Zacta

TEST REPORT

Report number : Z101C-14135
Issue date : December 26, 2014

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart E

The test results are traceable to the international or national standards.

Applicant	:	KYOCERA Corporation
Equipment under test (EUT)	:	Mobile Phone
Model number	:	KC-S701
FCC ID	:	JOYKYO701

Date of test : December 10-14, 19, 2014
Test place : TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome
Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888
Test results : Complied

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of TÜV SÜD Zacta Ltd.
This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Tested by : Taiki Watanabe
Taiki Watanabe

Tested by : Hikaru Shibata
Hikaru Shibata

Authorized by :
Eiji Akiba
Deputy General Manager of EMC Technical Department

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1. Summary of Test

1.1 Purpose of test

It is the original test in order to verify conformance to FCC Part 15 Subpart E.

1.2 Standards

CFR47 FCC Part 15 Subpart E

1.2.1 Test Methods

ANSI C63.4-2009, KDB789033 D02

1.2.2 Deviation from standards

None

1.3 List of applied test to the EUT

Test items Section	Test items	Condition	Result
15.407(a)	26dB Bandwidth	Conducted	PASS
15.407(a)	Maximum Conducted Output Power	Conducted	PASS
15.407(a)	Peak Power Spectral Density	Conducted	PASS
15.407(b) 15.205 15.209	Radiated emissions (Restricted Bands of Operation)	Radiated	PASS
15.407(g)	Frequency Stability	Conducted	PASS
15.207	AC Power Line Conducted Emissions	Conducted	PASS

1.3.1 Test set up

Table-Top

1.4 Modification to the EUT by laboratory

None

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2. Equipment Under Test

2.1 General Description of equipment

EUT is the Mobile Phone.

2.2 EUT information

Applicant	:	KYOCERA Corporation Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment under test	:	Mobile Phone
Trade name	:	Kyocera
Model number	:	KC-S701
Serial number	:	N/A
EUT condition	:	Pre-Production
Power ratings	:	Battery: DC 3.8V
Size	:	(W) 69.0 × (D) 13.5 × (H) 136.0 mm
Environment	:	Indoor and Outdoor use
Terminal limitation	:	-20˚C to 60˚C
RF Specification Protocol	:	IEEE802.11a, IEEE802.11n (HT20), IEEE802.11n (HT40) IEEE802.11ac (HT20), IEEE802.11ac (HT40), IEEE802.11ac (HT80)
Frequency range	:	IEEE802.11a/n/ac (HT20): 5180MHz-5320MHz, 5500MHz-5700MHz IEEE802.11n/ac(HT40): 5190MHz-5310MHz, 5510MHz-5670MHz IEEE802.11ac(HT80): 5210MHz, 5290MHz, 5530MHz
Number of RF Channels	:	IEEE802.11a/n/ac (HT20): 16 Channels IEEE802.11n/ac(HT40): 7 Channels IEEE802.11ac(HT80): 3 Channels
Modulation type	:	IEEE802.11a/n/ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Data rate	:	IEEE802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE802.11n (HT20 LGI): 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps IEEE802.11n (HT20 SGI): 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2Mbps IEEE802.11ac (HT20 LGI): 6.5, 13, 19.5, 26, 39, 52, 58.5, 65, 78, 86.5Mbps IEEE802.11ac (HT20 SGI): 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2, 86.6, 96.1Mbps IEEE802.11n (HT40 LGI): 13.5, 27, 40.5, 54, 81, 108, 121.5, 135Mbps IEEE802.11n (HT40 SGI): 15, 30, 45, 60, 90, 120, 135, 150Mbps IEEE802.11ac (HT40 LGI): 13.5, 27, 40.5, 54, 81, 108, 121.5, 135, 162, 180Mbps IEEE802.11ac (HT40 SGI): 15, 30, 45, 60, 90, 120, 135, 150, 180, 200Mbps IEEE802.11ac (HT80 LGI): 29.3, 58.5, 87.8, 117, 175.5, 234, 263.3, 292.6, 351, 390Mbps IEEE802.11ac (HT80 SGI): 32.5, 65, 97.5, 130, 195, 260, 292.5, 325, 390, 433.3Mbps

Channel separation	:	IEEE802.11a/n/ac (HT20): 20MHz IEEE802.11n/ac (HT40): 40MHz IEEE802.11ac (HT80): 80MHz
Output power	:	29.512mW (IEEE802.11a) 29.580mW (IEEE802.11n: HT20) 14.791mW (IEEE802.11n: HT40) 16.911mW (IEEE802.11ac: HT80)
Antenna type	:	Internal antenna
Antenna gain	:	5.15-5.25GHZ, 5.25-5.35GHz band: 1.0dBi 5.47-5.725GHz band: 0.4dBi

2.3 Variation of the family model(s)

Not applicable

2.4 Operating channels and frequencies

[IEEE802.11a/n/ac (HT20)]

Channel	Frequency [MHz]
36	5180
40	5200
44	5220
48	5240
52	5260
56	5280
60	5300
64	5320
100	5500
104	5520
108	5540
112	5560
116	5580
132	5660
136	5680
140	5700

[IEEE802.11n/ac (HT40)]

Channel	Frequency [MHz]
38	5190
46	5230
54	5270
62	5310
102	5510
110	5550
134	5670

[IEEE802.11ac (HT80)]

Channel	Frequency [MHz]
42	5210
58	5290
106	5530

2.5 Operating mode

The EUT had been tested under operating condition.
There are three channels have been tested as following:

Band	IEEE802.11a/n/ac (HT20)		IEEE802.11n/ac (HT40)		IEEE802.11ac (HT80)	
	Channel	Frequency [MHz]	Channel	Frequency [MHz]	Channel	Frequency [MHz]
5.2GHz Band	36	5180	38	5190	42	5210
	40	5200	-	-	-	-
	48	5240	46	5230	-	-
5.3GHz Band	52	5260	54	5270	58	5290
	56	5280	-	-	-	-
	64	5320	62	5310	-	-
5.6GHz Band	100	5500	102	5510	106	5530
	116	5580	110	5550	-	-
	140	5700	134	5670	-	-

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

Band	Modulation Type	Data Rate
5.2GHz Band	IEEE802.11a: OFDM	6Mbps
	IEEE802.11n (HT20): OFDM	MCS0 (6.5Mbps)
	IEEE802.11n (HT40): OFDM	MCS0 (13.5Mbps)
	IEEE802.11ac (HT80): OFDM	MCS0 (29.3Mbps)
5.3GHz Band	IEEE802.11a: OFDM	6Mbps
	IEEE802.11n (HT20): OFDM	MCS0 (6.5Mbps)
	IEEE802.11n (HT40): OFDM	MCS0 (13.5Mbps)
	IEEE802.11ac (HT80): OFDM	MCS0 (29.3Mbps)
5.6GHz Band	IEEE802.11a: OFDM	6Mbps
	IEEE802.11n (HT20): OFDM	MCS0 (6.5Mbps)
	IEEE802.11n (HT40): OFDM	MCS0 (13.5Mbps)
	IEEE802.11ac (HT80): OFDM	MCS0 (29.3Mbps)

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.
The worst emission was found in Z axis and the worst case recorded.

2.6 Operating mode

[Tx mode]
i) Test program setup to the DM tool
ii) Select a Test mode
Operating frequency: 5.2GHz Band, 5.3GHz Band, 5.6GHz Band
iii) Start test mode

[Rx mode]
i) Test program setup to the DM tool
ii) Select a Test mode
Operating frequency: 5.2GHz Band, 5.3GHz Band, 5.6GHz Band
iii) Start test mode

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3. Configuration of equipment

3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Mobile Phone	KYOCERA	KC-S701	N/A	JOYKYO701	EUT
2	AC Adapter	au	N/A	N/A	N/A	*

*: AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	Micro USB cable(for AC Adapter)	1.1	Yes	Metal	*

*: AC power line Conducted Emission Test.

3.3 System configuration

: Un-detachable cable

Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “3.1 Equipment(s) used” and “3.2 Cable(s) used”.

4. 26dB Bandwidth

4.1 Measurement procedure [FCC 15.407(a), KDB789033]

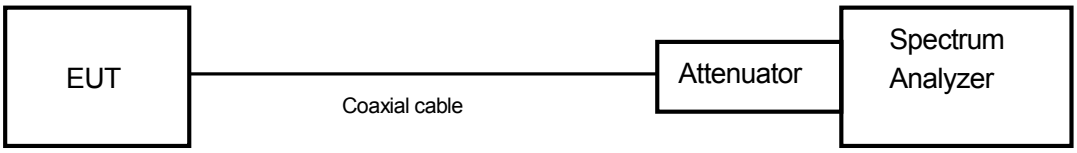
The bandwidth at 26dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=200kHz/430kHz/820kHz, VBW=620kHz/1.3MHz/2.4MHz, Span=40MHz/80MHz/160MHz
  Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



4.2 Limit

None

4.3 Measurement result

Date : December 10, 2014
Temperature : 22.5 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4

Test engineer : Hikaru Shibata

Mode	Band	Channel	Frequency (MHz)	Test Result (MHz)
802.11a	5.2GHz Band	36	5180	21.776
		40	5200	21.787
		48	5240	21.970
	5.3GHz Band	52	5260	21.971
		56	5280	21.784
		64	5320	21.921
	5.6GHz Band	100	5500	21.189
		116	5580	22.037
		140	5700	21.631

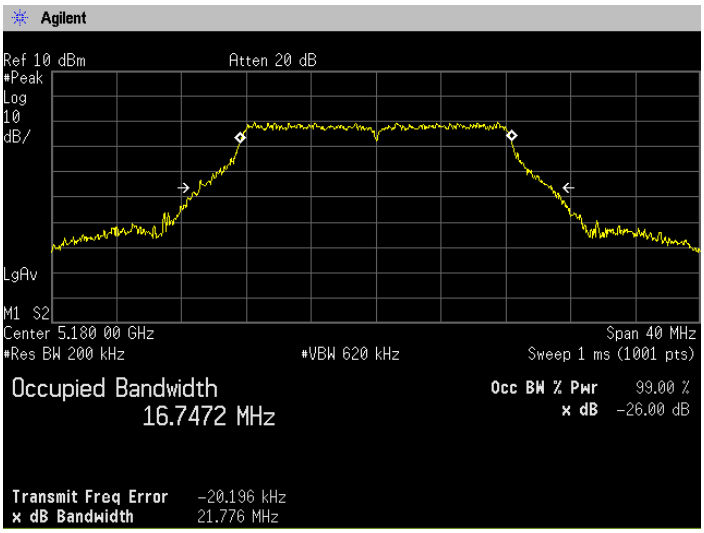
Mode	Band	Channel	Frequency (MHz)	Test Result (MHz)
802.11n (20MHz)	5.2GHz Band	36	5180	21.635
		40	5200	22.027
		48	5240	22.002
	5.3GHz Band	52	5260	21.912
		56	5280	21.636
		64	5320	22.282
	5.6GHz Band	100	5500	22.040
		116	5580	21.776
		140	5700	22.007

Mode	Band	Channel	Frequency (MHz)	Test Result (MHz)
802.11n (40MHz)	5.2GHz Band	38	5190	43.409
		46	5230	42.971
	5.3GHz Band	54	5270	43.936
		62	5310	43.623
	5.6GHz Band	102	5510	43.388
		110	5550	44.009
		134	5670	42.742

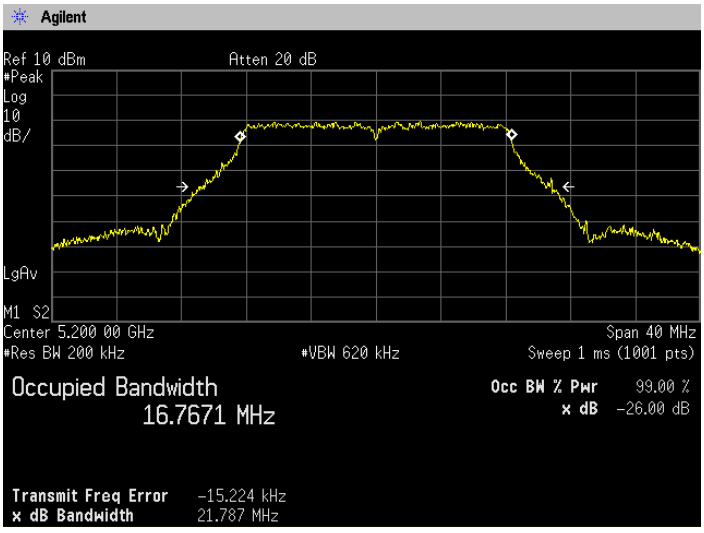
Mode	Band	Channel	Frequency (MHz)	Test Result (MHz)
802.11ac (80MHz)	5.2GHz Band	42	5210	84.201
	5.3GHz Band	58	5290	83.998
	5.6GHz Band	106	5530	83.782

4.4 Trace data
[IEEE802.11a]
(5.2GHz Band)

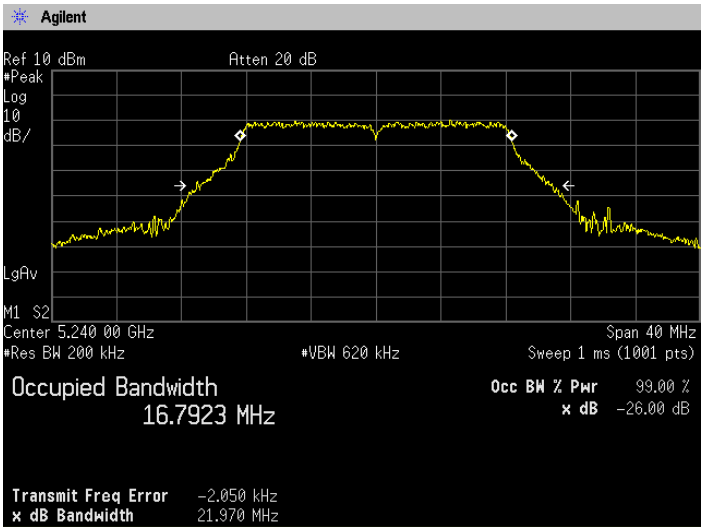
Channel: 36



Channel: 40

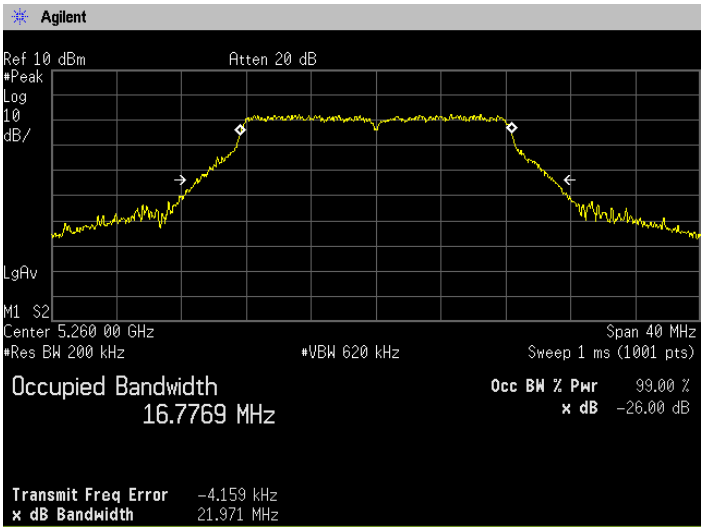


Channel: 48

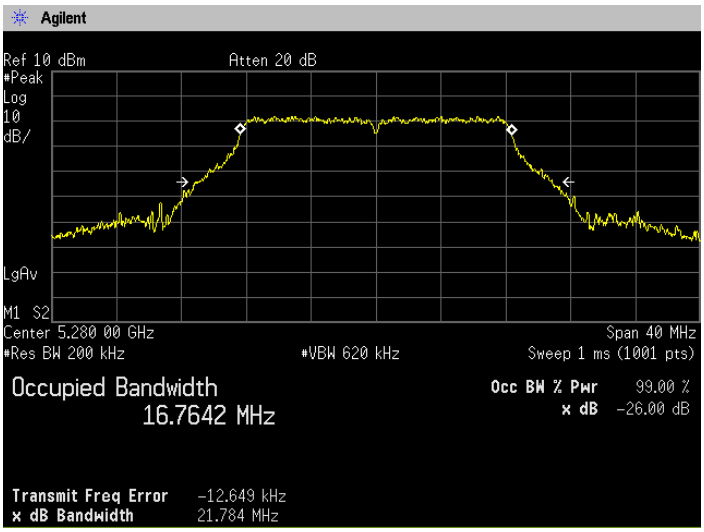


(5.3GHz Band)

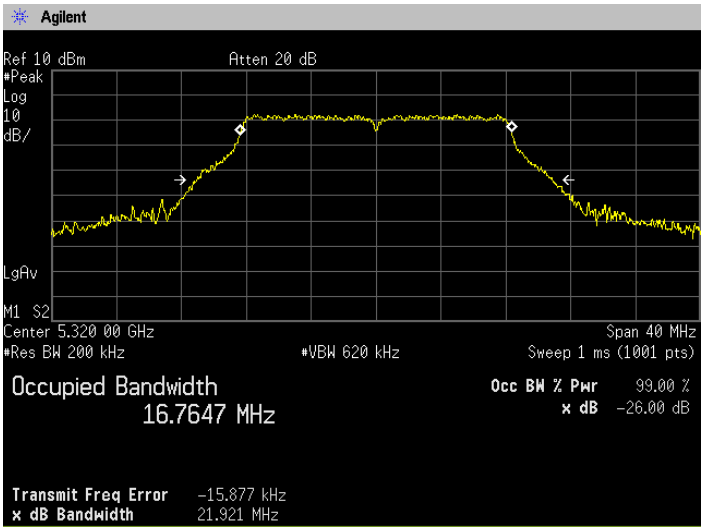
Channel: 52



Channel: 56

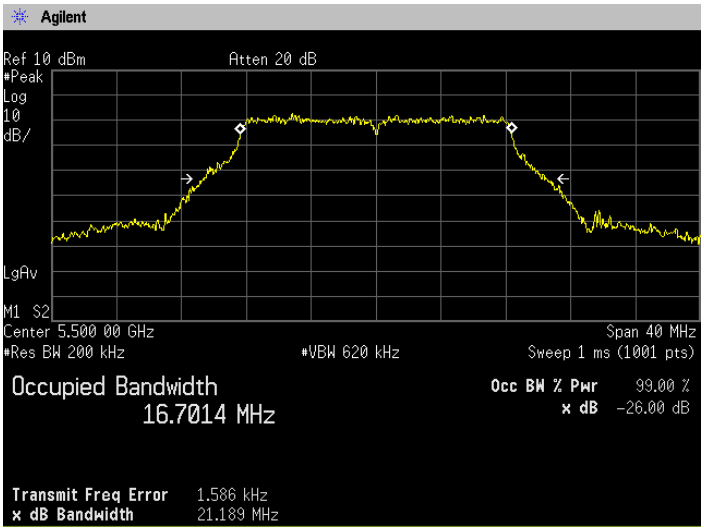


Channel: 64

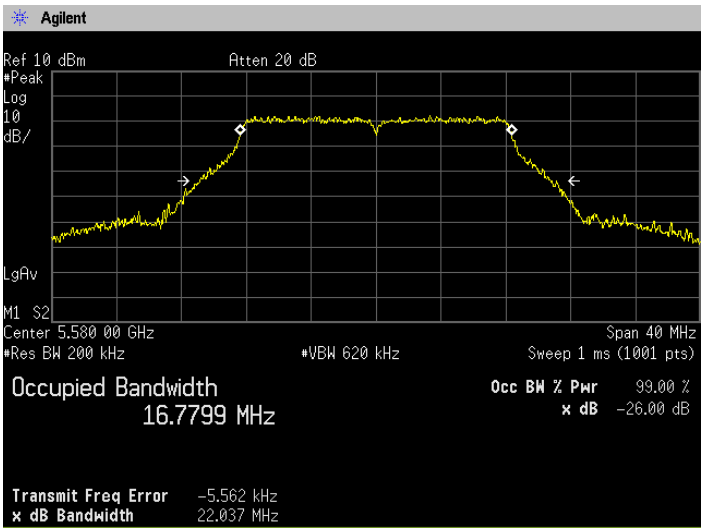


(5.6GHz Band)

