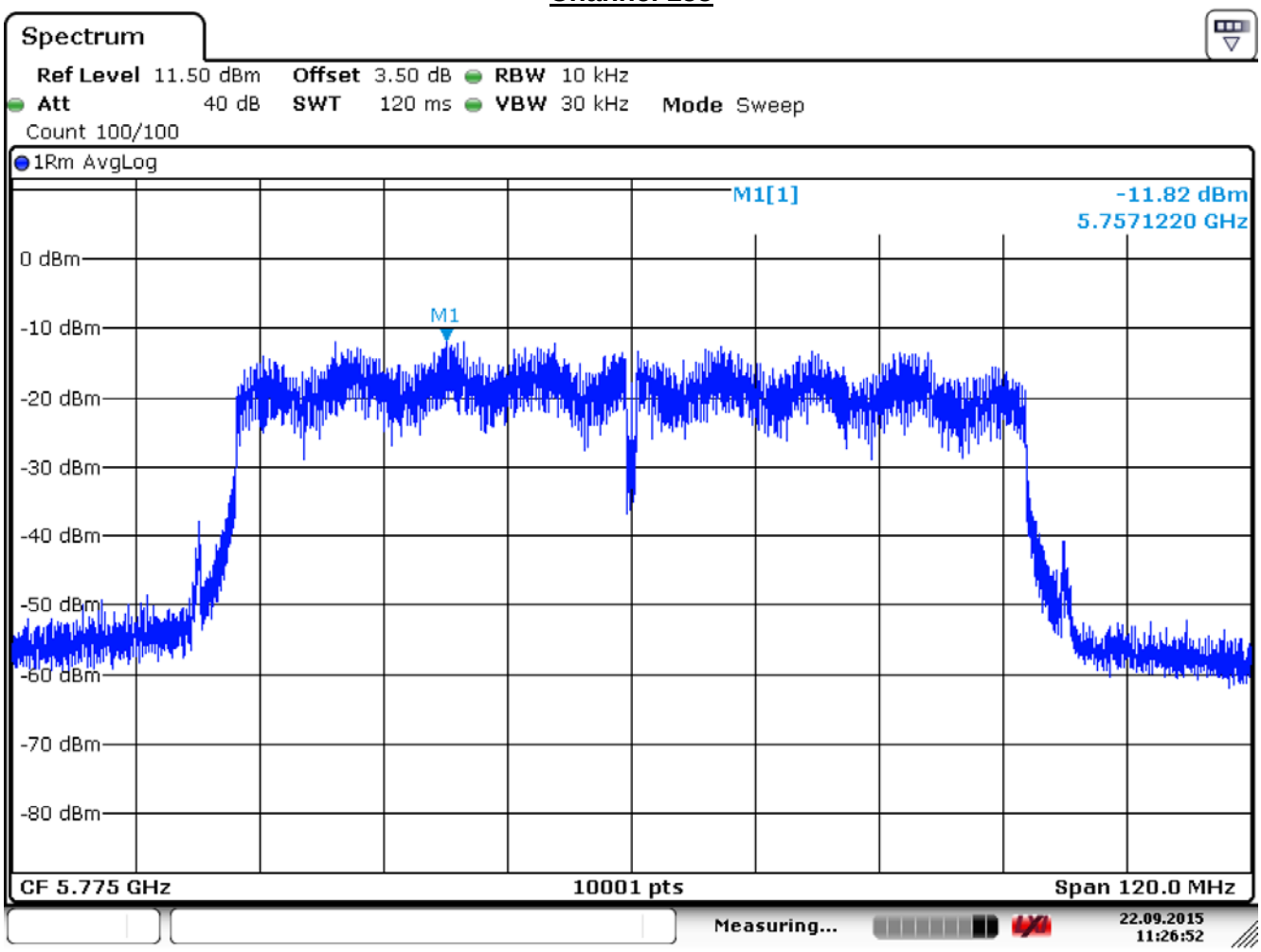
IEEE 802.11ac_80MHz (ANT 0)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-11.82	5.17	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155