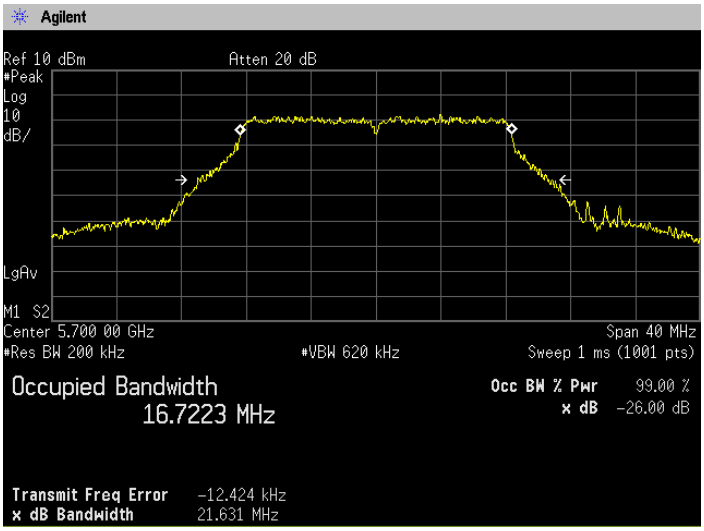
Channel: 100



Channel: 116

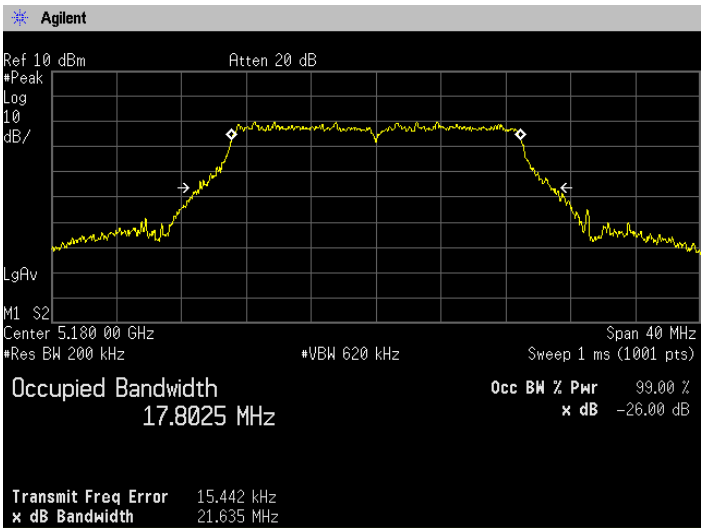


Channel: 140

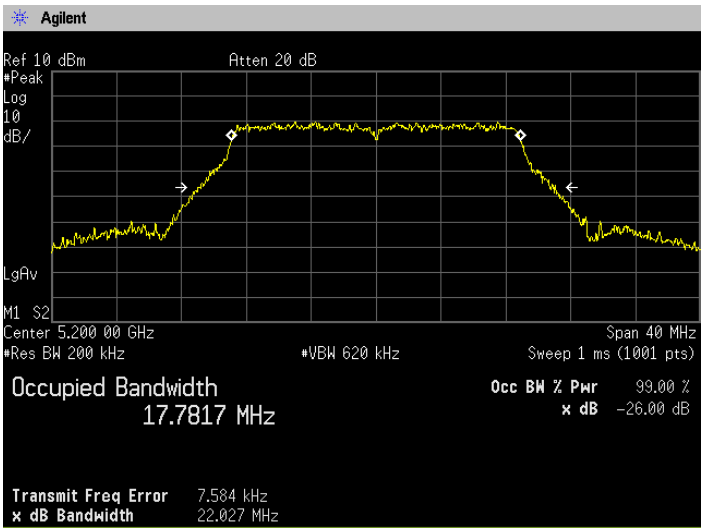


[IEEE802.11n (HT20)]
(5.2GHz Band)

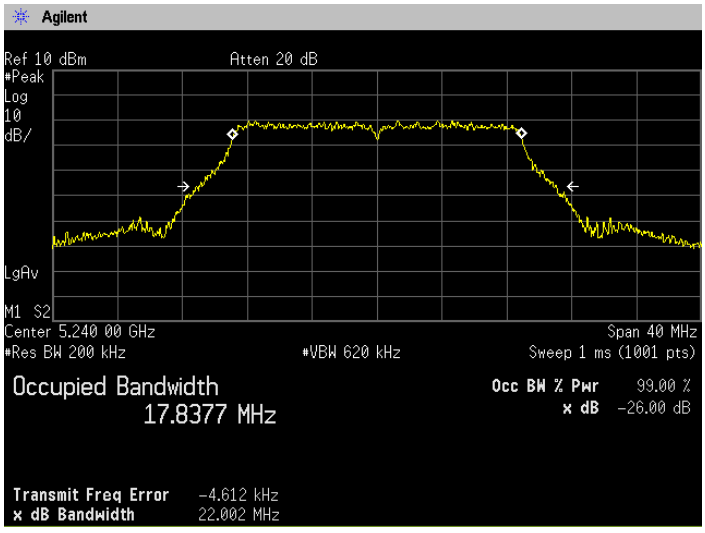
Channel: 36



Channel: 40

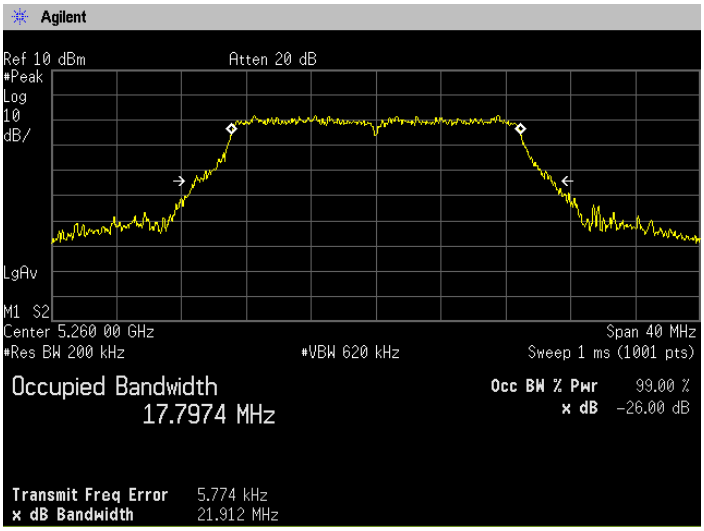


Channel: 48

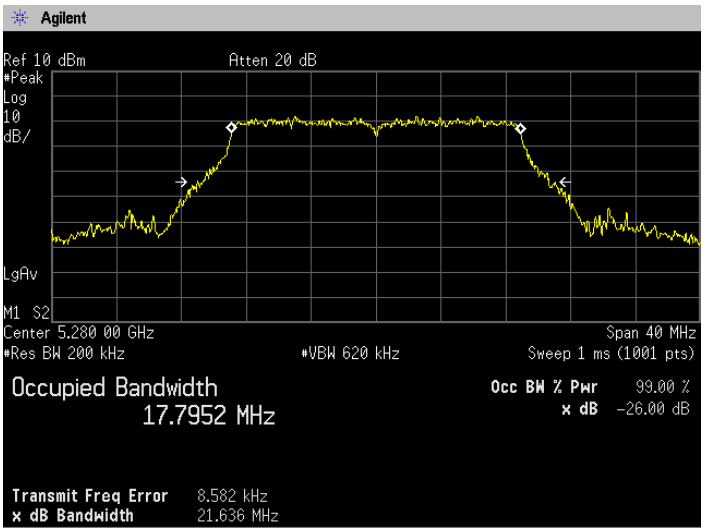


(5.3GHz Band)

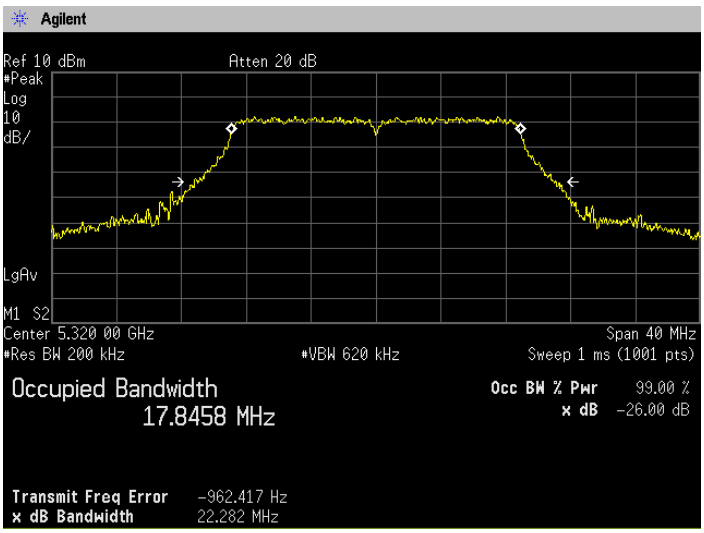
Channel: 52



Channel: 56

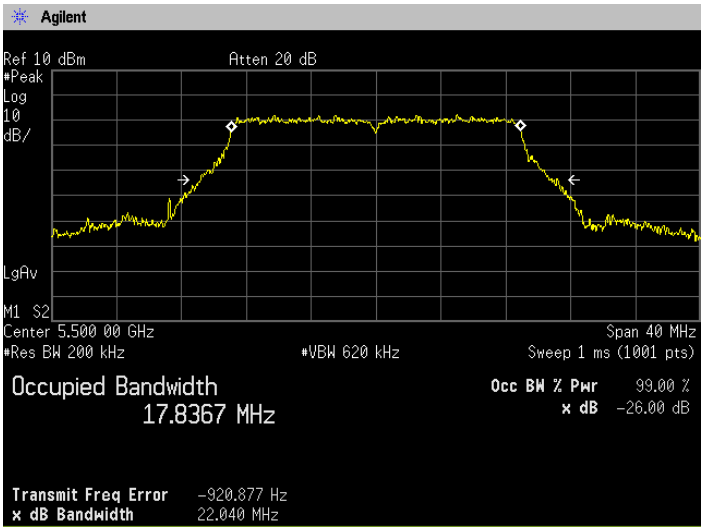


Channel: 64



(5.6GHz Band)

Channel: 100



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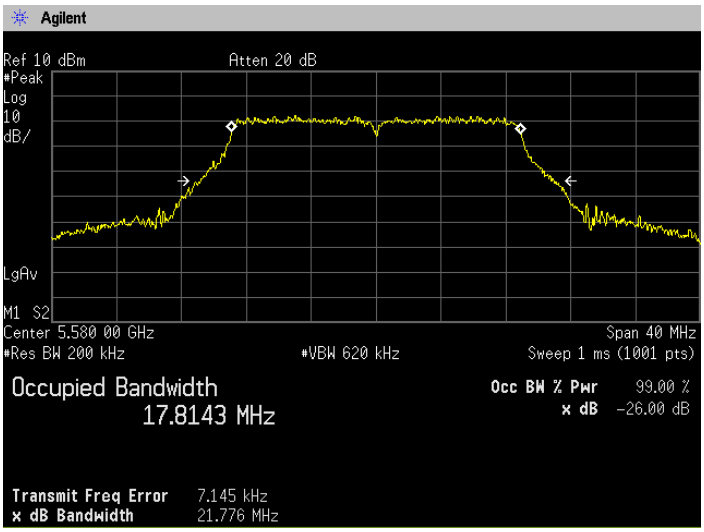

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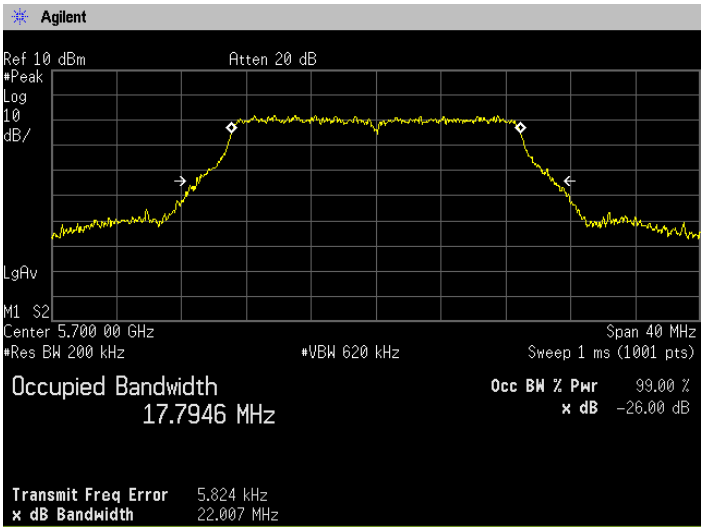
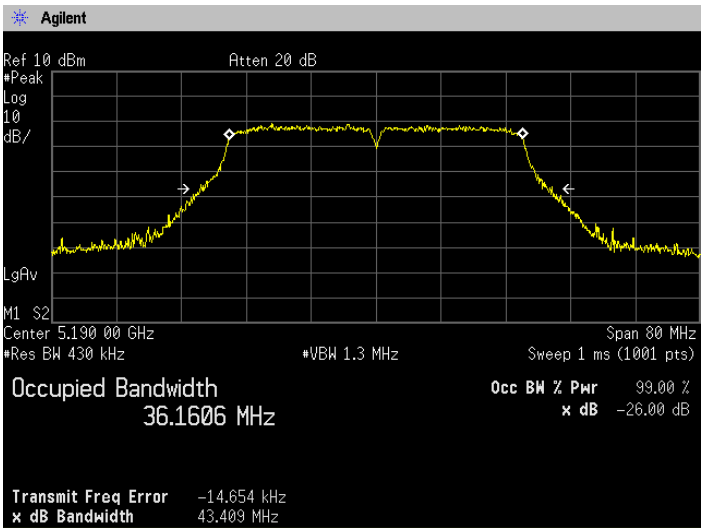
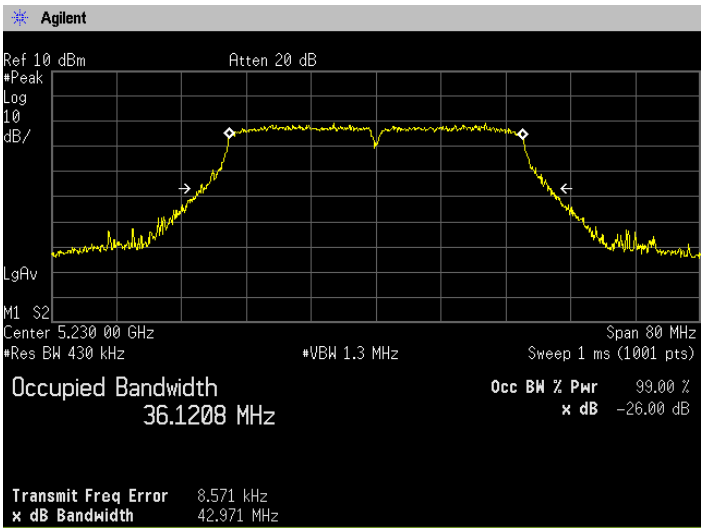


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

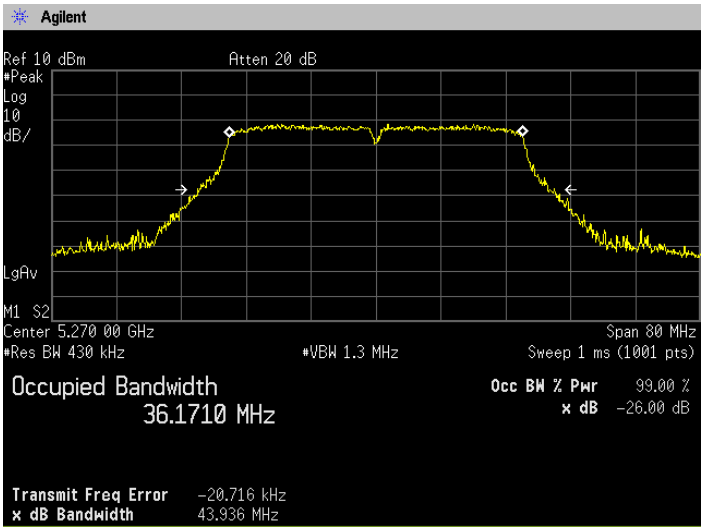


Channel: 46

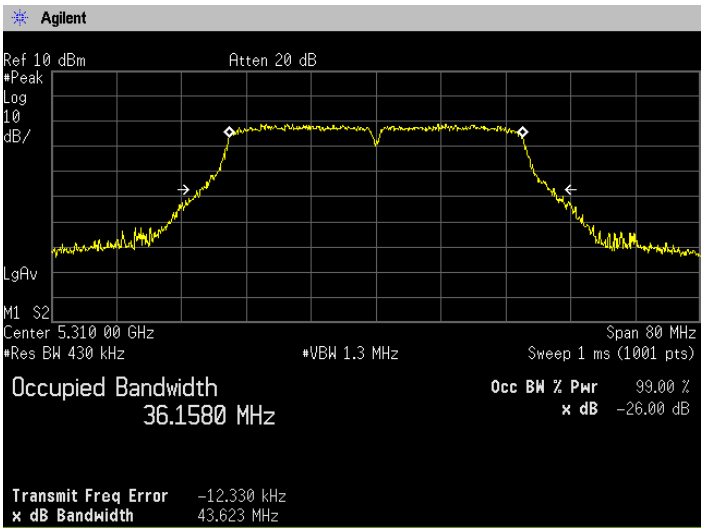


(5.3GHz Band)

Channel: 54

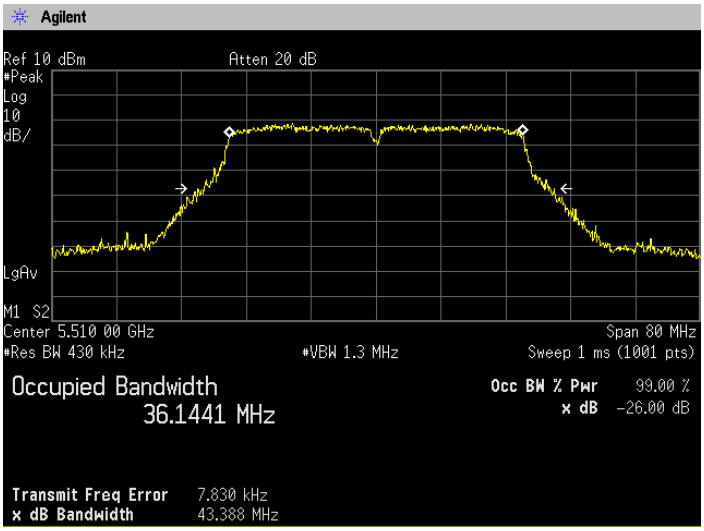


Channel: 62

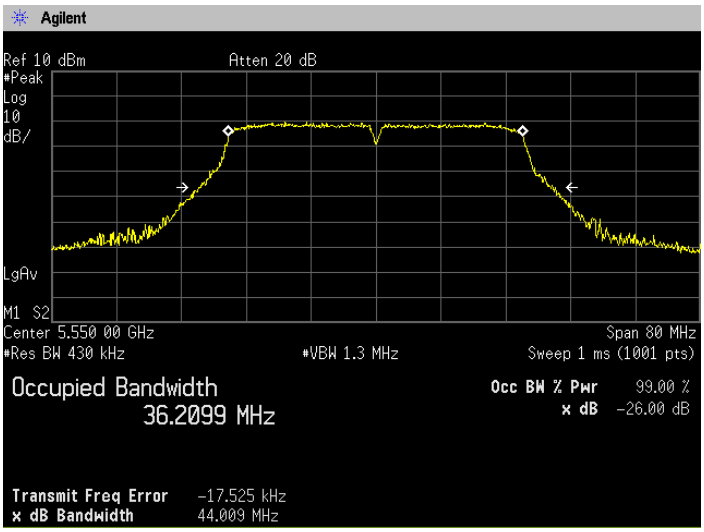


(5.6GHz Band)

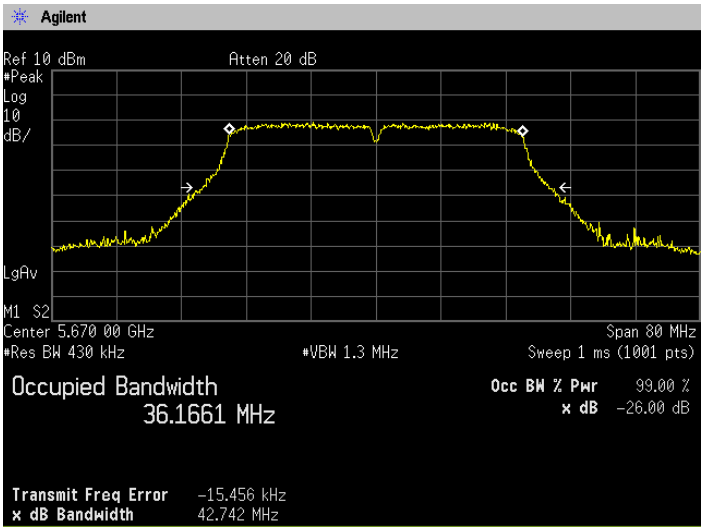
Channel: 102



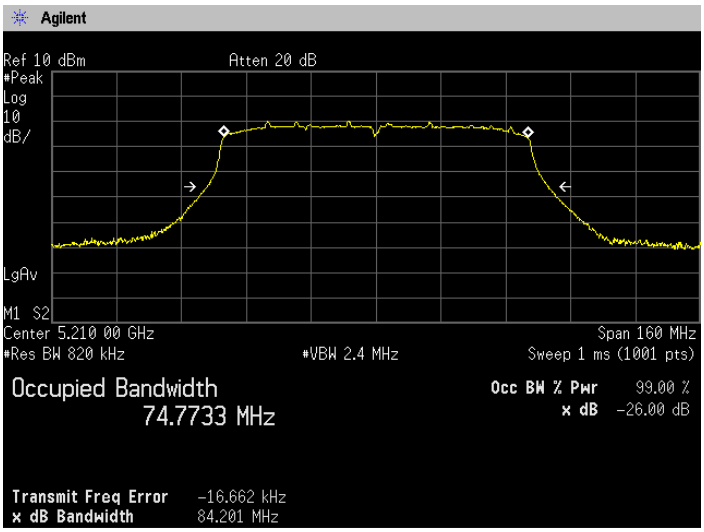
Channel: 110



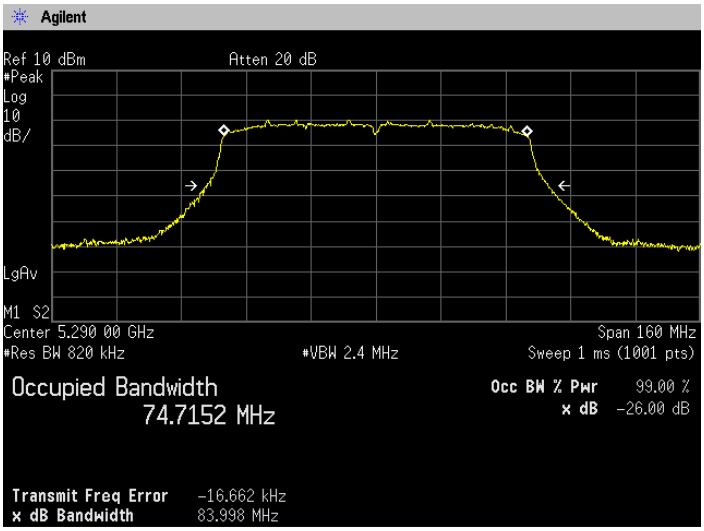
Channel: 134



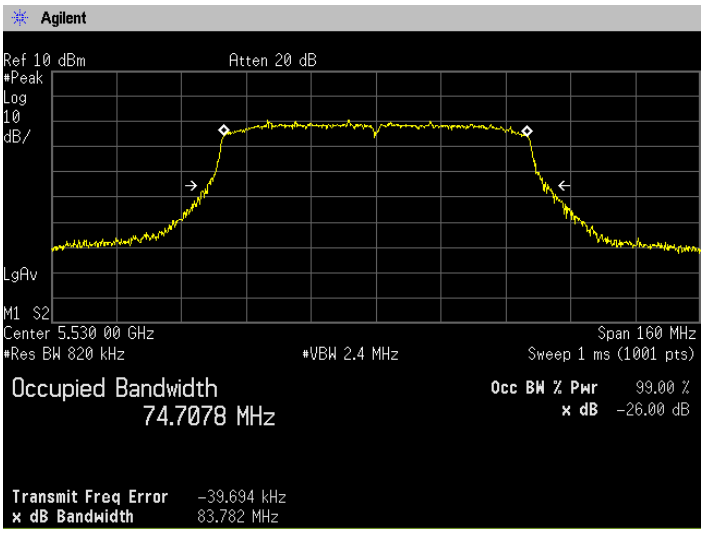
[IEEE802.11ac (HT80)]
(5.2GHz Band)
Channel: 42



(5.3GHz Band)
Channel: 58



(5.6GHz Band)
Channel: 106



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5. Maximum Conducted Output Power

5.1 Measurement procedure [FCC 15.407(a), KDB789033]

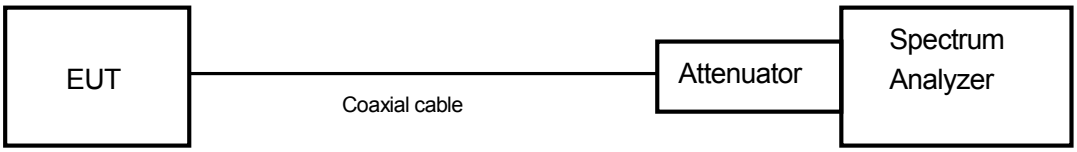
The peak power is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=8MHz, Span=25MHz/50MHz/100MHz, Sweep=auto, Detector=RMS, Trace mode=Averaging

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



5.2 Limit

(1) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250mW or 11dBm + 10logB, where B is the 26dB emission bandwidth in megahertz.

(3) For the 5.725-5.85GHz bands, the maximum conducted output power over the frequency band of operation shall not exceed 1W.

<Output Power Limit Calculation>

Band	Mode	Power Limit (mW)	Antenna Gain (dBi)	Determined Limit (dBm)
5.2GHz Band	802.11a	250	1.0	23.97
	802.11n HT20	250		23.97
	802.11n HT40	250		23.97
	802.11ac HT80	250		23.97

Band	Mode	Power Limit (mW) / Least 26dBc BW (MHz)	Calculated Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.3GHz Band	802.11a	250	23.97	1.0	23.97
		21.971	24.42		
	802.11n HT20	250	23.97		23.97
		22.282	24.48		
	802.11n HT40	250	23.97		23.97
		43.936	27.43		
	802.11ac HT80	250	23.97		23.97
		83.998	30.24		

Band	Mode	Power Limit (mW) / Least 26dBc BW (MHz)	Calculated Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.6GHz Band	802.11a	250	23.97	0.4	23.97
		22.037	24.43		
	802.11n HT20	250	23.97		23.97
		22.007	24.43		
	802.11n HT40	250	23.97		23.97
		44.009	27.44		
	802.11ac HT80	250	23.97		23.97
		83.782	30.23		

5.3 Measurement result

Date : December 10, 2014
Temperature : 22.5 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4
Test engineer : Hikaru Shibata

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)	Test Result (mW)
				On Time(ms)	On+Off Time(ms)	X			
802.11a	36	5180	12.310	1.362	1.372	0.993	-	12.310	17.022
	40	5200	12.170					12.170	16.482
	48	5240	12.270					12.270	16.866
	52	5260	14.390	1.364	1.372	0.994	-	14.390	27.479
	56	5280	14.560					14.560	28.576
	64	5320	14.700					14.700	29.512
	100	5500	14.710	1.362	1.372	0.993	-	14.710	29.580
	116	5580	14.650					14.650	29.174
	140	5700	14.530					14.530	28.379

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)	Test Result (mW)
				On Time(ms)	On+Off Time(ms)	X			
802.11n (20MHz)	36	5180	12.380	1.274	1.284	0.992	-	12.380	17.298
	40	5200	12.260					12.260	16.827
	48	5240	12.360					12.360	17.219
	52	5260	14.320	1.274	1.284	0.992	-	14.320	27.040
	56	5280	14.470					14.470	27.990
	64	5320	14.590					14.590	28.774
	100	5500	14.710	1.272	1.284	0.991	-	14.710	29.580
	116	5580	14.190					14.190	26.242
	140	5700	14.520					14.520	28.314

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

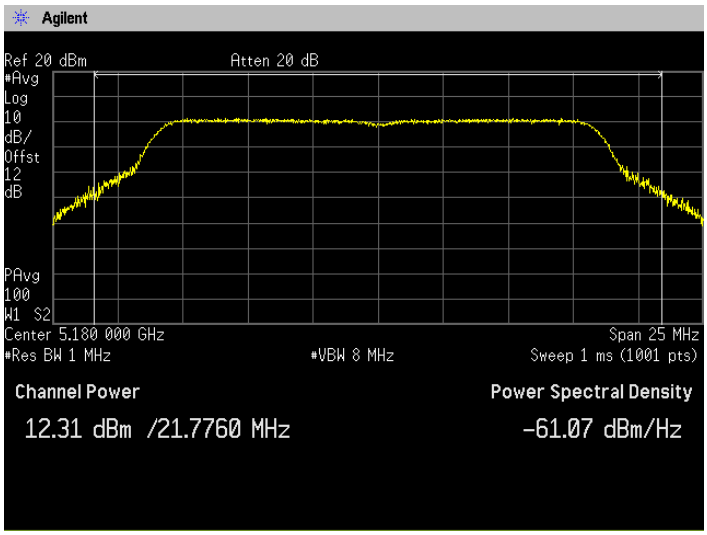
Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)	Test Result (mW)
				On Time(ms)	On+Off Time(ms)	X			
802.11n (40MHz)	38	5190	11.160	0.635	0.645	0.984	-	11.160	13.062
	46	5230	11.020					11.020	12.647
	54	5270	11.100	0.635	0.645	0.984	-	11.100	12.882
	62	5310	11.370					11.370	13.709
	102	5510	11.700	0.635	0.645	0.984	-	11.700	14.791
	110	5550	11.560					11.560	14.322
	134	5670	11.240					11.240	13.305

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

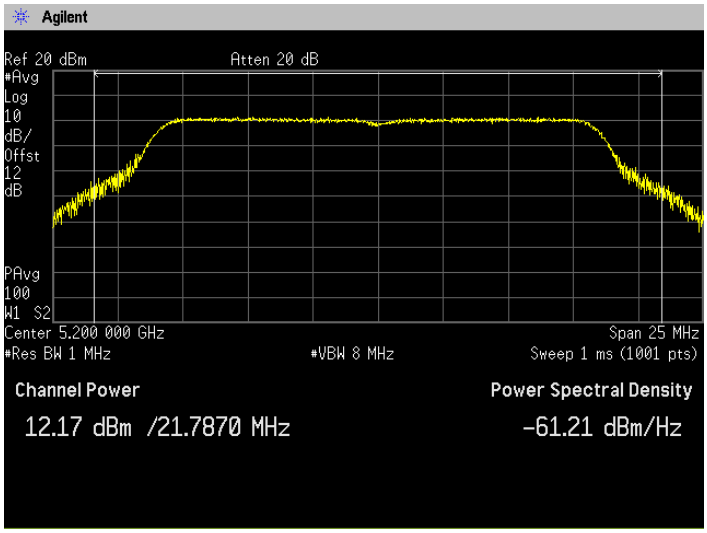
Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)	Test Result (mW)
				On Time(ms)	On+Off Time(ms)	X			
802.11ac (80MHz)	42	5210	11.410	0.248	0.258	0.961	0.172	11.582	14.394
	58	5290	11.820	0.247	0.258	0.957	0.189	12.009	15.883
	106	5530	12.110	0.248	0.258	0.961	0.172	12.282	16.911

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

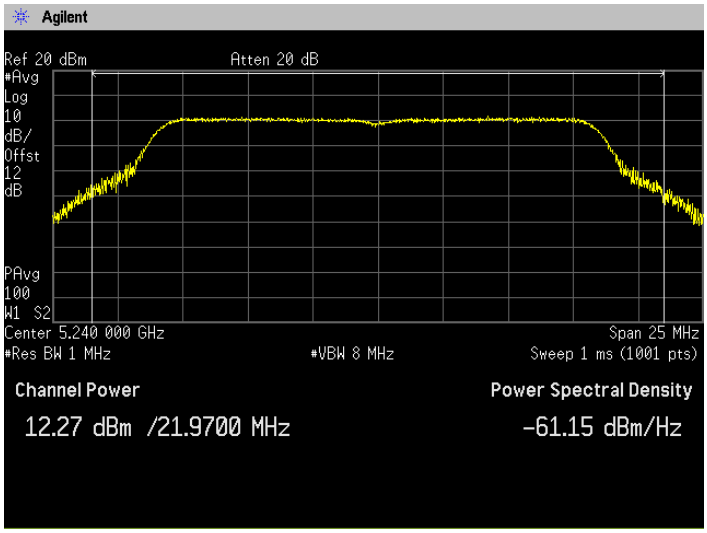
5.4 Trace data
[IEEE802.11a]
(5.2GHz Band)
Channel: 36



Channel: 40

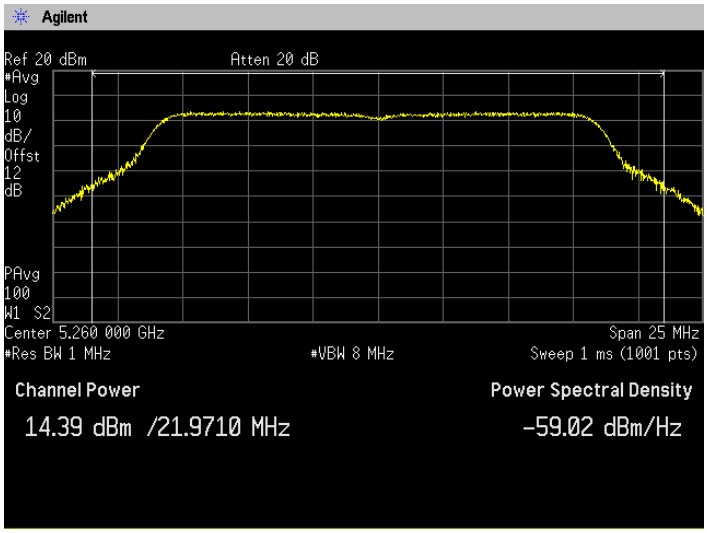


Channel: 48

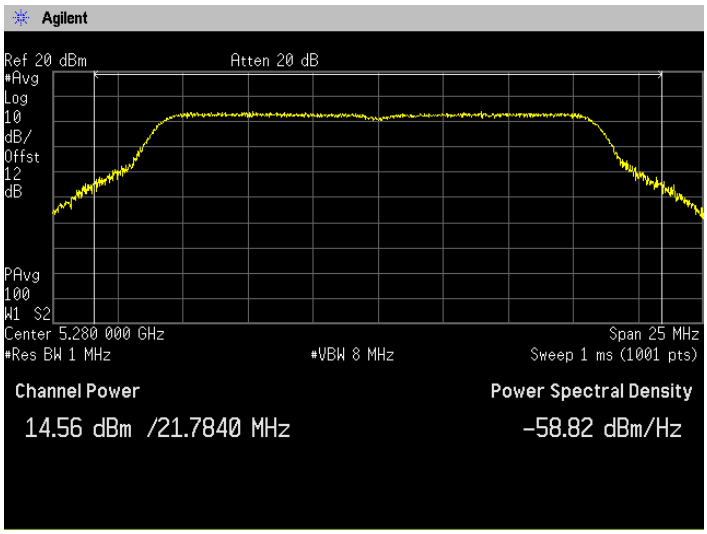


(5.3GHz Band)

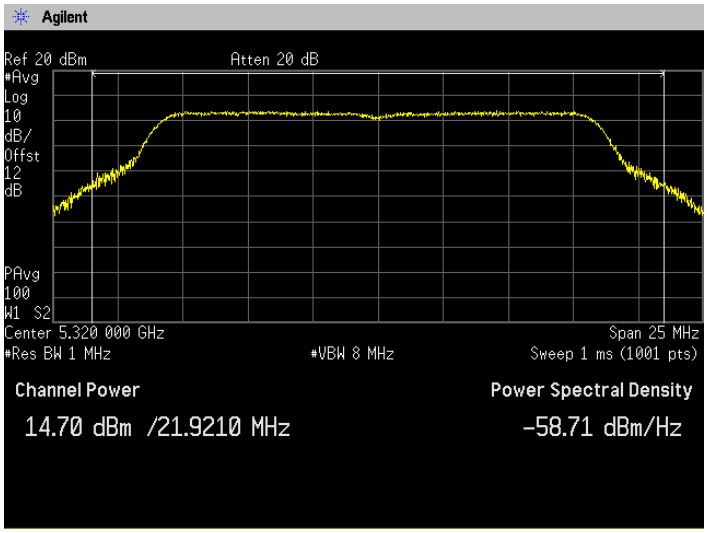
Channel: 52



Channel: 56

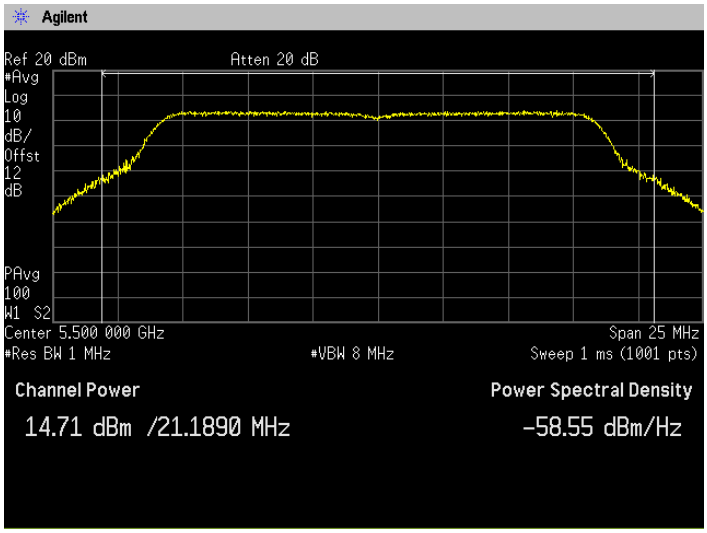


Channel: 64

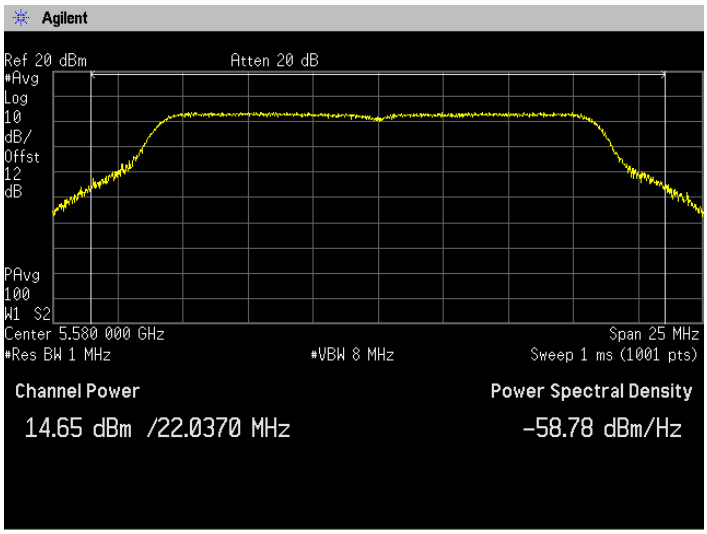


(5.6GHz Band)

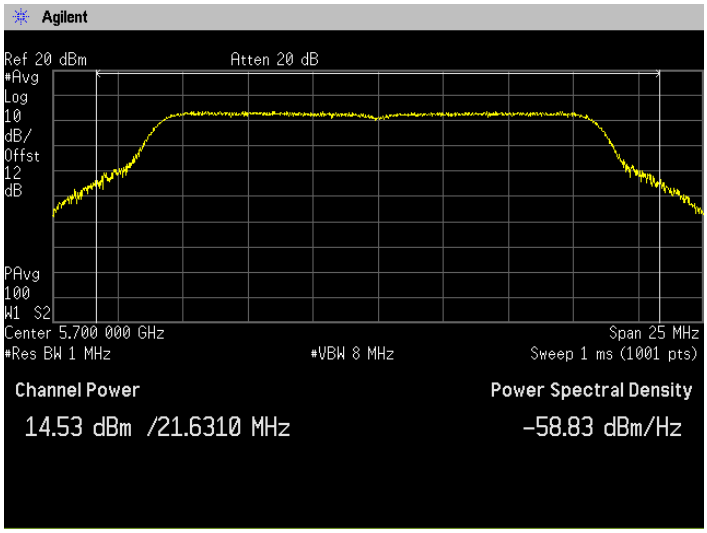
Channel: 100



Channel: 116

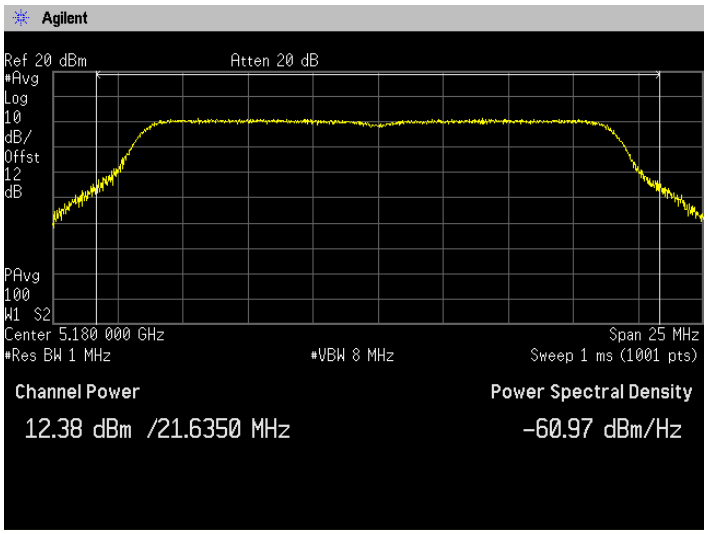


Channel: 140

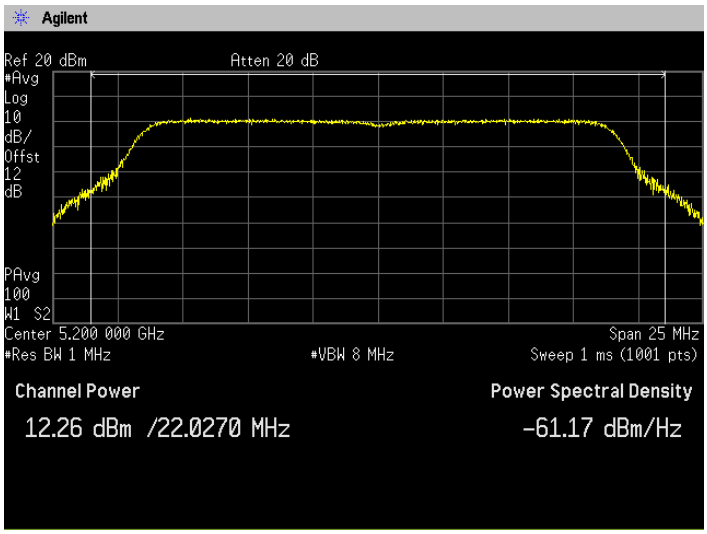


[IEEE802.11n (HT20)]
(5.2GHz Band)