Date: 22.SEP.2015 11:26:52

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

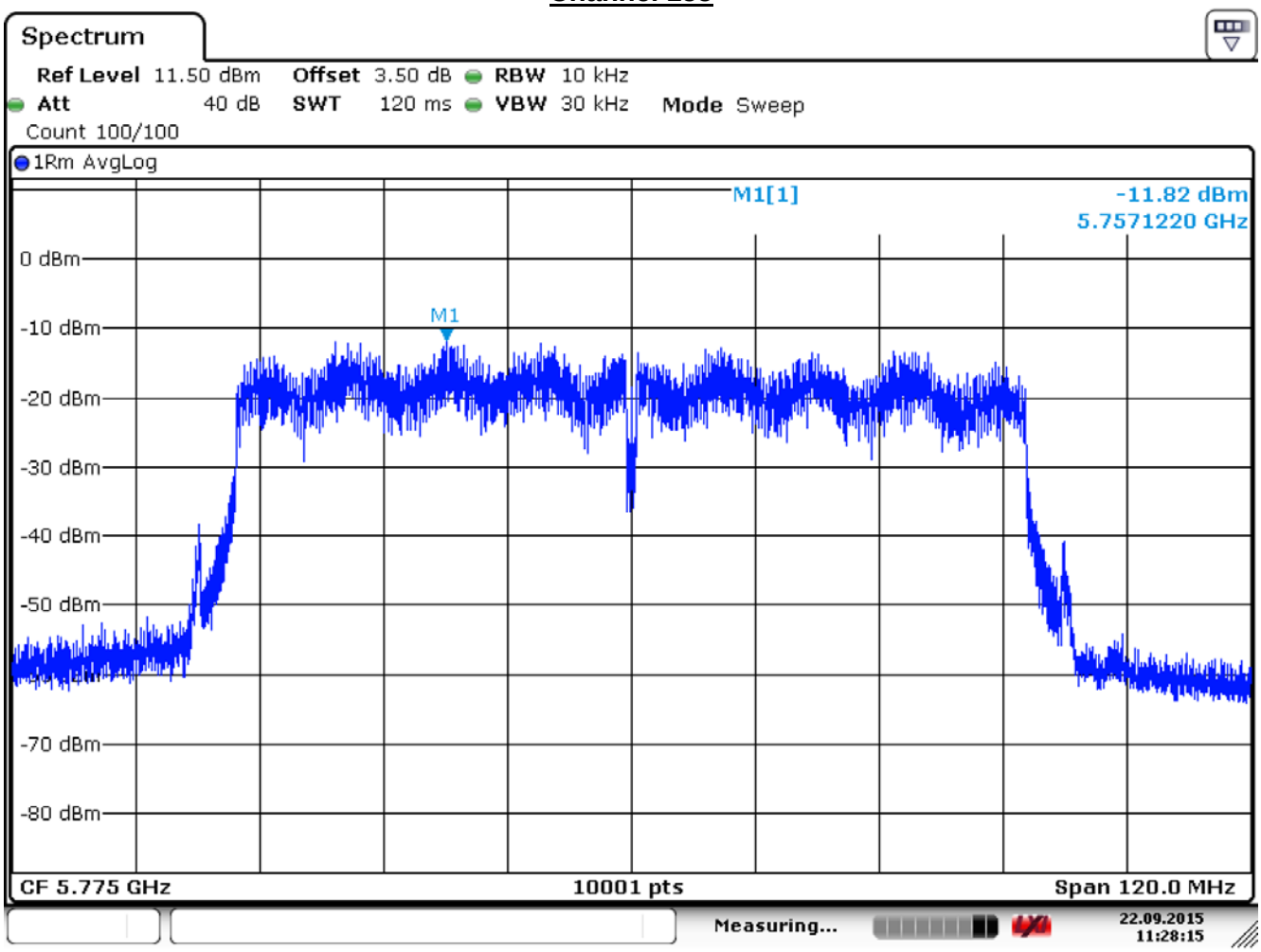
IEEE 802.11ac_80MHz (ANT 1)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-11.82	5.17	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155



Date: 22.SEP.2015 11:28:14

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

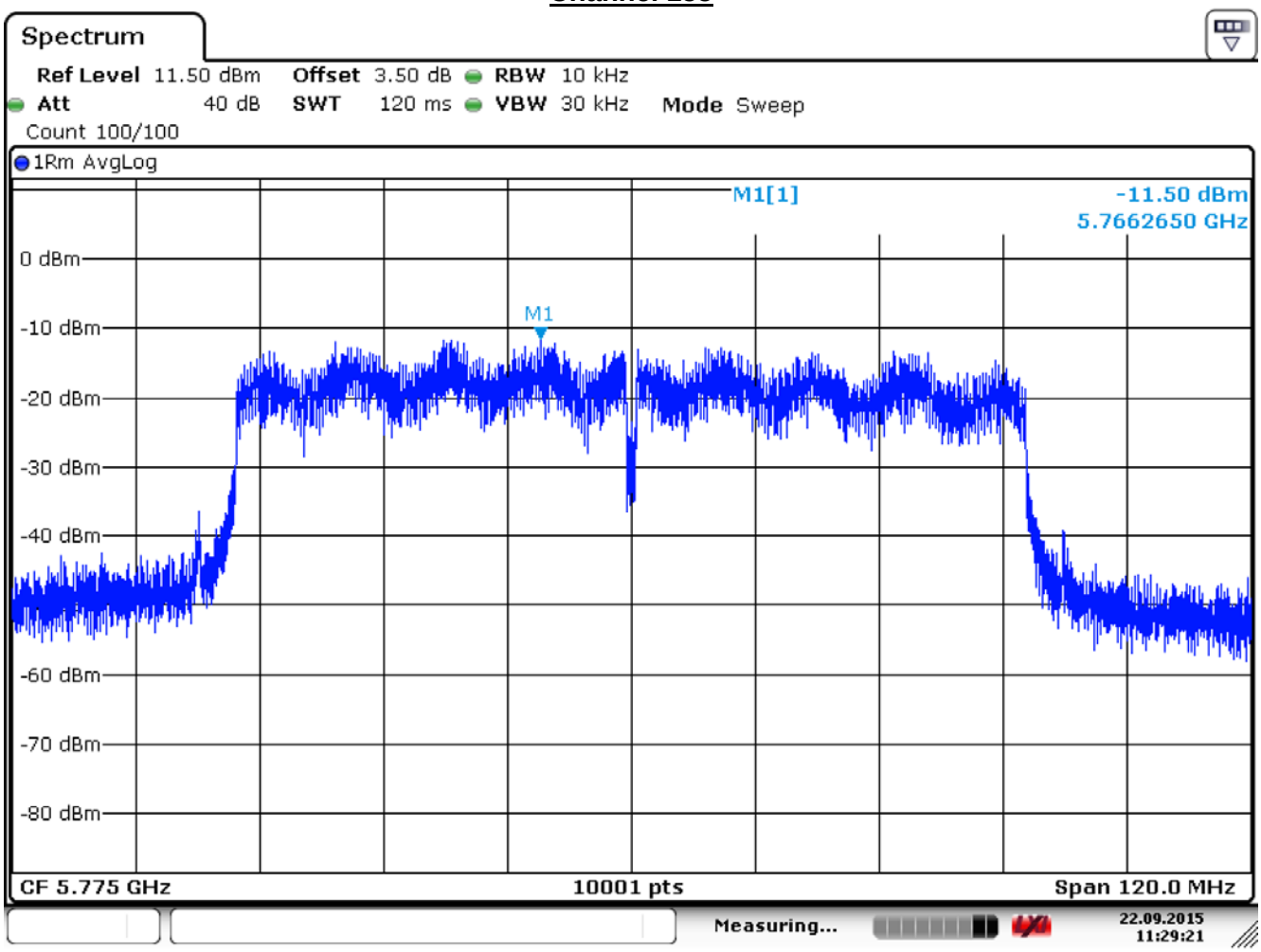
IEEE 802.11ac_80MHz (ANT 2)				
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)
155	5775	-11.5	5.49	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

Channel 155



Date: 22.SEP.2015 11:29:21

Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectrum Density		
Test Mode	Mode 2: Transmit_Beamforming Mode_AD890326		
Date of Test	2015/09/22	Test Site	SR7

IEEE802.11ac 80MHz(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
155	5775	10.05	≦28.40