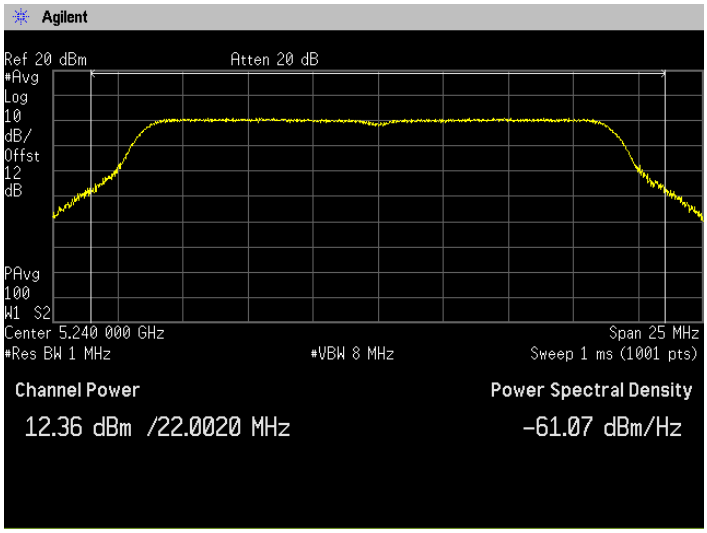
Channel: 36



Channel: 40

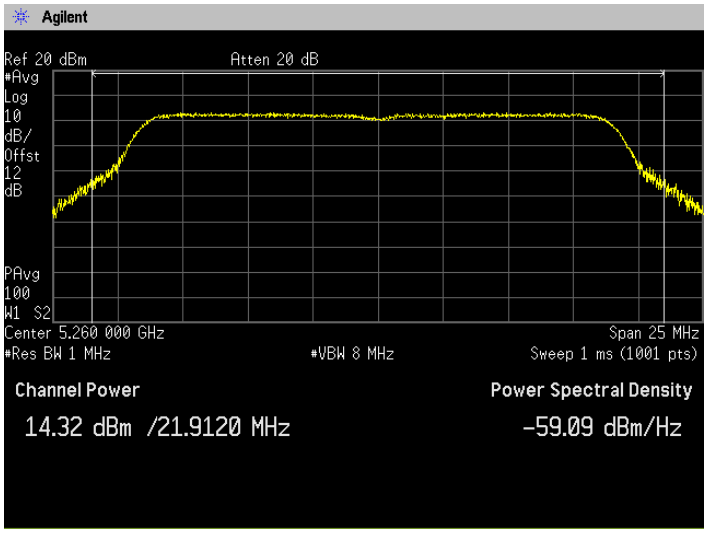


Channel: 48

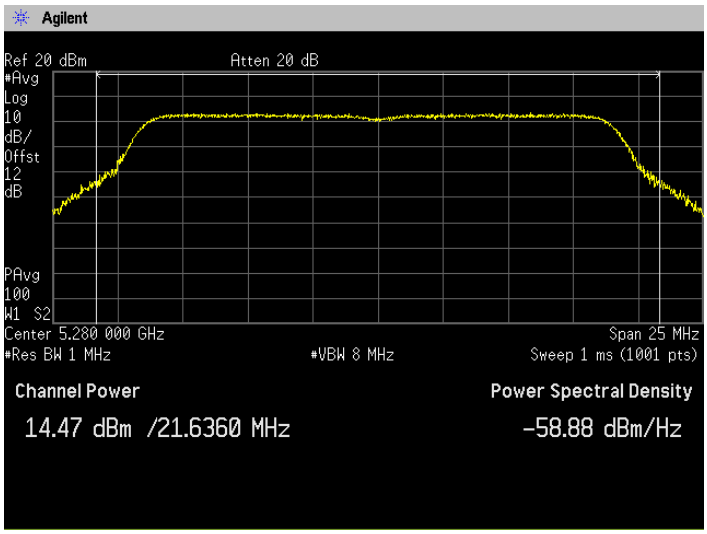


(5.3GHz Band)

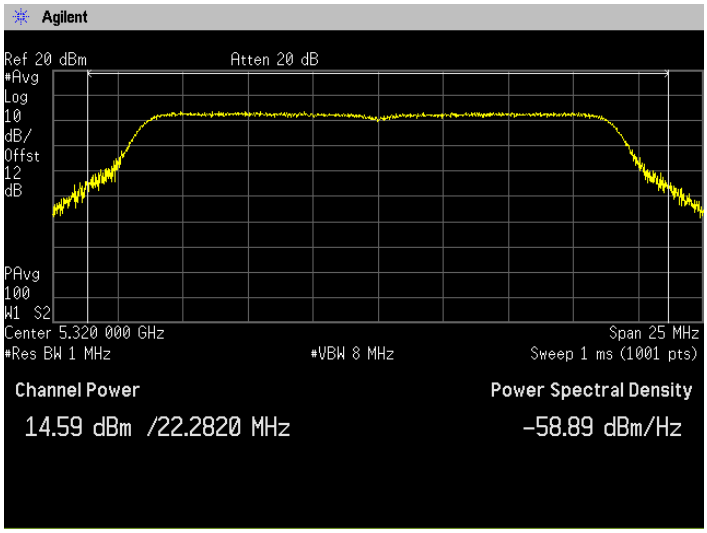
Channel: 52



Channel: 56

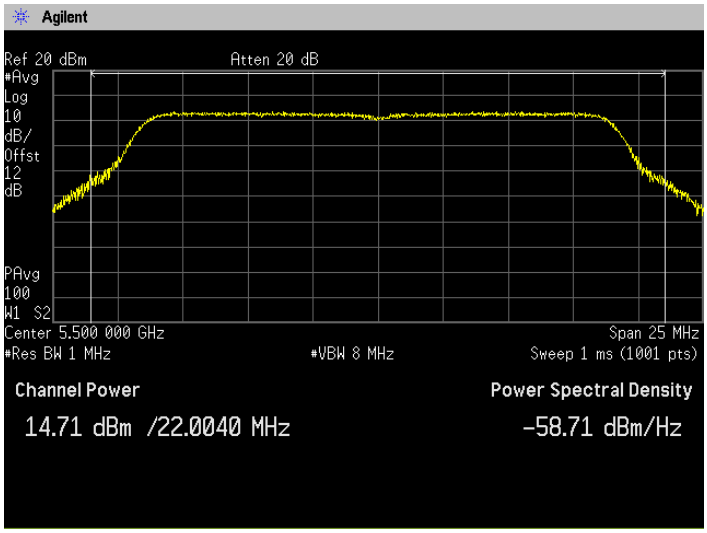


Channel: 64

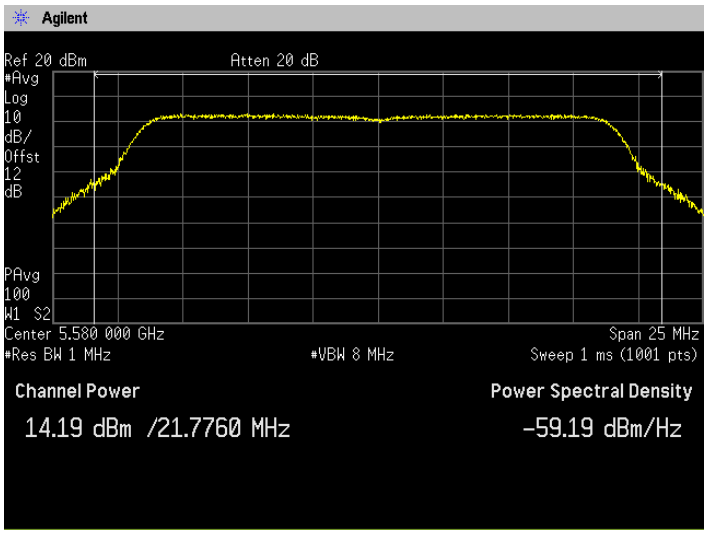


(5.6GHz Band)

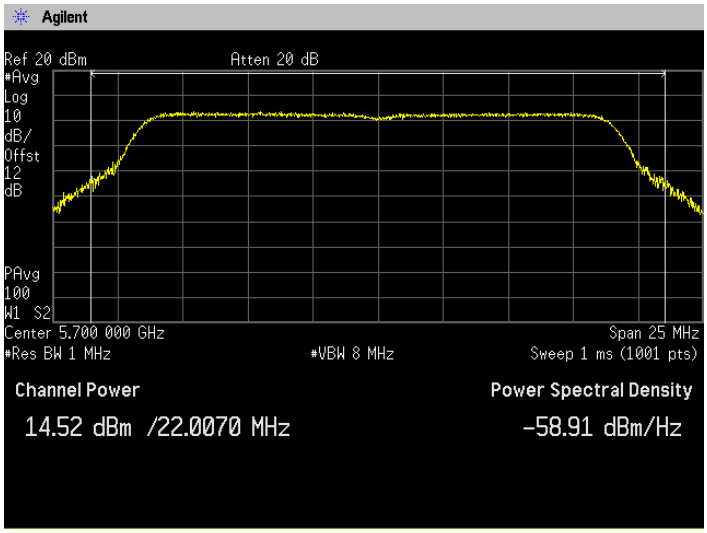
Channel: 100



Channel: 116

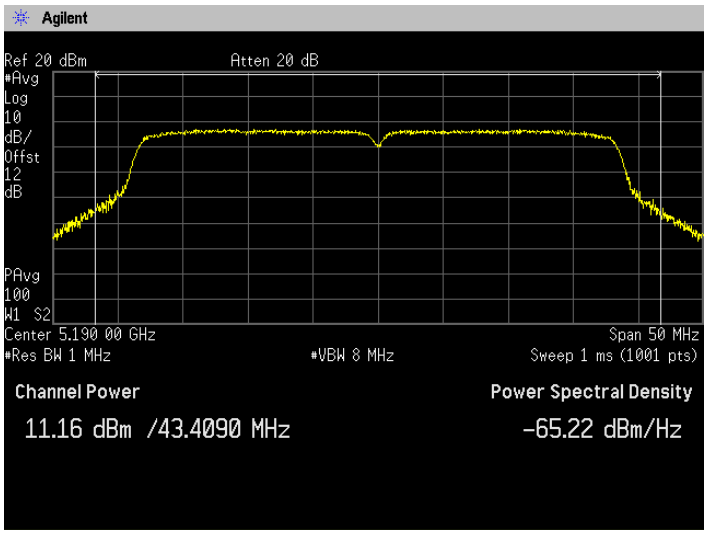


Channel: 140

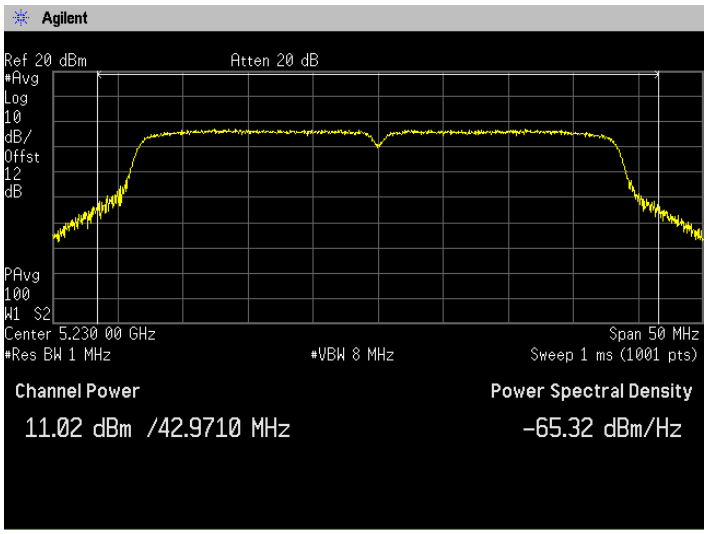


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

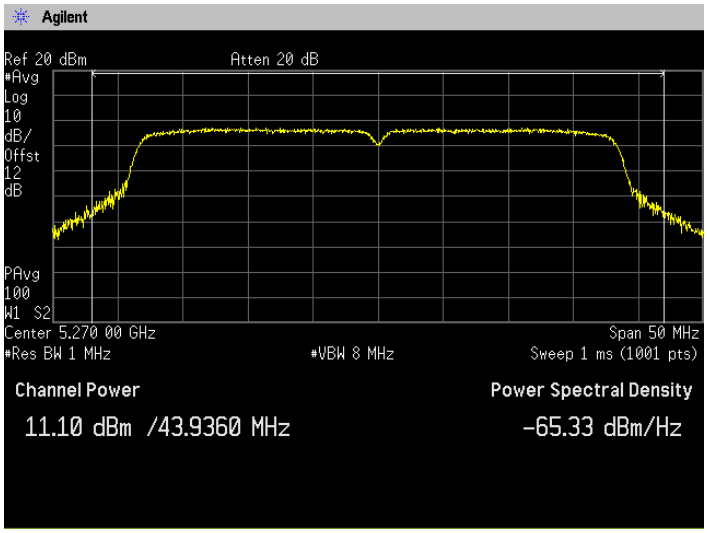


Channel: 46

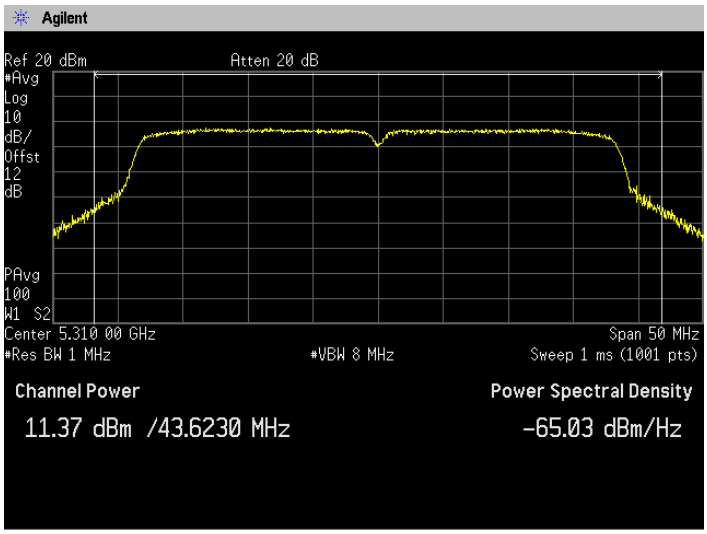


(5.3GHz Band)

Channel: 54

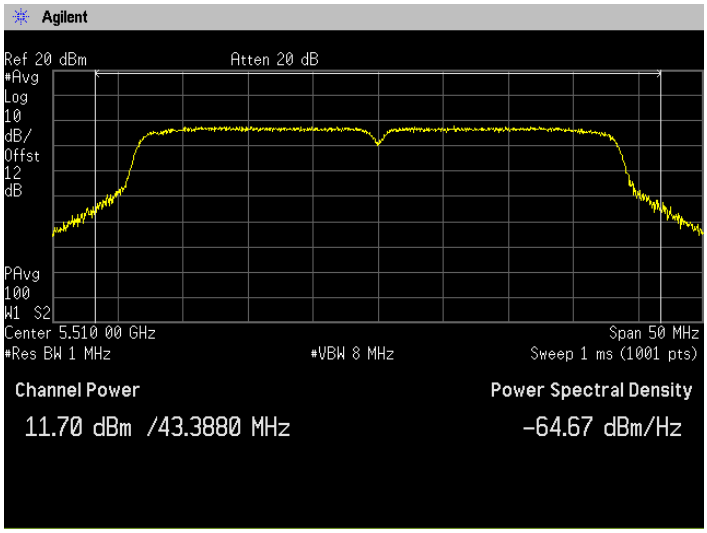


Channel: 62

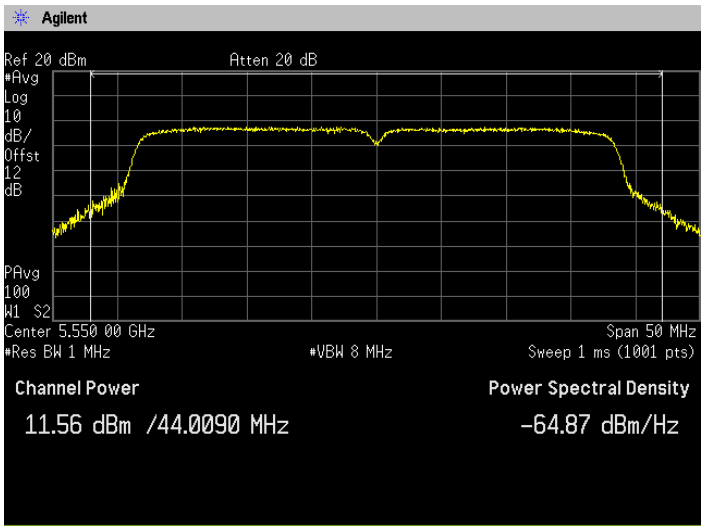


(5.6GHz Band)

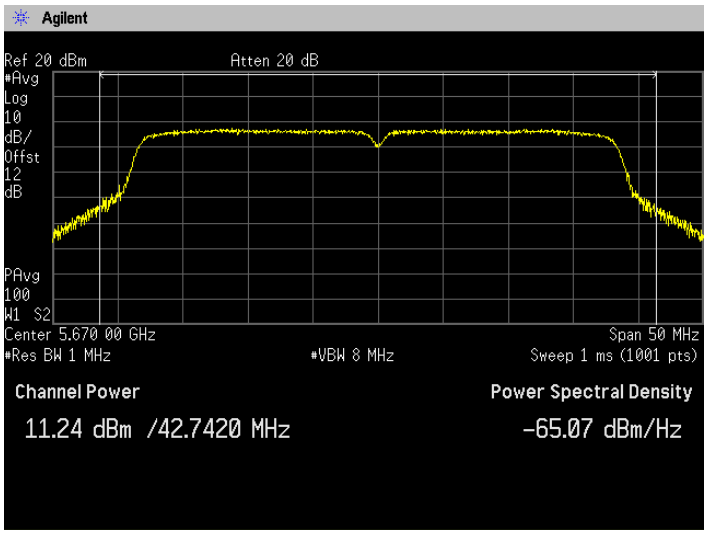
Channel: 102



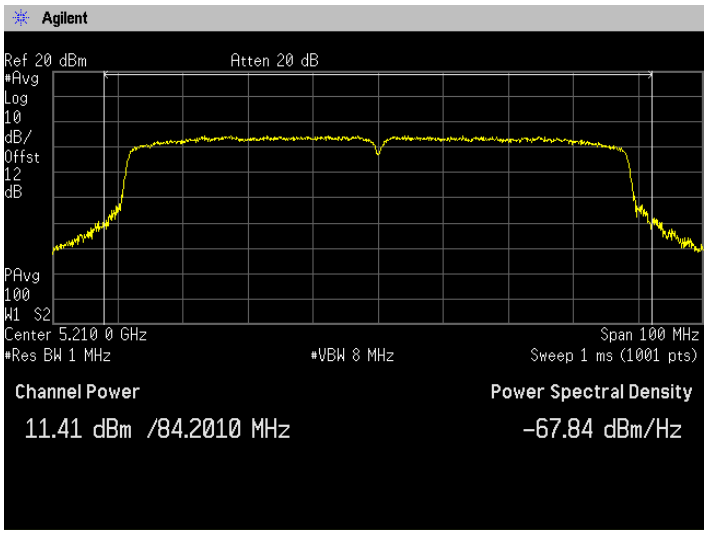
Channel: 110



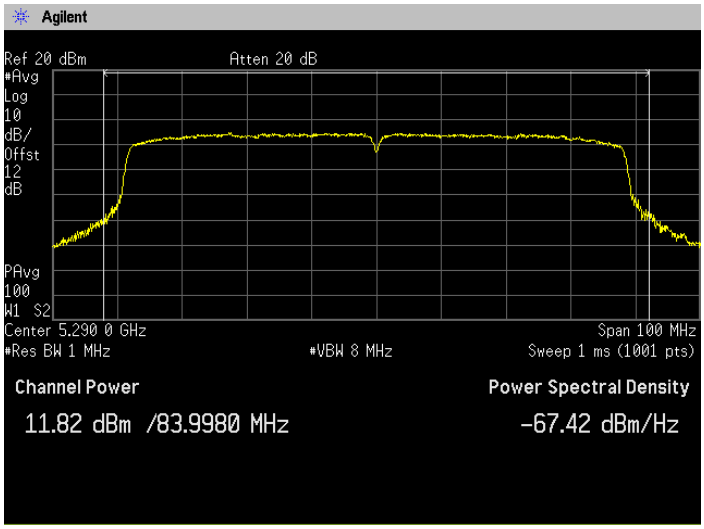
Channel: 134



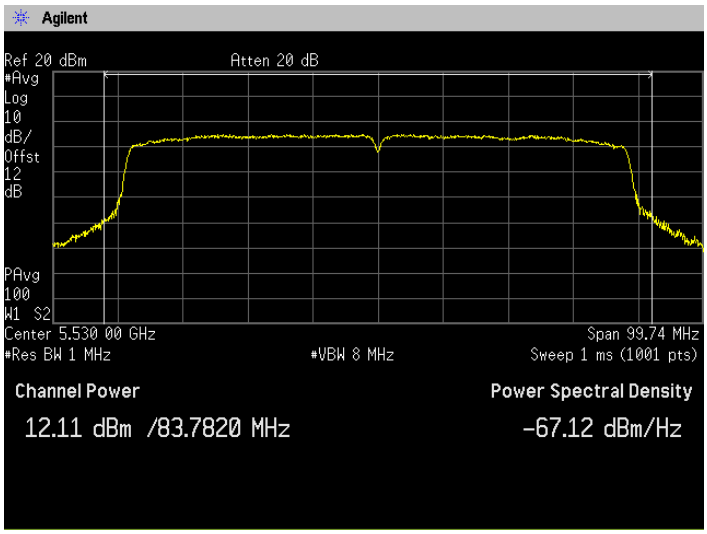
[IEEE802.11ac (HT80)]
(5.2GHz Band)
Channel: 42



(5.3GHz Band)
Channel: 58



(5.6GHz Band)
Channel: 106



Zacta

6. Peak Power Spectral Density

6.1 Measurement procedure [FCC 15.407(a), KDB789033]

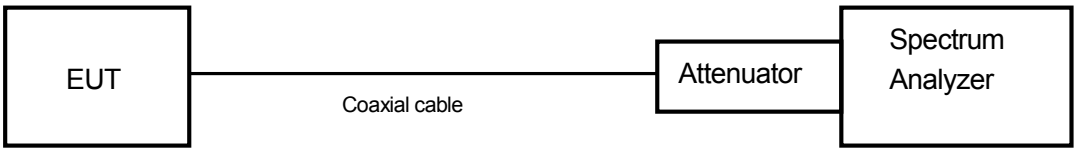
The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=8MHz, Span=25MHz/50MHz/100MHz, Sweep=Auto, Detector=RMS, Trace mode=Averaging

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



6.2 Limit

(1) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6dBi.