Directional Antenna: 10log(Ant N)+Max Gain =3+4.6 =7.60dBi

Peak Transmit Output Limit:30dBm-(7.60dBi-6dB)=28.40 dBm

Correct factor =10 log(500KHz/10KHz)=16.99 dB
Reading=measure + correct factor

3. Frequency Stability

3.1. Test Equipment

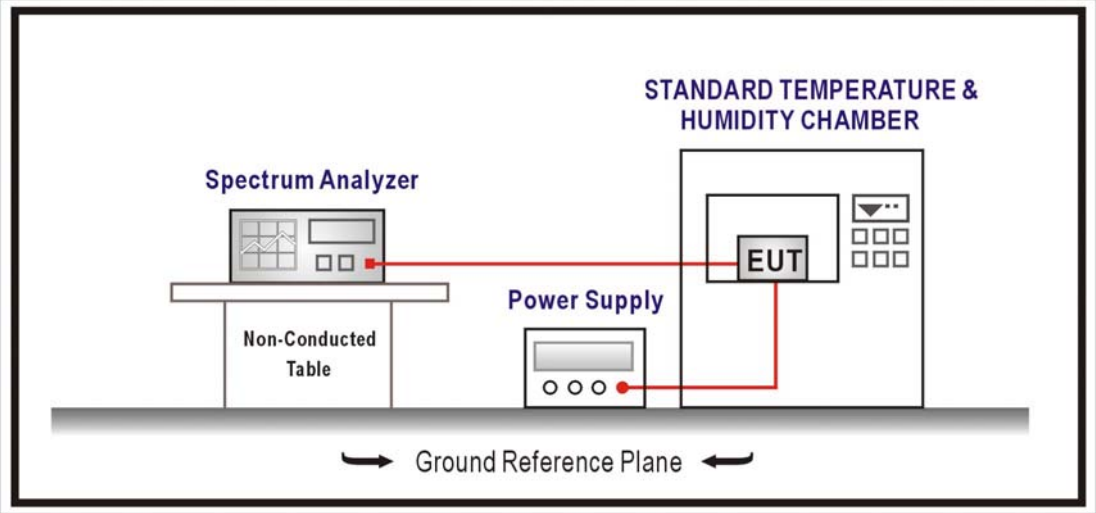
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2016/08/23
Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2017/01/18

Note: All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

Manufactures of all 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

3.4. Test Procedure

The EUT was setup to ANSI C63.10:2009; tested to U-NII test procedure of 789033 D02 V01R01 for compliance to FCC 47CFR Subpart E requirements.