(3) For the 5.725-5.85GHz bands, the maximum power spectral density shall not exceed 30dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirection applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

<Peak Power Spectral Density Limit Calculation>

Band	Antenna Gain (dBi)	Limit (dBm)
5.2GHz Band	1.0	11
5.3GHz Band	1.0	11
5.6GHz Band	0.4	11

6.3 Measurement result

Date : December 10, 2014
Temperature : 22.5 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4

Test engineer : Hikaru shibata

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11a	36	5180	1.443	1.362	1.372	0.993	-	1.443
	40	5200	1.375					1.375
	48	5240	1.412					1.412
	52	5260	3.888	1.364	1.372	0.994	-	3.888
	56	5280	1.965					1.965
	64	5320	4.086					4.086
	100	5500	4.037	1.362	1.372	0.993	-	4.037
	116	5580	4.219					4.219
	140	5700	3.654					3.654

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11n (20MHz)	36	5180	1.207	1.276	1.284	0.994	-	1.207
	40	5200	1.051					1.051
	48	5240	1.445					1.445
	52	5260	3.428	1.276	1.284	0.994	-	3.428
	56	5280	3.517					3.517
	64	5320	3.514					3.514
	100	5500	3.948	1.276	1.284	0.994	-	3.948
	116	5580	3.534					3.534
	140	5700	3.413					3.413

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11n (40MHz)	38	5190	-2.674	0.636	0.645	0.986	-	-2.674
	46	5230	-2.752					-2.752
	54	5270	-2.790	0.635	0.645	0.984	-	-2.790
	62	5310	-2.187					-2.187
	102	5510	-1.948	0.635	0.645	0.984	-	-1.948
	110	5550	-2.209					-2.209
	134	5670	-2.539					-2.539

Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ac (80MHz)	42	5210	-5.301	0.247	0.258	0.957	0.189	-5.112
	58	5290	-4.962	0.248	0.259	0.958	0.188	-4.774
	106	5530	-4.496	0.247	0.258	0.957	0.189	-4.307

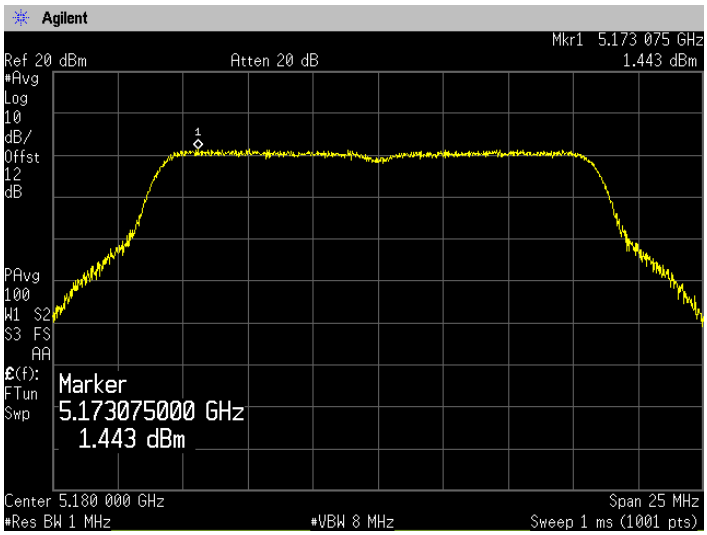
Note1: X = On time / (On + Off time), DCF=10log (1/x)
Note2: Test Result = Reading + DCF (If transmit duty cycle < 98 percent)

6.4 Trace data

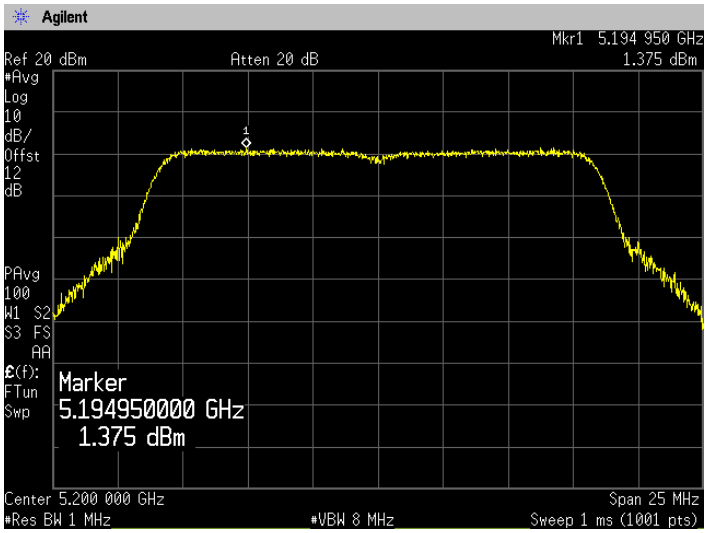
[IEEE802.11a]

(5.2GHz Band)

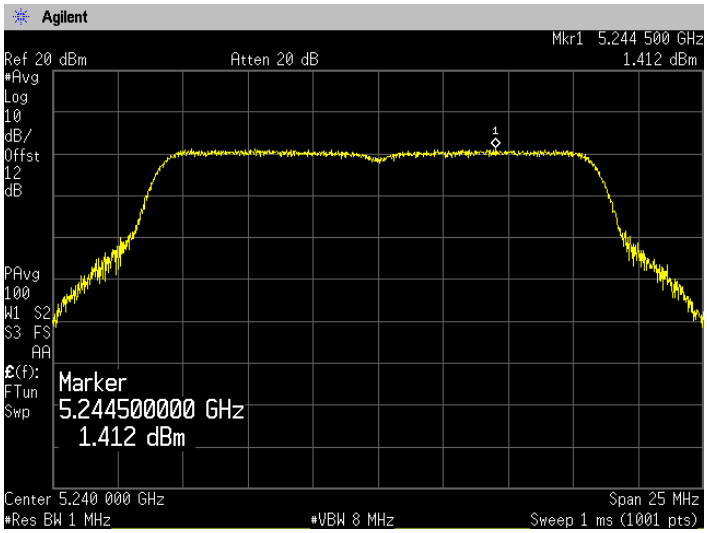
Channel: 36



Channel: 40

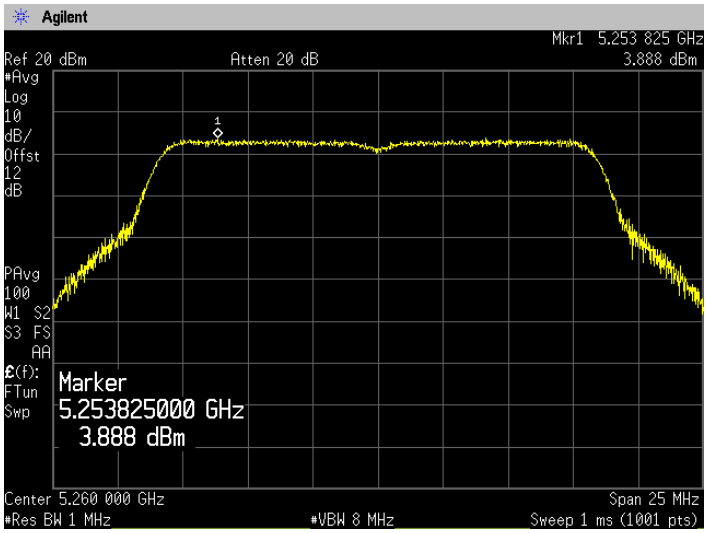


Channel: 48

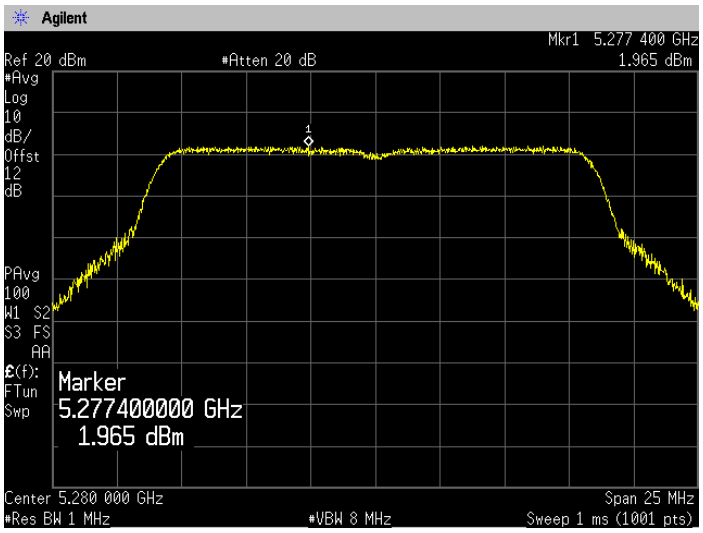


(5.3GHz Band)

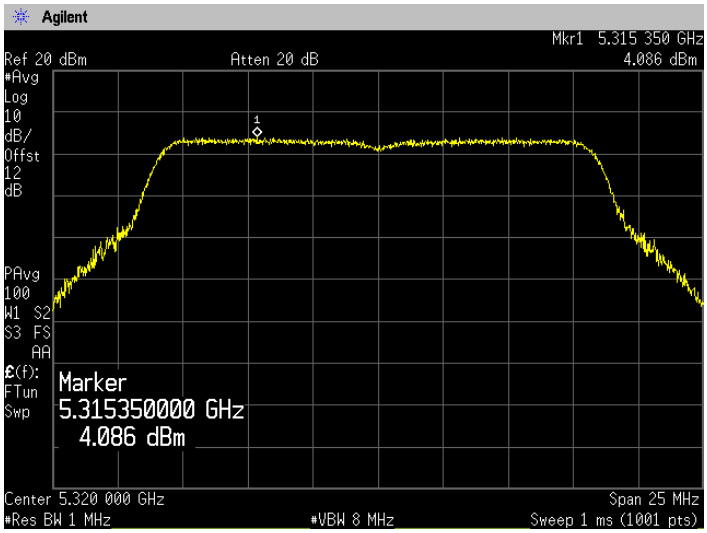
Channel: 52



Channel: 56

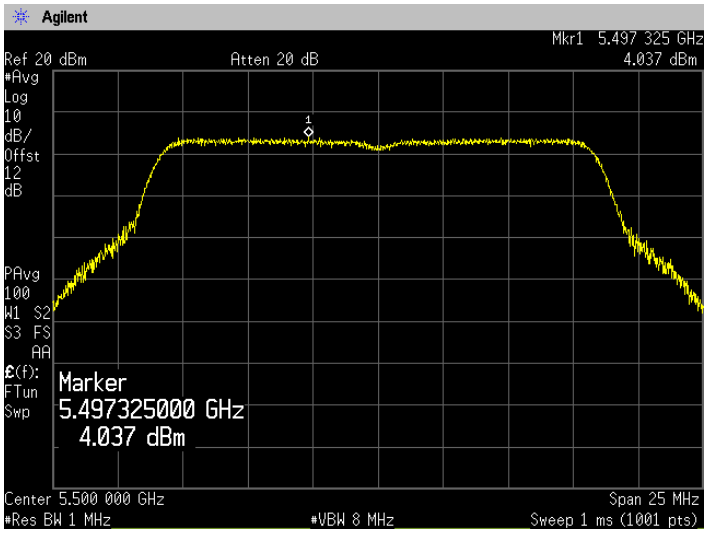


Channel: 64

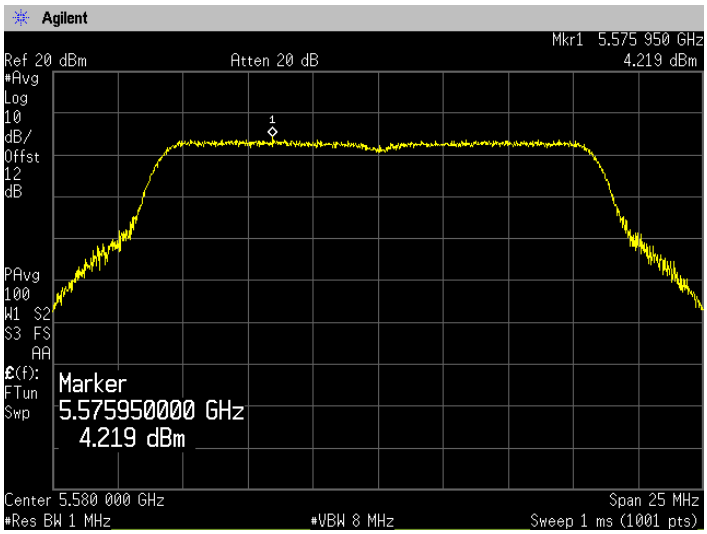


(5.6GHz Band)

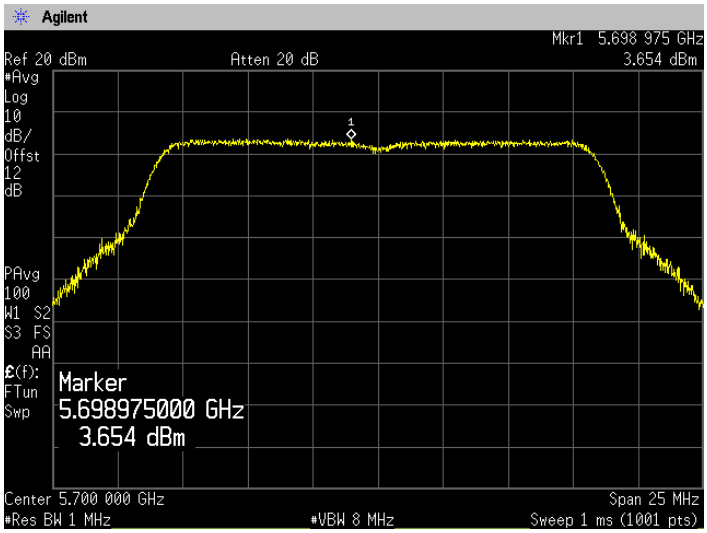
Channel: 100



Channel: 116

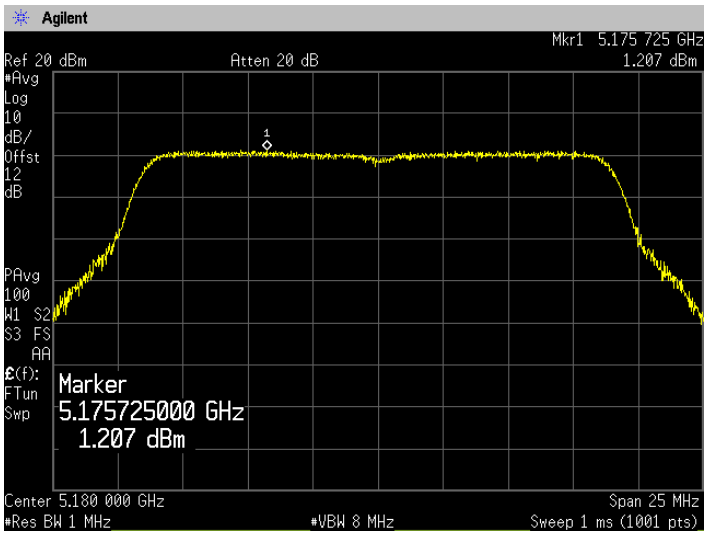


Channel: 140

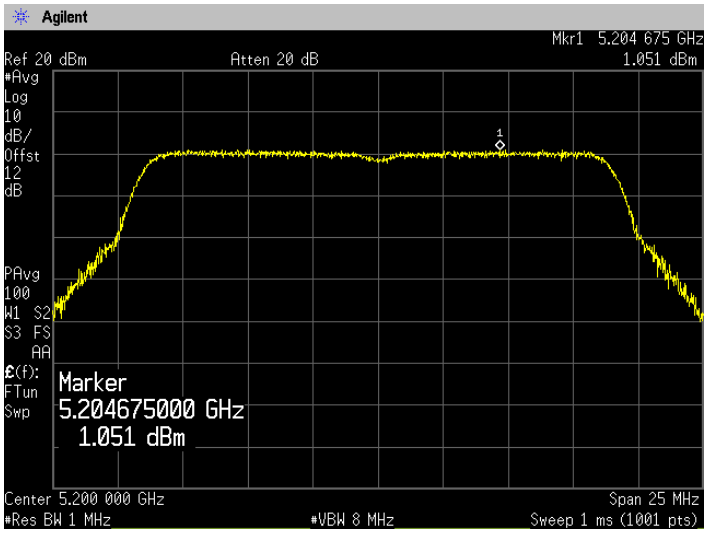


[IEEE802.11n (HT20)]
(5.2GHz Band)

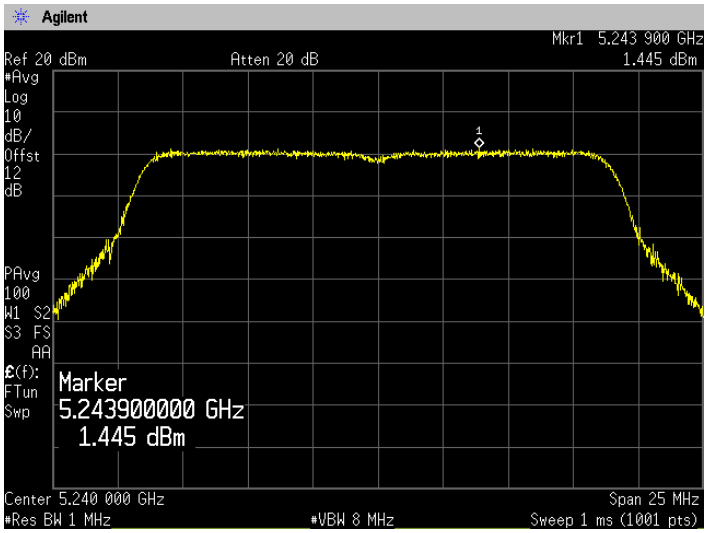
Channel: 36



Channel: 40

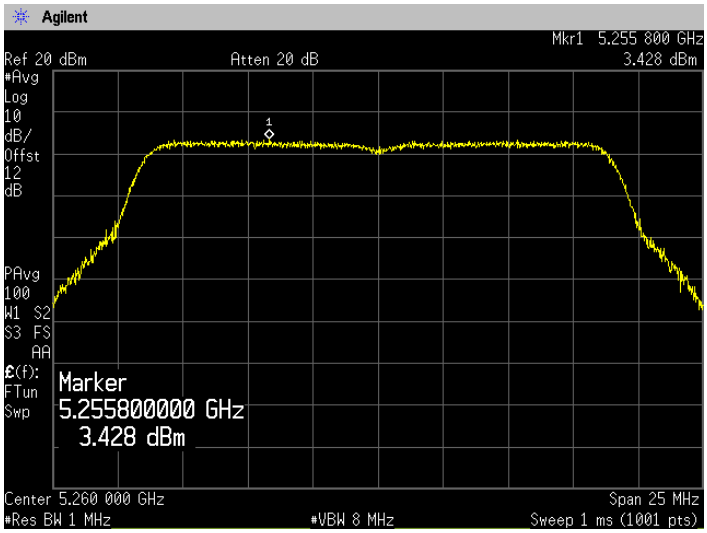


Channel: 48

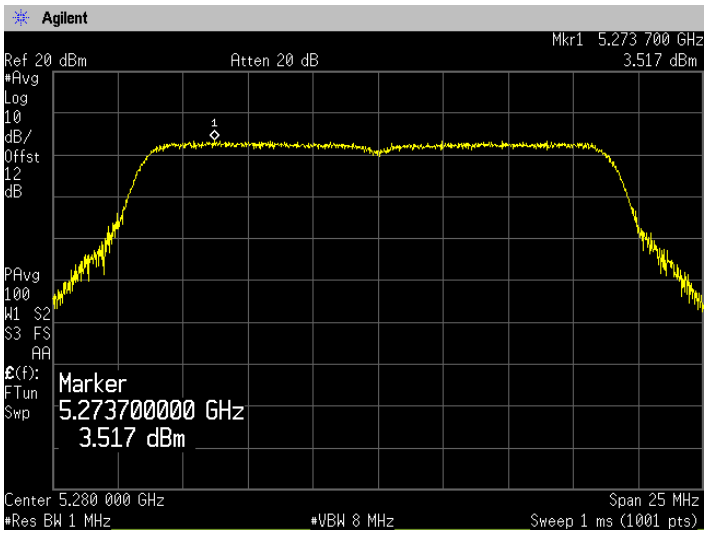


(5.3GHz Band)

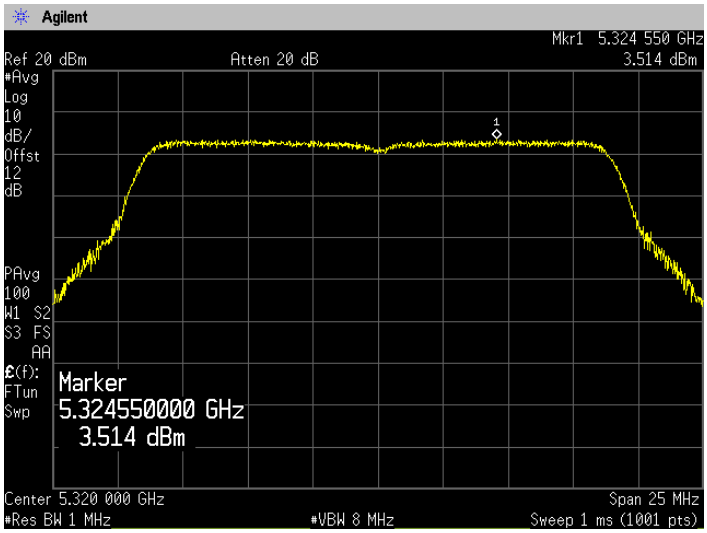
Channel: 52



Channel: 56

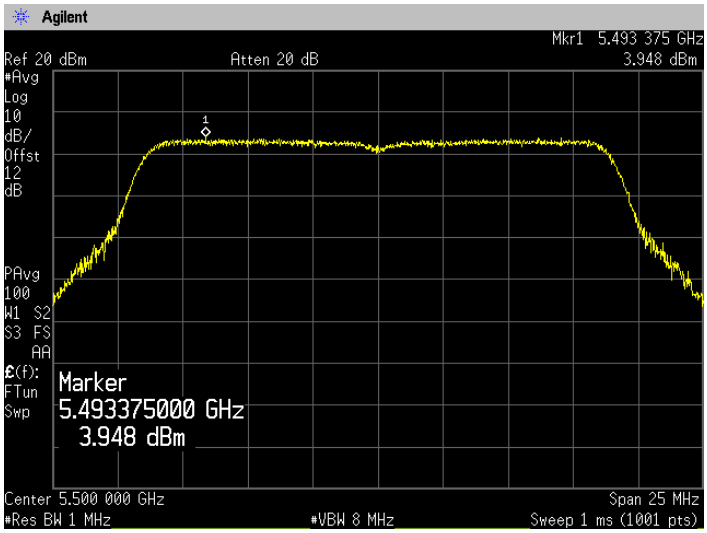


Channel: 64

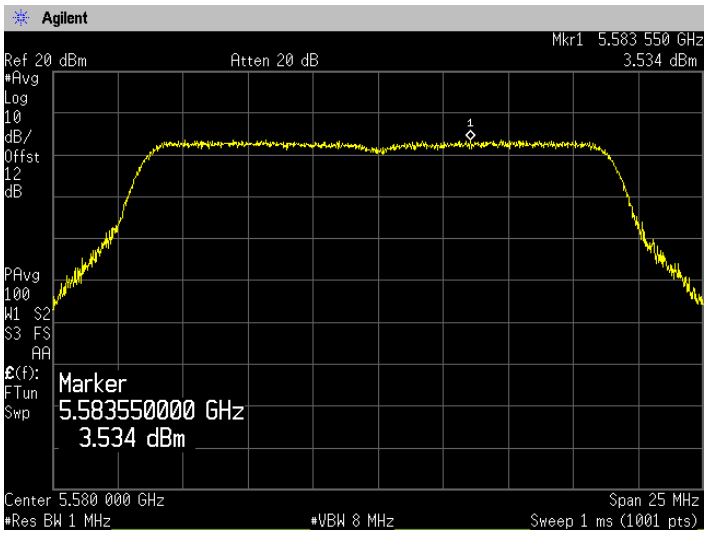


(5.6GHz Band)

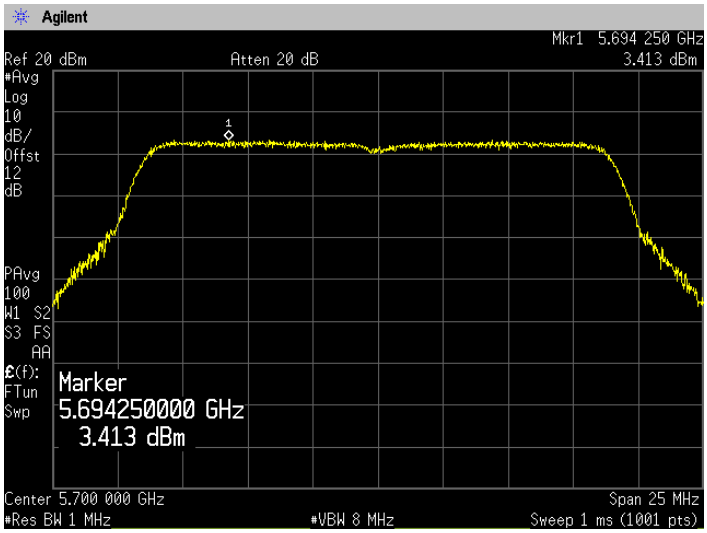
Channel: 100



Channel: 116

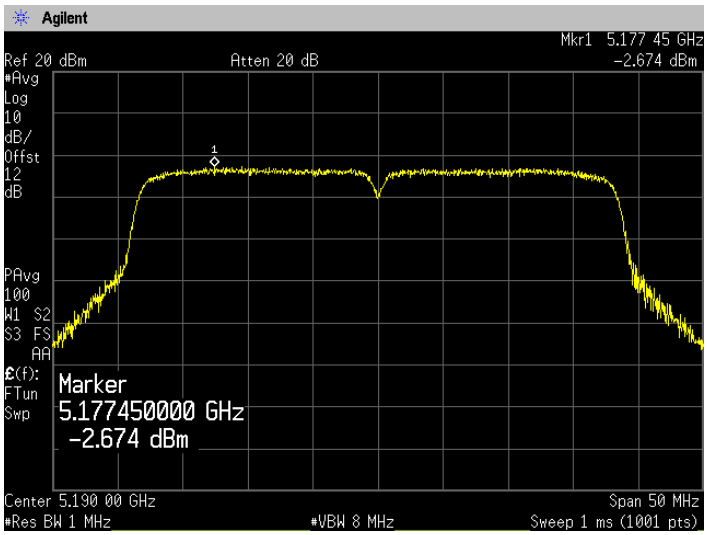


Channel: 140

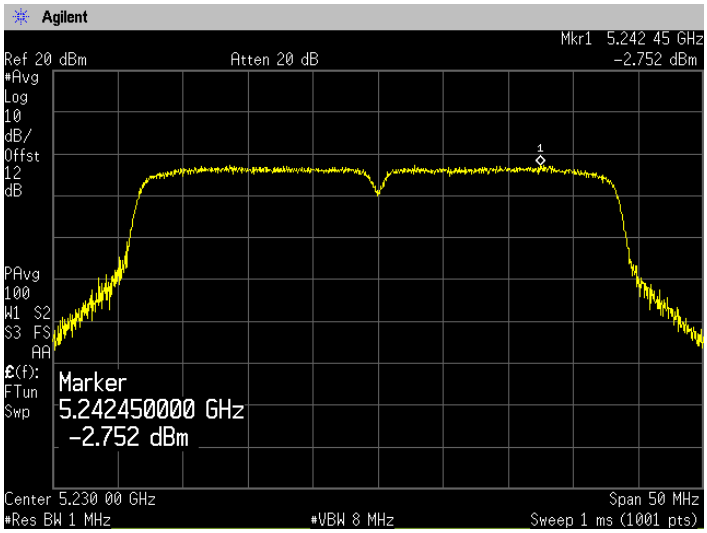


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

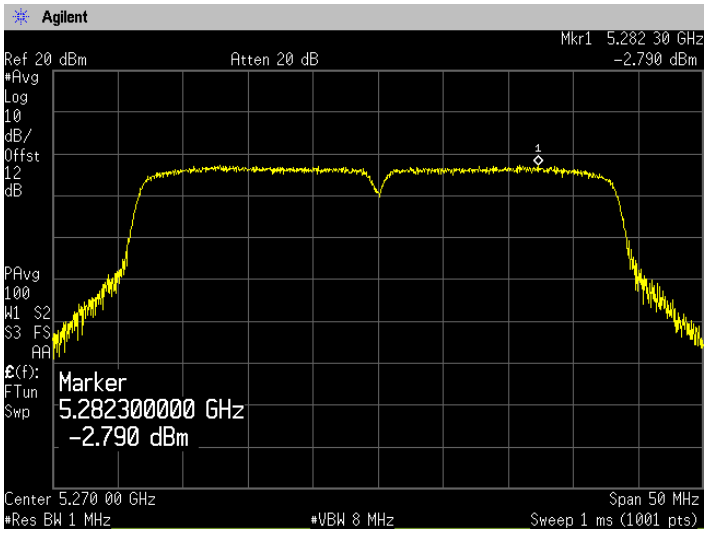


Channel: 46

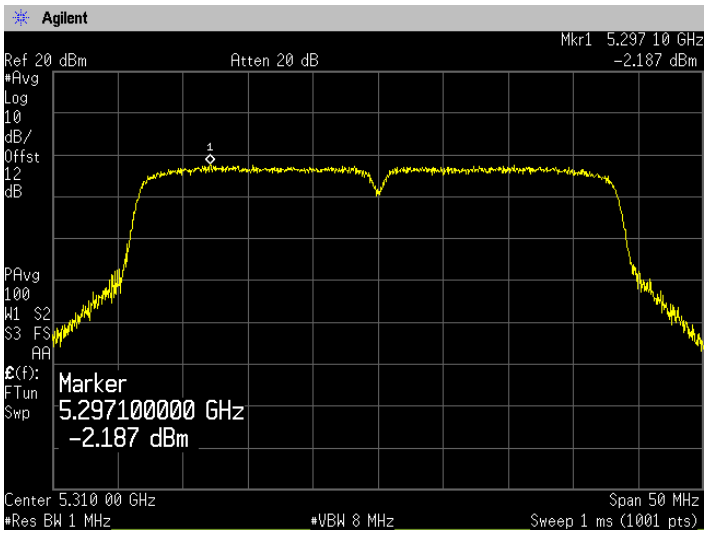


(5.3GHz Band)

Channel: 54

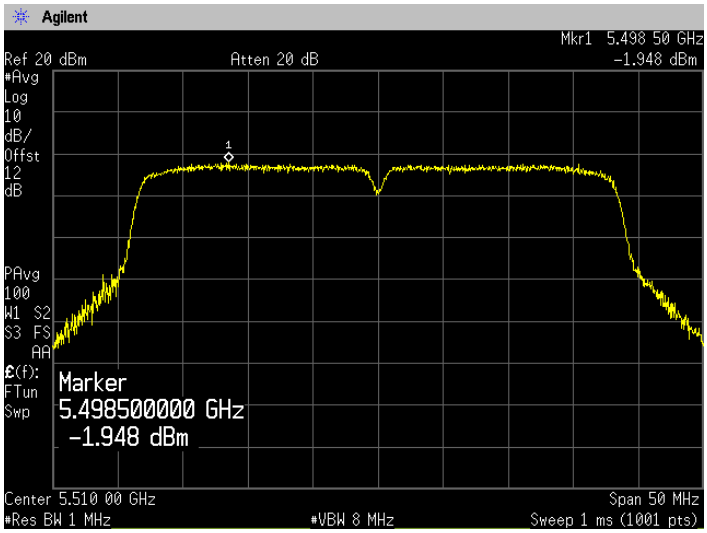


Channel: 62

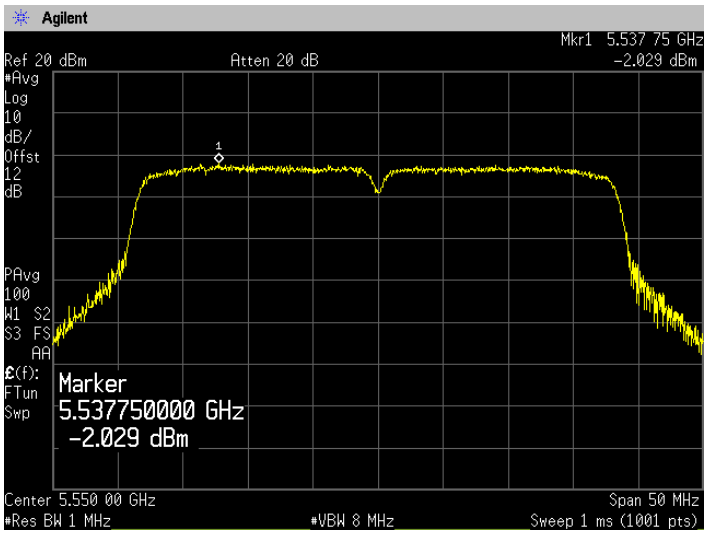


(5.6GHz Band)

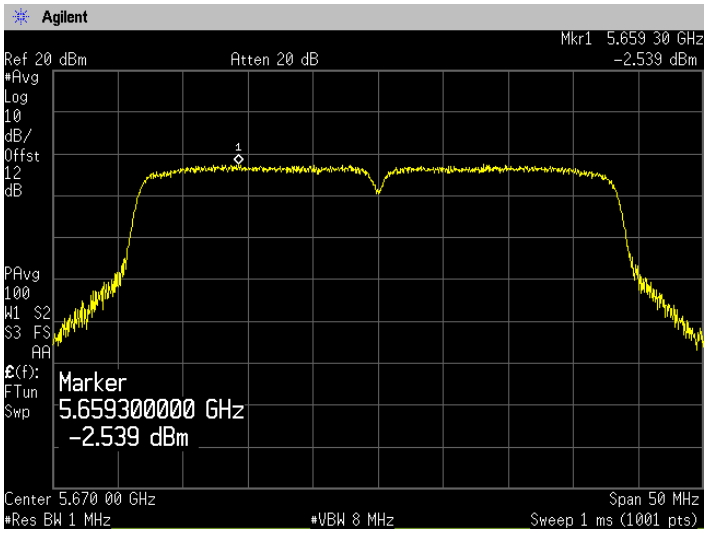
Channel: 102



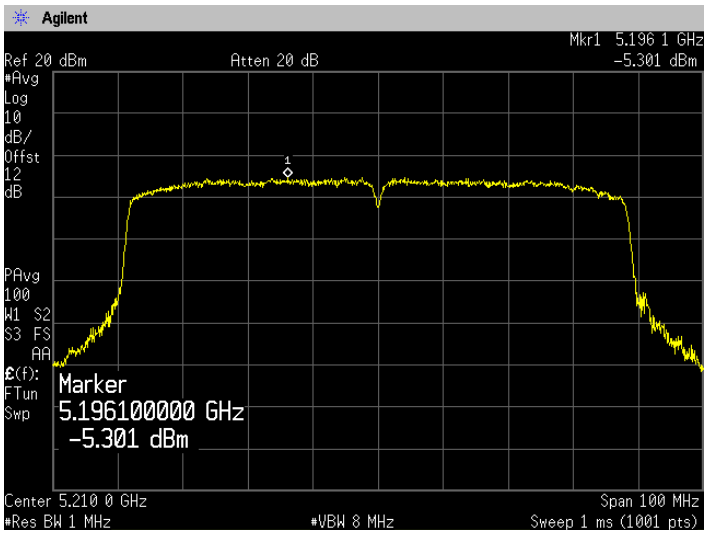
Channel: 110



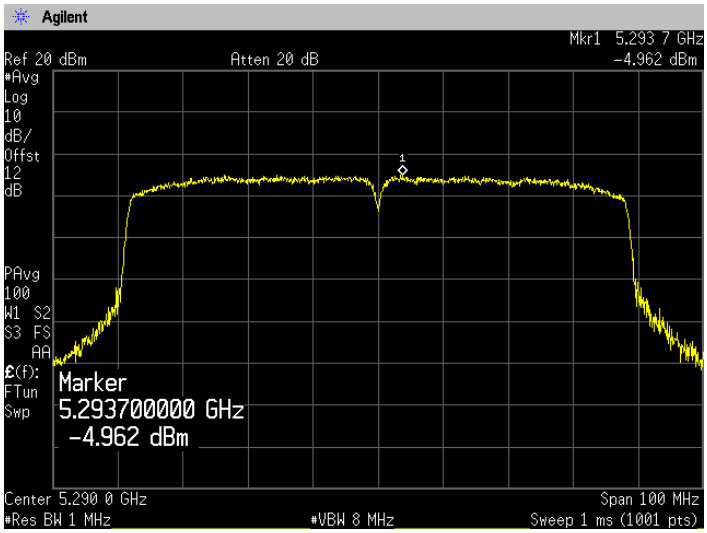
Channel: 134



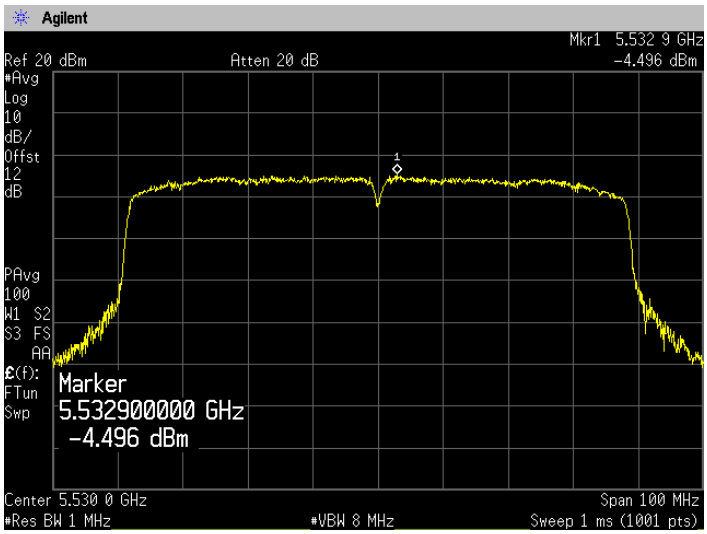
[IEEE802.11ac (HT80)]
(5.2GHz Band)
Channel: 42



(5.3GHz Band)
Channel: 58



(5.6GHz Band)
Channel: 106



7. Radiated Emissions (Restricted Bands of Operation)

7.1 Measurement procedure
[FCC 15.407(b), 15.205, 15.209, KDB789033]

Test was applied by following conditions.

Frequency range	:	30MHz to 40GHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m
Test receiver setting		Below 1GHz
- Detector	:	Quasi-peak
- Bandwidth	:	120kHz
Spectrum analyzer setting		Above 1GHz
- Peak	:	RBW=1MHz, VBW=3MHz, Span=0Hz, Sweep=auto
- Average	:	11ac(HT80) RBW=1MHz, VBW=5.1KHz, Span=0Hz, Sweep=auto Other RBW=1MHz, VBW=10Hz, Span=0Hz, Sweep=auto Display mode=Linear

Average Measurement Setting [VBW]

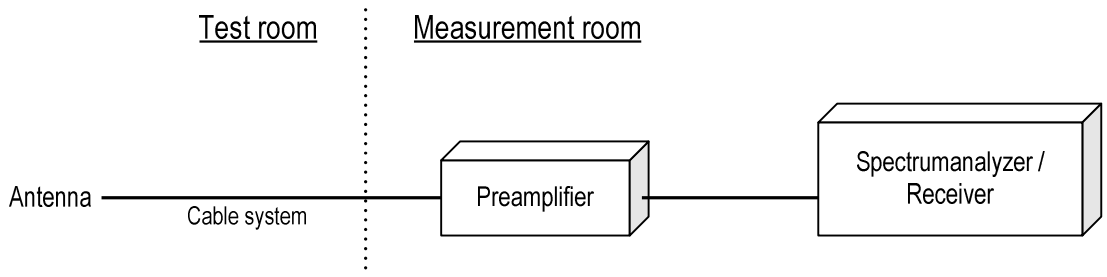
Mode	Duty Cycle (%)	T_{on} (us)	T_{off} (us)	$1/T_{on}$ (kHz)	Determined VBW Setting
11ac(HT80)	95.7	247	11	4.03	5.1kHz

Radiated emission measurements are performed at 3m distance with the broadband antenna (TRILOG antenna and Double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission.
The EUT is Placed on a turntable, which is 0.8m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode, Rx mode

- Test configuration



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7.2 Calculation method

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)
Margin = Limit – Emission level

7.3 Limit

(1) For transmitters operating in the 5.15-5.25GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz.

(2) For transmitters operating in the 5.25-5.35GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz.

(3) For transmitters operating in the 5.47-5.725GHz band: all emissions outside of the 5.47 5-5.725GHz band shall not exceed an EIRP of -27dBm/MHz.

(4) For transmitters operating in the 5.725-5.85GHz band: all emissions within the frequency range from the band edge to 10MHz above or below the band edge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz.

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition modulation.