3.5. Uncertainty

The measurement uncertainty is defined as ± 150 Hz

3.6. Test Result

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326_802.11a - 5745MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0162	2.8132	Pass
-10		5745.0093	1.6123	Pass
0		5744.9810	-3.3012	Pass
10		5744.9600	-6.9581	Pass
20		5744.9972	-0.4900	Pass
30		5744.9668	-5.7771	Pass
40		5744.9447	-9.6297	Pass
50		5744.9660	-5.9140	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5745.0023	0.3945	Pass
	120	5744.9892	-1.8827	Pass
	138	5744.9911	-1.5528	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11a - 5825MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0262	4.5039	Pass
-10		5825.0038	0.6493	Pass
0		5824.9777	-3.8328	Pass
10		5824.9841	-2.7214	Pass
20		5824.9707	-5.0243	Pass
30		5824.9540	-7.8893	Pass
40		5824.9925	-1.2899	Pass
50		5824.9605	-6.7768	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5825.0030	0.5137	Pass
	120	5824.9918	-1.4054	Pass
	138	5824.9987	-0.2221	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11a - 5745MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0096	1.6680	Pass
-10		5745.0085	1.4826	Pass
0		5744.9875	-2.1722	Pass
10		5744.9984	-0.2867	Pass
20		5744.9939	-1.0578	Pass
30		5744.9507	-8.5792	Pass
40		5744.9515	-8.4498	Pass
50		5744.9573	-7.4347	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5744.9990	-0.1821	Pass
	120	5745.0062	1.0710	Pass
	138	5745.0014	0.2473	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11a - 5825MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0193	3.3081	Pass
-10		5825.0105	1.8012	Pass
0		5824.9776	-3.8468	Pass
10		5824.9787	-3.6558	Pass
20		5824.9922	-1.3341	Pass
30		5824.9797	-3.4873	Pass
40		5824.9548	-7.7619	Pass
50		5824.9788	-3.6405	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5824.9989	-0.1807	Pass
	120	5825.0025	0.4275	Pass
	138	5824.9931	-1.1788	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11a - 5745MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0083	1.4388	Pass
-10		5745.0117	2.0363	Pass
0		5744.9935	-1.1230	Pass
10		5744.9819	-3.1476	Pass
20		5744.9703	-5.1664	Pass
30		5744.9963	-0.6402	Pass
40		5744.9631	-6.4303	Pass
50		5744.9910	-1.5719	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5745.0082	1.4205	Pass
	120	5745.0064	1.1070	Pass
	138	5744.9963	-0.6509	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11a - 5825MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0105	1.7978	Pass
-10		5825.0127	2.1816	Pass
0		5824.9806	-3.3384	Pass
10		5824.9809	-3.2814	Pass
20		5824.9888	-1.9269	Pass
30		5824.9838	-2.7883	Pass
40		5824.9976	-0.4163	Pass
50		5824.9328	-11.5319	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5825.0023	0.3868	Pass
	120	5825.0024	0.4179	Pass
	138	5824.9992	-0.1375	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5745MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0064	1.1154	Pass
-10		5745.0035	0.6088	Pass
0		5744.9757	-4.2329	Pass
10		5744.9853	-2.5651	Pass
20		5744.9875	-2.1697	Pass
30		5744.9794	-3.5869	Pass
40		5744.9526	-8.2437	Pass
50		5744.9403	-10.3971	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5745.0061	1.0666	Pass
	120	5744.9933	-1.1640	Pass
	138	5744.9997	-0.0438	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5825MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0181	3.1034	Pass
-10		5825.0166	2.8579	Pass
0		5824.9724	-4.7370	Pass
10		5824.9964	-0.6105	Pass
20		5824.9772	-3.9108	Pass
30		5824.9547	-7.7785	Pass
40		5824.9708	-5.0166	Pass
50		5824.9700	-5.1448	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5825.0031	0.5310	Pass
	120	5824.9987	-0.2179	Pass
	138	5824.9943	-0.9858	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5745MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0041	0.7138	Pass
-10		5745.0115	2.0080	Pass
0		5744.9981	-0.3365	Pass
10		5744.9775	-3.9168	Pass
20		5744.9994	-0.1035	Pass
30		5744.9616	-6.6858	Pass
40		5744.9872	-2.2240	Pass
50		5744.9833	-2.9026	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5745.0047	0.8264	Pass
	120	5744.9910	-1.5668	Pass
	138	5745.0045	0.7761	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5825MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0030	0.5218	Pass
-10		5825.0187	3.2123	Pass
0		5824.9894	-1.8233	Pass
10		5824.9708	-5.0062	Pass
20		5824.9719	-4.8242	Pass
30		5824.9677	-5.5506	Pass
40		5824.9716	-4.8673	Pass
50		5824.9610	-6.6966	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5824.9928	-1.2414	Pass
	120	5824.9815	-3.1782	Pass
	138	5825.0004	0.0687	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5745MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5745.0232	4.0406	Pass
-10		5745.0176	3.0668	Pass
0		5744.9877	-2.1353	Pass
10		5744.9883	-2.0358	Pass
20		5744.9772	-3.9705	Pass
30		5744.9899	-1.7582	Pass
40		5744.9758	-4.2128	Pass