7.4 Test data

Date	:	December 11, 2014			
Temperature	:	15.9 [˚C]			
Humidity	:	26.3 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

Date	:	December 12, 2014			
Temperature	:	21.8 [˚C]			
Humidity	:	27.3 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

Date	:	December 13, 2014			
Temperature	:	23.1 [˚C]			
Humidity	:	20.8 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

Date	:	December 19, 2014			
Temperature	:	16.1 [˚C]			
Humidity	:	26.7 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

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[IEEE802.11a]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	36	5180	5112.80	H	PK	41.5	14.2	55.7	74.0	18.3
			5112.80	H	AV	29.7	14.2	43.9	54.0	10.1
			10360.00	H	PK	39.3	24.3	63.6	68.2	4.6
	40	5200	10400.00	H	PK	38.5	24.4	62.9	68.2	5.3
	48	5240	10480.00	H	PK	37.3	24.4	61.7	68.2	6.5

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	52	5260	10520.00	H	PK	37.3	24.4	61.7	68.2	6.5
	56	5280	10560.00	H	PK	37.6	24.5	62.1	68.2	6.1
	64	5320	5351.00	H	PK	49.5	15.0	64.5	74.0	9.5
			5351.00	H	AV	28.1	15.0	43.1	54.0	10.9
			5351.00	V	PK	48.3	15.0	63.3	74.0	10.7
			5351.00	V	AV	27.7	15.0	42.7	54.0	11.3
			10640.00	H	PK	37.7	24.8	62.5	74.0	11.5
			10640.00	H	AV	24.5	24.8	49.3	54.0	4.7

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	100	5500	5469.00	H	PK	51.1	15.2	66.3	74.0	7.7
			5469.00	H	AV	27.7	15.2	42.9	54.0	11.1
			5469.00	V	PK	47.7	15.2	62.9	74.0	11.1
			5469.00	V	AV	26.9	15.2	42.1	54.0	11.9
			11000.00	H	PK	38.6	25.8	64.4	74.0	9.6
			11000.00	H	AV	27.0	25.8	52.8	54.0	1.2
	116	5580	11160.00	H	PK	38.6	26.3	64.9	74.0	9.1
			11160.00	H	AV	26.1	26.3	52.4	54.0	1.6
	140	5700	5726.50	H	PK	54.4	15.8	70.2	74.0	3.8
			5726.50	H	AV	30.1	15.8	45.9	54.0	8.1
			5726.50	V	PK	55.4	15.8	71.2	74.0	2.8
			5726.50	V	AV	30.6	15.8	46.4	54.0	7.6
			11400.00	H	PK	40.0	26.6	66.6	74.0	7.4
			11400.00	H	AV	26.5	26.6	53.1	54.0	0.9

Note:

1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30MHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

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[IEEE802.11n (HT20)]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	36	5180	5127.80	H	PK	45.8	14.2	60.0	74.0	14.0
			5127.80	H	AV	33.3	14.2	47.5	54.0	6.5
			10360.00	H	PK	37.8	24.3	62.1	68.2	6.1
	40	5200	5148.30	H	PK	44.5	14.3	58.8	74.0	15.2
			5148.30	H	AV	32.0	14.3	46.3	54.0	7.7
			5148.50	V	PK	41.9	14.3	56.2	74.0	17.8
			5148.50	V	AV	29.6	14.3	43.9	54.0	10.1
			10400.00	H	PK	38.3	24.4	62.7	68.2	5.5
	48	5240	10480.00	H	PK	37.1	24.4	61.5	68.2	6.7

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	52	5260	10520.00	H	PK	36.9	24.3	61.2	68.2	7.0
	56	5280	10560.00	H	PK	38.9	24.5	63.4	68.2	4.8
	64	5320	5351.00	H	PK	53.1	15.0	68.1	74.0	5.9
			5351.00	H	AV	30.3	15.0	45.3	54.0	8.7
			5351.00	V	PK	48.3	15.0	63.3	74.0	10.7
			5351.00	V	AV	28.0	15.0	43.0	54.0	11.0
			10640.00	H	PK	38.5	24.8	63.3	74.0	10.7
			10640.00	H	AV	25.6	24.8	50.4	54.0	3.6

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	100	5500	5469.00	H	PK	50.0	15.2	65.2	74.0	8.8
			5469.00	H	AV	29.0	15.2	44.2	54.0	9.8
			5469.00	V	PK	51.0	15.2	66.2	74.0	7.8
			5469.00	V	AV	28.8	15.2	44.0	54.0	10.0
			11000.00	H	PK	39.5	25.8	65.3	74.0	8.7
			11000.00	H	AV	27.2	25.8	53.0	54.0	1.0
	110	5580	11160.00	H	PK	39.5	26.3	65.8	74.0	8.2
			11160.00	H	AV	27.3	26.3	53.6	54.0	0.4
	140	5700	5726.00	H	PK	55.6	15.8	71.4	74.0	2.6
			5726.00	H	AV	31.7	15.8	47.5	54.0	6.5
			5726.00	V	PK	55.1	15.8	70.9	74.0	3.1
			5726.00	V	AV	31.0	15.8	46.8	54.0	7.2
			11400.00	H	PK	39.5	26.6	66.1	74.0	7.9
			11400.00	H	AV	26.7	26.6	53.3	54.0	0.7

Note:

1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30MHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

[IEEE802.11n (HT40)]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (40MHz)	38	5190	5144.00	H	PK	45.0	14.3	59.3	74.0	14.7
			5144.00	H	AV	27.5	14.3	41.8	54.0	12.2
			10380.00	H	PK	37.7	24.3	62.0	68.2	6.2
	46	5230	10460.00	H	PK	37.5	24.4	61.9	68.2	6.3

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (40MHz)	54	5270	10540.00	H	PK	37.7	24.5	62.2	68.2	6.0
	62	5310	5351.00	H	PK	50.2	15.0	65.2	74.0	8.8
			5351.00	H	AV	28.4	15.0	43.4	54.0	10.6
			5351.00	V	PK	52.1	15.0	67.1	74.0	6.9
			5351.00	V	AV	28.3	15.0	43.3	54.0	10.7
			10620.00	H	PK	38.8	24.7	63.5	74.0	10.5
			10620.00	H	AV	25.4	24.7	50.1	54.0	3.9

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (40MHz)	102	5510	5469.00	H	PK	49.5	15.2	64.7	74.0	9.3
			5469.00	H	AV	28.3	15.2	43.5	54.0	10.5
			5469.00	V	PK	46.1	15.2	61.3	74.0	12.7
			5469.00	V	AV	27.8	15.2	43.0	54.0	11.0
			11020.00	H	PK	38.9	25.9	64.8	74.0	9.2
			11020.00	H	AV	26.8	25.9	52.7	54.0	1.3
	110	5590	11100.00	H	PK	38.5	26.2	64.7	74.0	9.3
			11100.00	H	AV	27.2	26.2	53.4	54.0	0.6
	134	5670	11340.00	H	PK	38.2	26.5	64.7	74.0	9.3
			11340.00	H	AV	27.1	26.5	53.6	54.0	0.4

Note:
1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30MHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

[IEEE802.11ac (HT80)]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	42	5210	5149.00	H	PK	42.9	14.3	57.2	74.0	16.8
			5149.00	H	AV	27.2	14.3	41.5	54.0	12.5
			10420.00	H	PK	37.3	24.4	61.7	68.2	6.5

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	58	5290	5368.50	H	PK	44.1	15.0	59.1	74.0	14.9
			5368.50	H	AV	27.3	15.0	42.3	54.0	11.7
			10580.00	H	PK	37.5	24.6	62.1	68.2	6.1

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	106	5530	5469.00	H	PK	43.1	15.2	58.3	74.0	15.7
			5469.00	H	AV	28.9	15.2	44.1	54.0	9.9
			11060.00	H	PK	37.6	26.0	63.6	74.0	10.4
			11060.00	H	AV	25.2	26.0	51.2	54.0	2.8

Note:
1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30MHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

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8. Frequency Stability

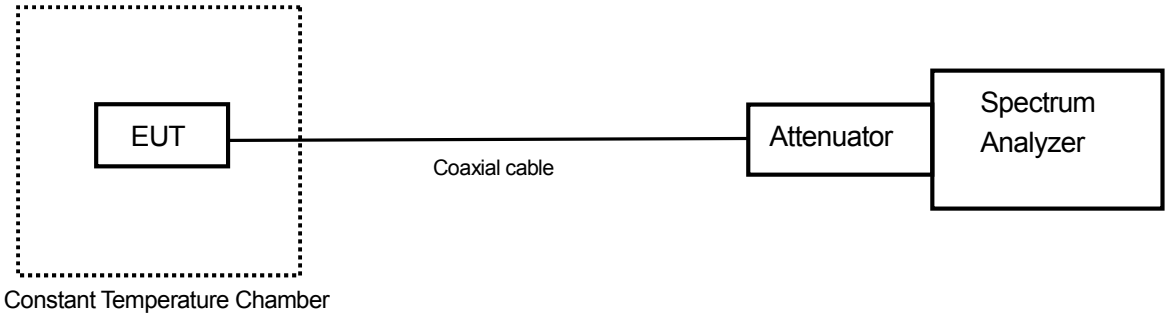
8.1 Measurement procedure [FCC 15.407(g)]

The EUT was placed of an inside of an constant temperature chamber as the temperature in the chamber was varied between -30˚C and +60˚C. The temperature was incremented by 10˚C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channels center frequency was recorded.

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



8.2 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified.

8.3 Measurement result

Date : December 10, 2014
Temperature : 22.5 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4

Test engineer : Hikaru Shibata

[Channel: 36 (5180MHz)]

Power Supply [V]	Temperature [ºC]	Measurements Frequency [Hz]	Frequency Tolerance [ppm]
3.80	25(Ref.)	5179998548	0.00000000
	60	5179991234	-1.41196951
	50	5179993457	-0.98281881
	40	5179967478	-5.99807118
	30	5179972197	-5.08706706
	20	5179984123	-2.78474982
	10	5179997937	-0.11795370
	0	5180017955	3.74652615
	-10	5180021065	4.34691242
	-20	5180032655	6.58436478
	-30	5180029563	5.98745342
3.23	25	5180001529	0.57548279
4.37	25	5179995674	-0.55482641

[Channel: 64 (5320MHz)]

Power Supply [V]	Temperature [ºC]	Measurements Frequency [Hz]	Frequency Tolerance [ppm]
3.80	25(Ref.)	5320003255	0.00000000
	60	5320016588	2.50620147
	50	5320008634	1.01108961
	40	5319996486	-1.27236764
	30	5319985579	-3.32255436
	20	5319980190	-4.33552366
	10	5320020592	3.25883259
	0	5320022897	3.69210300
	-10	5320034691	5.90901894
	-20	5320004753	0.28157878
	-30	5320014250	2.06672806
3.23	25	5320005976	0.51146585
4.37	25	5320002832	-0.07951123

[Channel: 140 (5700MHz)]

Power Supply [V]	Temperature [ºC]	Measurements Frequency [Hz]	Frequency Tolerance [ppm]
3.80	25(Ref.)	5700001732	0.00000000
	60	5700002664	0.16350872
	50	5699995326	-1.12385931
	40	5699998077	-0.64122788
	30	5699997874	-0.67684190
	20	5699998841	-0.50719283
	10	5700003004	0.22315783
	0	5700002119	0.06789472
	-10	5700038584	6.46526119
	-20	5700040511	6.80333127
	-30	5700030225	4.99877041
3.23	25	5699994082	-1.34210486
4.37	25	5699997176	-0.79929800

9. AC Power Line Conducted Emissions

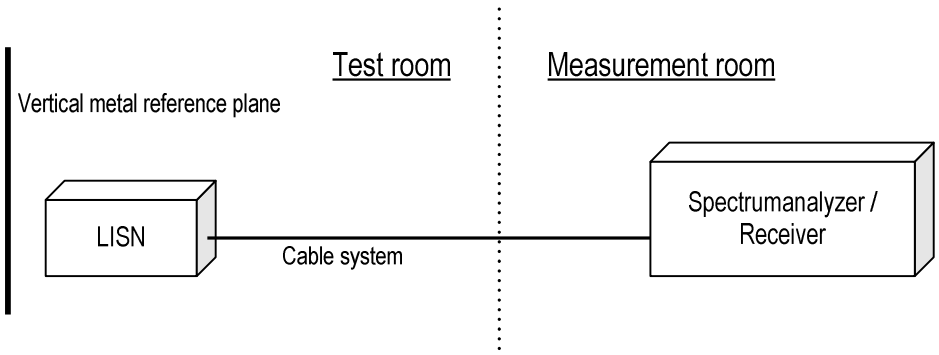
9.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

Test method	:	ANSI C63.4
Frequency range	:	0.15MHz to 30MHz
Test place	:	10m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Vertical Metal Reference Plane	:	(W)2.0m × (H)2.0m 0.4m away from EUT
Test receiver setting		
- Detector	:	Quasi-peak, Average
- Bandwidth	:	9kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.
LISN for peripheral is terminated in 50Ω.
EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



9.2 Calculation method

Emission level = Reading + (LISN. factor + Cable system loss)
Margin = Limit – Emission level

9.3 Limit

Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

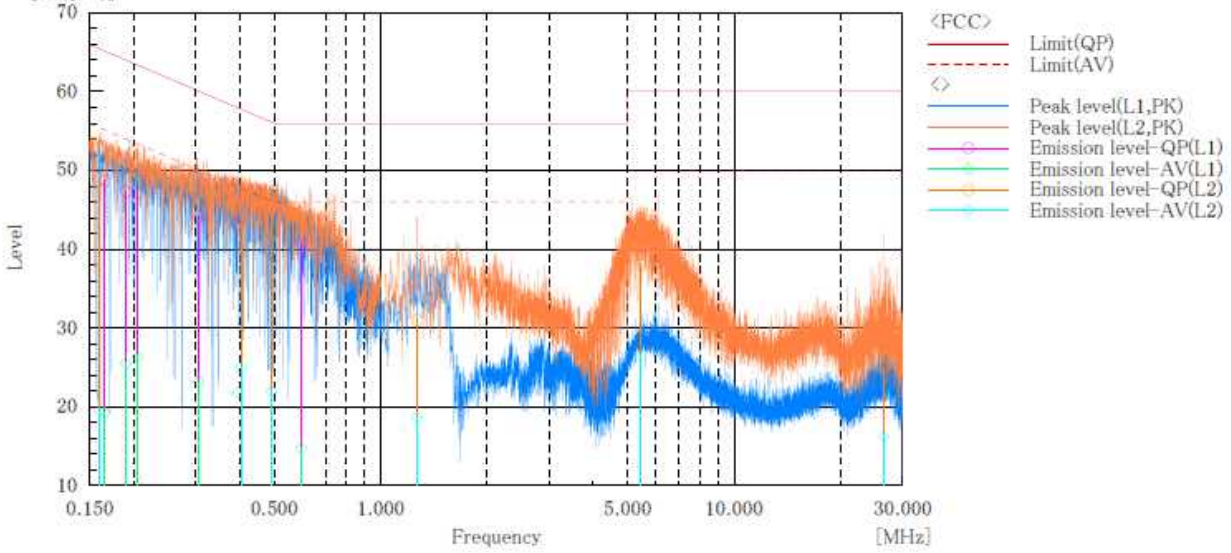
*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

9.4 Test data

***** CONDUCTED EMISSION at MAINS PORT *****
≪ 3m Semi-anechoic chamber ≫

TUV SUD Zacta Ltd. <<Data Sheet No.1>> 14 December,2014

Company Name	: KYOCERA Corporation	Standard	: FCC Part.15 E
EUT	: Mobile Phone	Operator	: H.Shibata
Model No.	: KC-S701	Temp.Hum.	: 18.5[℃] 16.2[%]
Serial No.	: N/A	Note1	: W52
Test mode	: 5GHz_WLAN	Note2	:



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.166	38.3	8.9	10.4	48.7	19.3	65.2	55.2	16.5	35.9
2	0.191	36.9	15.2	10.4	47.3	25.6	64.0	54.0	16.7	28.4
3	0.206	36.7	16.0	10.4	47.1	26.4	63.4	53.4	16.3	27.0
4	0.306	33.9	12.9	10.3	44.2	23.2	60.1	50.1	15.9	26.9
5	0.394	32.9	11.5	10.3	43.2	21.8	58.0	48.0	14.8	26.2
6	0.598	30.5	4.5	10.3	40.8	14.8	56.0	46.0	15.2	31.2

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.161	38.4	9.1	10.5	48.9	19.6	65.4	55.4	16.5	35.8
2	0.403	32.6	14.6	10.4	43.0	25.0	57.8	47.8	14.8	22.8
3	0.493	31.5	11.6	10.4	41.9	22.0	56.1	46.1	14.2	24.1
4	1.269	20.6	8.3	10.4	31.0	18.7	56.0	46.0	25.0	27.3
5	5.455	27.5	15.8	10.6	38.1	26.4	60.0	50.0	21.9	23.6
6	26.554	13.8	5.0	11.3	25.1	16.3	60.0	50.0	34.9	33.7

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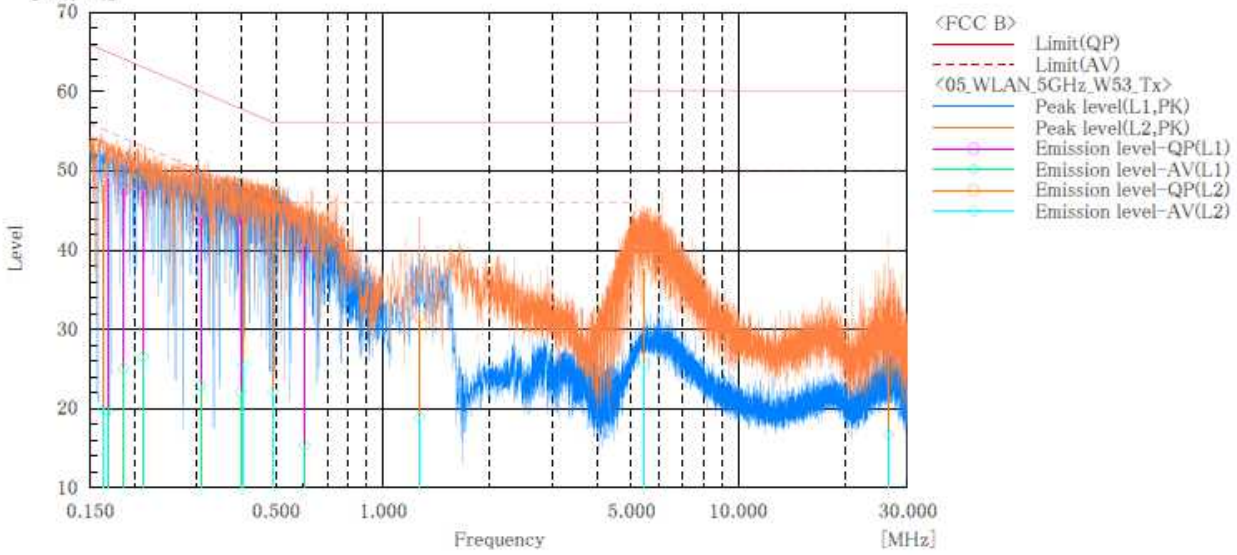
***** CONDUCTED EMISSION at MAINS PORT *****
≪ 3m Semi-anechoic chamber ≫

TUV SUD Zacta Ltd. <<Data Sheet No.2>> 14 December,2014

Company Name	: KYOCERA Corporation	Standard	: FCC Part.15 E
EUT	: Mobile Phone	Operator	: H.Shibata
Model No.	: KC-S701	Temp.Hum.	: 18.5[℃] 16.2[%]
Serial No.	: N/A	Note1	: W53
Test mode	: 5GHz_WLAN	Note2	:



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.169	38.5	9.3	10.4	48.9	19.7	65.0	55.0	16.1	35.3
2	0.187	37.3	14.7	10.4	47.7	25.1	64.2	54.2	16.5	29.1
3	0.212	36.9	16.3	10.3	47.2	26.6	63.1	53.1	15.9	26.5
4	0.308	33.7	12.6	10.3	44.0	22.9	60.0	50.0	16.0	27.1
5	0.399	33.6	11.8	10.3	43.9	22.1	57.9	47.9	14.0	25.8
6	0.603	30.1	5.1	10.3	40.4	15.4	56.0	46.0	15.6	30.6

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.164	37.6	9.4	10.5	48.1	19.9	65.3	55.3	17.2	35.4
2	0.407	34.2	15.2	10.4	44.6	25.6	57.7	47.7	13.1	22.1
3	0.493	31.6	11.7	10.4	42.0	22.1	56.1	46.1	14.1	24.0
4	1.271	21.2	8.5	10.4	31.6	18.9	56.0	46.0	24.4	27.1
5	5.460	27.0	15.1	10.6	37.6	25.7	60.0	50.0	22.4	24.3
6	26.531	14.2	5.5	11.3	25.5	16.8	60.0	50.0	34.5	33.2

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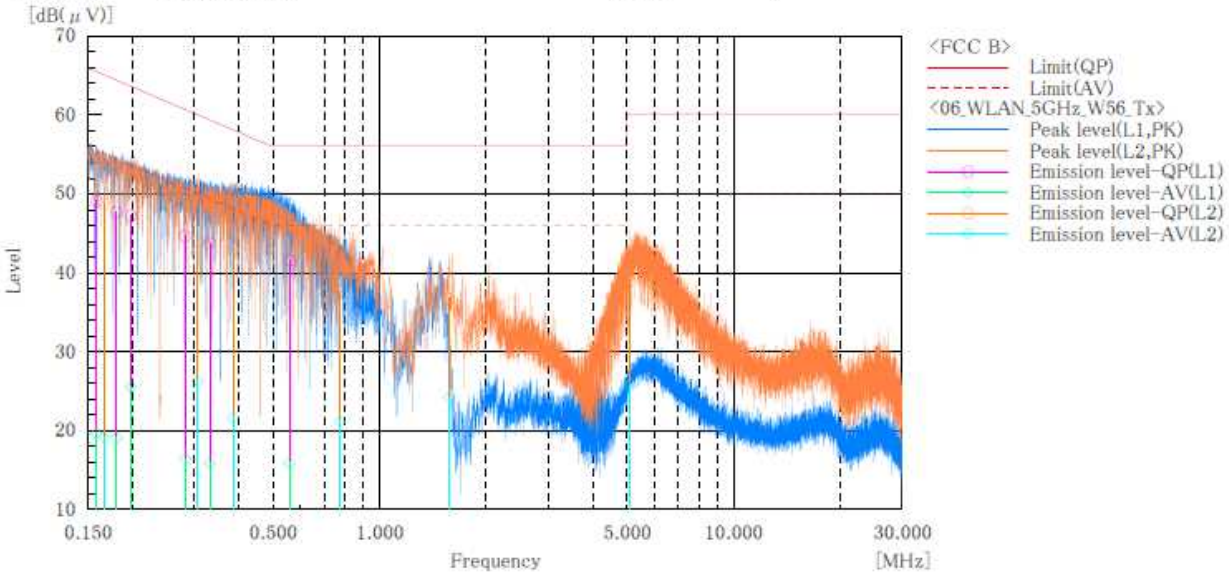
***** CONDUCTED EMISSION at MAINS PORT *****
≪ 3m Semi-anechoic chamber ≫

TUV SUD Zacta Ltd. <<Data Sheet No.3>> 14 December,2014

Company Name	: KYOCERA Corporation	Standard	: FCC Part.15 E
EUT	: Mobile Phone	Operator	: H.Shibata
Model No.	: KC-S701	Temp.Hum.	: 18.5[℃] 16.2[%]
Serial No.	: N/A	Note1	: W56
Test mode	: 5GHz_WLAN	Note2	:



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.159	38.7	9.3	10.4	49.1	19.7	65.5	55.5	16.4	35.8
2	0.181	37.3	8.7	10.4	47.7	19.1	64.4	54.4	16.7	35.3
3	0.199	36.8	15.2	10.4	47.2	25.6	63.7	53.7	16.5	28.1
4	0.283	34.4	6.1	10.3	44.7	16.4	60.7	50.7	16.0	34.3
5	0.332	33.5	5.6	10.3	43.8	15.9	59.4	49.4	15.6	33.5
6	0.558	31.3	5.6	10.3	41.6	15.9	56.0	46.0	14.4	30.1

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.167	38.3	8.7	10.5	48.8	19.2	65.1	55.1	16.3	35.9
2	0.307	33.6	15.9	10.4	44.0	26.3	60.1	50.1	16.1	23.8
3	0.386	32.6	11.3	10.4	43.0	21.7	58.1	48.1	15.1	26.4
4	1.572	26.3	13.8	10.4	36.7	24.2	56.0	46.0	19.3	21.8
5	5.114	28.4	15.2	10.6	39.0	25.8	60.0	50.0	21.0	24.2
6	0.774	27.3	10.8	10.4	37.7	21.2	56.0	46.0	18.3	24.8

10. Duty Cycle

10.1 Measurement procedure [KDB789033]

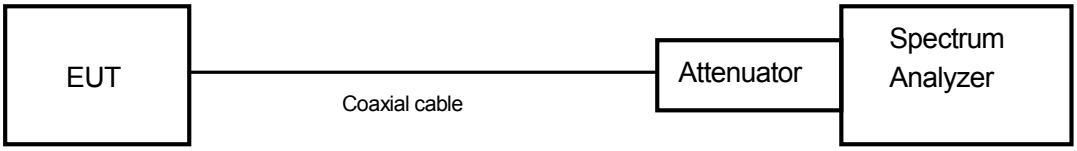
The duty cycle is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=8MHz, VBW=8MHz, Span=0Hz, Sweep=Auto, Detector=Peak, Trace mode=Single

The EUT was set to operate with following conditions.
- 5.2GHz Band, 5.3GHz Band, 5.6GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



10.2 Limit

None

10.3 Measurement result

Date : December 10, 2014
Temperature : 22.5 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4

Tested by : Hikaru Shibata

Mode	Channel	Frequency (MHz)	Duty Cycle		
			On Time(ms)	On+Off Time(ms)	%
802.11a	36	5180	1.362	1.372	99.27
	40	5200			
	58	5240			
	52	5260	1.364	1.372	99.42
	56	5280			
	64	5320			
	100	5500	1.362	1.372	99.27
	116	5580			
	140	5700			

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle		
			On Time(ms)	On+Off Time(ms)	%
802.11n (20MHz)	36	5180	1.276	1.284	99.38
	40	5200			
	58	5240			
	52	5260	1.276	1.284	99.38
	56	5280			
	64	5320			
	100	5500	1.276	1.284	99.38
	116	5580			
	140	5700			

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle		
			On Time(ms)	On+Off Time(ms)	%
802.11n (40MHz)	38	5190	0.636	0.645	98.60
	46	5230			
	54	5270	0.635	0.645	98.45
	62	5310			
	102	5510	0.635	0.645	98.45
	110	5550			
	134	5670			

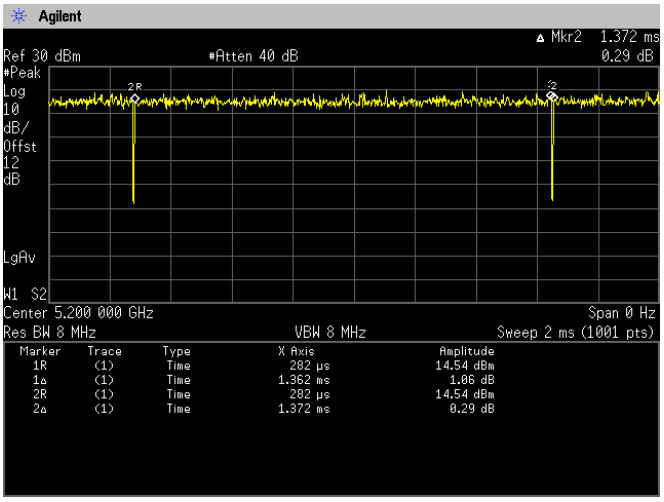
Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle		
			On Time(ms)	On+Off Time(ms)	%
802.11ac (80MHz)	42	5210	0.247	0.258	95.74
	58	5290	0.248	0.259	95.75
	106	5530	0.247	0.258	95.74

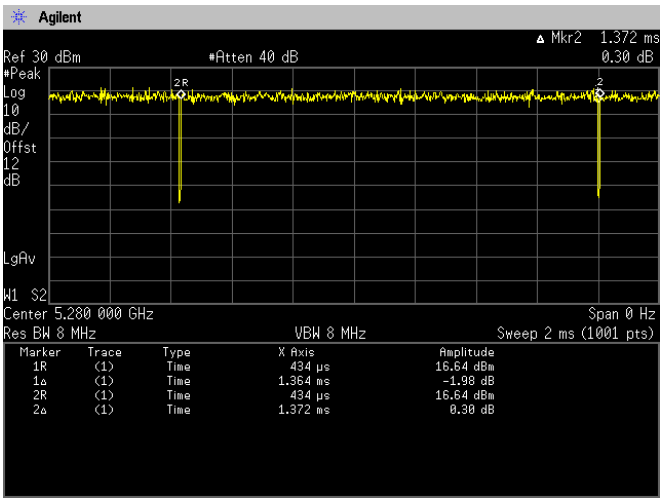
Note: X = On time / (On + Off time)

10.4 Trace data [IEEE802.11a]

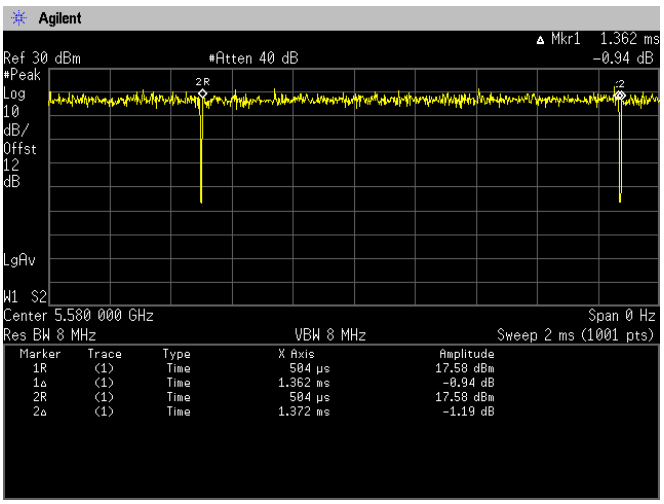
Channel: 40



Channel: 56

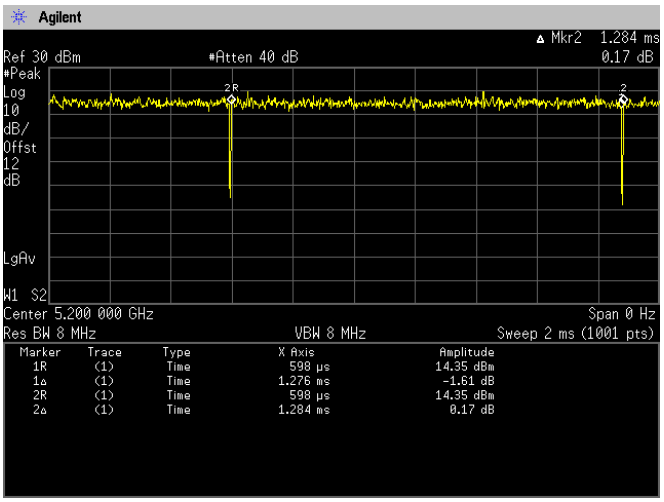


Channel: 116

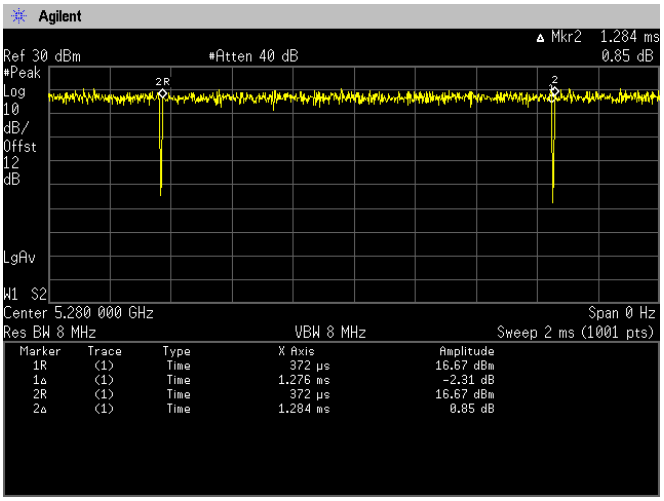


[IEEE802.11n (HT20)]

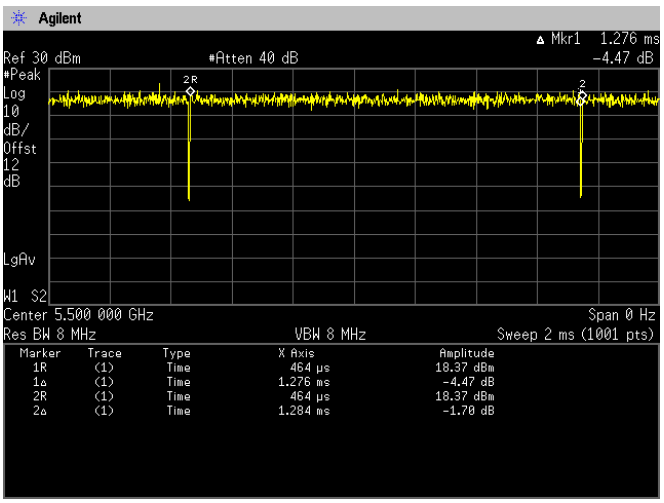
Channel: 40



Channel: 56

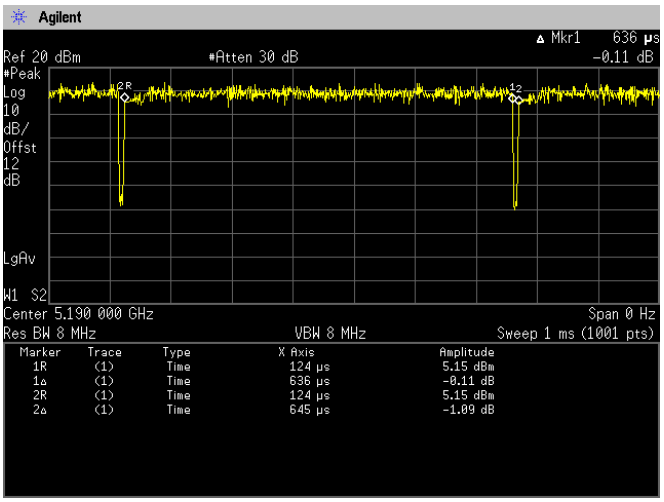


Channel: 100

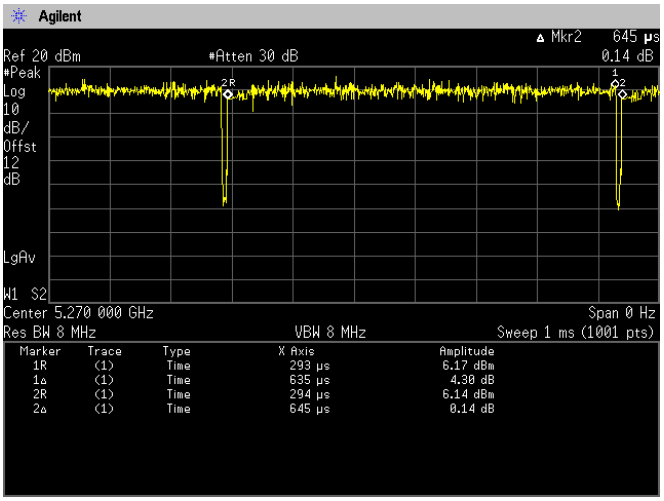


[IEEE802.11n (HT40)]

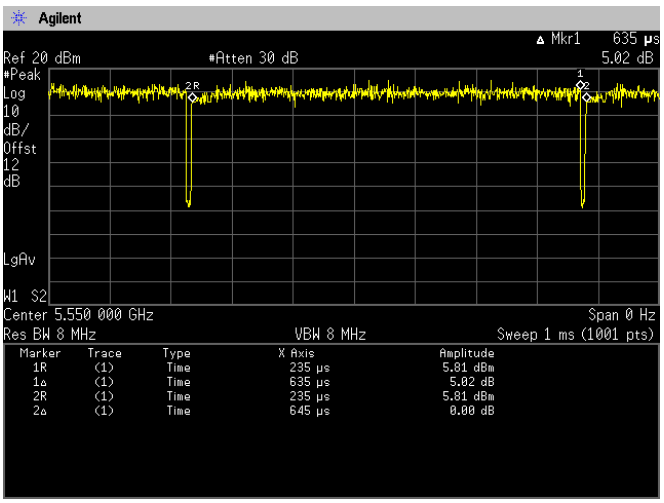
Channel: 38



Channel: 54

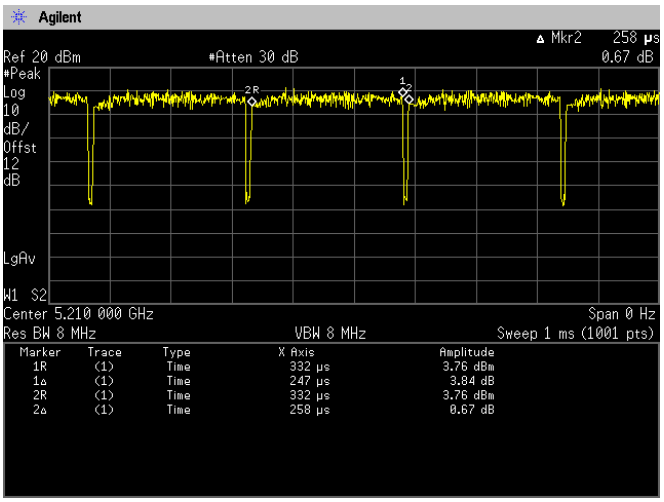


Channel: 110

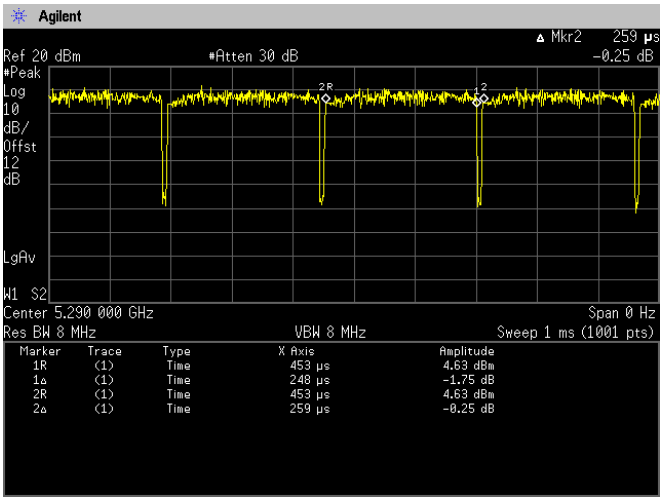


[IEEE802.11ac (HT80)]

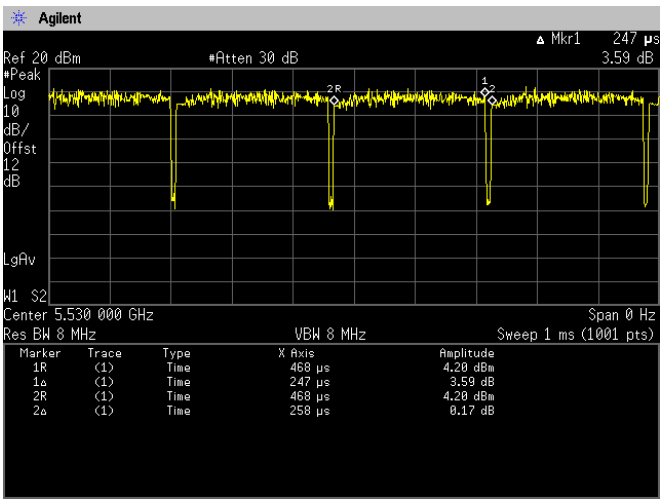
Channel: 42



Channel: 58



Channel: 106



11. Antenna requirement

According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

12. Uncertainty of measurement

Expanded uncertainties stated are calculated with a coverage Factor k=2.
Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission at mains port	±3.0dB
Radiated emission (9kHz – 30MHz)	±4.4dB
Radiated emission (30MHz – 1000MHz)	±4.5dB
Radiated emission (1000MHz – 26GHz)	±3.9dB

13. Laboratory description

1. Location:

TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888

2. Facility filing information:

1) NVLAP accreditation: NVLAP Lab. code: 200306-0

2) VLAC accreditation: Lab. code: VLAC-013

Site name	Radiated emission	Conducted emission for mains port	Conducted emission for telecom port	Radiated emission (CMAD)	Expiry Date
3m Semi-anechoic chamber	VLAC-013			-	Jul. 3, 2015
10m Semi-anechoic chamber No.1				VLAC-013	
10m Semi-anechoic chamber No.2					
Shielded room No.1	-	VLAC-013		-	

3) FCC filing:

Site name	Registration Number	Expiry Date
Site 3	91065	Oct. 1, 2017
3m Semi-anechoic chamber	540072	Feb. 20, 2017
10m Semi-anechoic chamber No.1		
10m Semi-anechoic chamber No.2		
Shielded room No.1		

4) Industry Canada Oats site filing:

Site name	Sites on file: Oats 3m/10m	Expiry Date
Site 3	4224A-3	Jan. 23, 2015
3m Semi-anechoic chamber	4224A-4	
10m Semi-anechoic chamber No.1	4224A-5	
10m Semi-anechoic chamber No.2	4224A-6	Jan. 15, 2017

5) VCCI site filing:

Site name	Radiated emission	Conducted emission for mains port	Conducted emission for telecom port	Expiry Date
Site 3	R-138	C-134	T-1222	Nov. 16, 2017
3m Semi-anechoic chamber	A-0166			Jul. 3, 2015
10m Semi-anechoic chamber No.1				
10m Semi-anechoic chamber No.2				
Shielded room No.1	-	A-0166		

6) TÜV SÜD PS authorization:
Authorized as an EMC test laboratory

7) TÜV Rheinland authorization:
Authorized as an EMC test laboratory

Appendix A. Test equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	May 31, 2015	May 30, 2014
Microwave cable	RS	YH_13S5	N/A (S403)	May 31, 2015	May 10, 2014
Attenuator	Weinschel	56-10	J4180	Nov. 30, 2015	Nov. 12, 2014

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Aug. 31, 2015	Aug. 9, 2014
Preamplifier	ANRITSU	MH648A	M96057	Jun. 30, 2015	Jun. 12, 2014
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	891847/17	Mar. 31, 2015	Mar. 5, 2014
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2125	May 31, 2015	May 7, 2014
Log periodic antenna	Schwarzbeck	UHALP9108A	0560	May 31, 2015	May 7, 2014
Attenuator	TME	CFA-01NPJ-6	N/A (S275)	Jun. 30, 2015	Jun. 9, 2014
Attenuator	TME	CFA-01NPJ-3	N/A (S272)	Jun. 30, 2015	Jun. 9, 2014
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	May 31, 2015	May 30, 2014
Preamplifier	Agilent Technologies	8449B	3008A1008	Dec. 31, 2014	Dec. 9, 2013
Double ridged guide antenna	EMCO	3115	5205	Dec. 31, 2014	Dec. 10, 2013
Attenuator	Agilent Technologies	8491B	MY39268633	Jan. 31, 2015	Jan. 15, 2013
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170189	May 31, 2015	May 2, 2013
Preamplifier	TSJ	MLA-1840-B03-35	1240332	May 31, 2015	May 2, 2013
Notch filter	Micro-Tronics	BRM50702	045	Nov. 30, 2015	Nov. 12, 2014
Microwave cable	SUHNER	SUCOFLEX104/9m	346316/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/1m	322084/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/1.5m	317226/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/7m	41625/6	Oct. 31, 2015	Oct. 31, 2014
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.3.61	N/A	N/A
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-NSA)	May 31, 2015	May 6, 2014
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-SVSWR)	May 31, 2015	May 6, 2014

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ECSI	100765	Aug. 31, 2015	Aug. 9, 2014
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	Feb. 28, 2015	Feb. 28, 2014
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F	8-2003-1	Mar. 31, 2015	Mar. 13, 2014
Coaxial cable	FUJIKURA	5D-2W/4m	N/A (S350)	Feb. 28, 2015	Feb. 5, 2014
Coaxial cable	FUJIKURA	5D-2W/1m	N/A (S193)	Feb. 28, 2015	Feb. 5, 2014
Coaxial cable	SUHNER	RG214/U/10m	N/A (S194)	Feb. 28, 2015	Feb. 5, 2014
PC	DELL	DIMENSION	75465BX	N/A	N/A

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.