50		5744.9753	-4.3030	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5745.0070	1.2196	Pass
	120	5745.0024	0.4168	Pass
	138	5745.0039	0.6841	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_20M - 5825MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5825.0072	1.2331	Pass
-10		5825.0055	0.9427	Pass
0		5824.9899	-1.7266	Pass
10		5824.9725	-4.7144	Pass
20		5824.9567	-7.4357	Pass
30		5824.9936	-1.0996	Pass
40		5824.9683	-5.4491	Pass
50		5824.9783	-3.7197	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5825.0011	0.1838	Pass
	120	5824.9921	-1.3505	Pass
	138	5824.9983	-0.2956	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5755MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5755.0108	1.8686	Pass
-10		5755.0057	0.9974	Pass
0		5754.9868	-2.2943	Pass
10		5754.9751	-4.3184	Pass
20		5754.9864	-2.3653	Pass
30		5754.9518	-8.3712	Pass
40		5754.9443	-9.6728	Pass
50		5754.9456	-9.4510	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5754.9920	-1.3957	Pass
	120	5755.0008	0.1446	Pass
	138	5754.9968	-0.5548	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5795MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5795.0182	3.1384	Pass
-10		5795.0056	0.9699	Pass
0		5794.9950	-0.8601	Pass
10		5794.9897	-1.7710	Pass
20		5794.9892	-1.8557	Pass
30		5794.9706	-5.0718	Pass
40		5794.9430	-9.8283	Pass
50		5794.9990	-0.1735	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5795.0019	0.3240	Pass
	120	5794.9837	-2.8119	Pass
	138	5794.9986	-0.2388	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5755MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5755.0209	3.6388	Pass
-10		5755.0042	0.7226	Pass
0		5754.9949	-0.8803	Pass
10		5754.9652	-6.0429	Pass
20		5754.9994	-0.1013	Pass
30		5754.9994	-0.0997	Pass
40		5754.9777	-3.8744	Pass
50		5754.9857	-2.4928	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5755.0057	0.9835	Pass
	120	5754.9903	-1.6894	Pass
	138	5755.0033	0.5769	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5795MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5795.0077	1.3347	Pass
-10		5795.0018	0.3113	Pass
0		5794.9708	-5.0303	Pass
10		5794.9719	-4.8442	Pass
20		5794.9790	-3.6202	Pass
30		5794.9925	-1.3011	Pass
40		5794.9931	-1.1911	Pass
50		5794.9729	-4.6789	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5794.9991	-0.1516	Pass
	120	5794.9929	-1.2181	Pass
	138	5795.0040	0.6817	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5755MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5755.0296	5.1411	Pass
-10		5755.0053	0.9176	Pass
0		5754.9851	-2.5944	Pass
10		5754.9635	-6.3416	Pass
20		5754.9991	-0.1499	Pass
30		5754.9883	-2.0267	Pass
40		5754.9492	-8.8295	Pass
50		5754.9636	-6.3246	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5755.0026	0.4562	Pass
	120	5754.9975	-0.4309	Pass
	138	5754.9958	-0.7298	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11n_40M - 5795MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5795.0022	0.3797	Pass
-10		5795.0102	1.7635	Pass
0		5794.9895	-1.8137	Pass
10		5794.9809	-3.3040	Pass
20		5794.9789	-3.6445	Pass
30		5794.9732	-4.6262	Pass
40		5794.9406	-10.2487	Pass
50		5794.9621	-6.5458	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5795.0002	0.0398	Pass
	120	5794.9926	-1.2825	Pass
	138	5794.9980	-0.3407	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11ac_80M - 5775MHz, ANT 0		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5775.0123	2.1323	Pass
-10		5775.0011	0.1919	Pass
0		5774.9760	-4.1597	Pass
10		5774.9758	-4.1859	Pass
20		5774.9724	-4.7811	Pass
30		5774.9684	-5.4749	Pass
40		5774.9835	-2.8570	Pass
50		5774.9779	-3.8285	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5774.9979	-0.3618	Pass
	120	5774.9892	-1.8712	Pass
	138	5774.9956	-0.7630	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11ac_80M - 5775MHz, ANT 1		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5775.0251	4.3387	Pass
-10		5775.0189	3.2804	Pass
0		5774.9788	-3.6767	Pass
10		5774.9998	-0.0350	Pass
20		5774.9948	-0.8985	Pass
30		5774.9651	-6.0459	Pass
40		5774.9740	-4.5010	Pass
50		5774.9920	-1.3858	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5775.0025	0.4300	Pass
	120	5774.9865	-2.3395	Pass
	138	5775.0015	0.2651	Pass

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit_AD890326- 802.11ac_80M - 5775MHz, ANT 2		
Date of Test	2016/03/25	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5775.0251	4.3522	Pass
-10		5775.0173	2.9893	Pass
0		5774.9836	-2.8375	Pass
10		5774.9905	-1.6377	Pass
20		5774.9523	-8.2552	Pass
30		5774.9783	-3.7507	Pass
40		5774.9494	-8.7689	Pass
50		5774.9969	-0.5415	Pass

Temperature Interval (^{o}C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5775.0092	1.5954	Pass
	120	5774.9989	-0.1846	Pass
	138	5774.9960	-0.6976	Pass

Attachment 1

- **Original Report**