Zacta

TEST REPORT

Report number : JPD-TR-17220-0
Issue date : November 2, 2017

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)	:	Tablet
Model number	:	FA51
FCC ID	:	JOYFA51

Date of test : October 12, 17, 19, 20, 21, 24, 25, 26, 2017

Test place : TÜV SÜD Zacta Ltd. Yonezawa Testing Center
5-4149-7, Hachimanpara, Yonezawa-shi,
Yamagata, 992-1128 Japan
Phone: +81-238-28-2881 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 the client to claim product certification, approval, or endorsement by NVLAP, NIST, ILAC-MRA, or any agency of the federal government.

Tested by : Chiaki Kanno Tadahiro Seino
Chiaki Kanno Tadahiro Seino

Tested by : Taiki Watanabe
Taiki Watanabe

Approved by : Hiroaki Suzuki
Hiroaki Suzuki
Lab Manager of RF Lab

NVLAP TESTING
NVLAP LAB CODE 200306-0

ilac-MRA

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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 C63.10-2013, KDB789033 D02 General U-NII Test Procedures New Rules v01r04

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 Tablet.

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	:	Tablet
Trade name	:	Kyocera
Model number	:	FA51
Serial number	:	N/A
EUT condition	:	Pre-Production
Power ratings	:	Battery: DC 3.8V
Size	:	(W) 126.0 × (D) 8.6 × (H) 214.0mm
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, 5610MHz
Number of RF Channels	:	IEEE802.11a/n/ac(HT20): 19 Channels IEEE802.11n/ac(HT40): 9 Channels IEEE802.11ac(HT80): 4 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	:	9.237mW (IEEE802.11a) 9.066mW (IEEE802.11n: HT20) 8.956mW (IEEE802.11n: HT40) 8.033mW (IEEE802.11ac: HT80)
Antenna type	:	Internal antenna
Antenna gain	:	5.15-5.25GHz band: 2.9dBi 5.25-5.35GHz band: 2.9dBi 5.47-5.725GHz band: 4.0dBi

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
120	5600
124	5620
128	5640
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
118	5590
126	5630
134	5670

[IEEE802.11ac (HT80)]

Channel	Frequency [MHz]
42	5210
58	5290
106	5530
122	5610

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	122	5610
	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

3. Configuration of equipment

3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Tablet	KYOCERA	FA51	N/A	JOYFA51	EUT
2	AC Adapter	au	N/A	N/A	N/A	*
3	USB conversion connector	ANKER	N/A	N/A	N/A	*

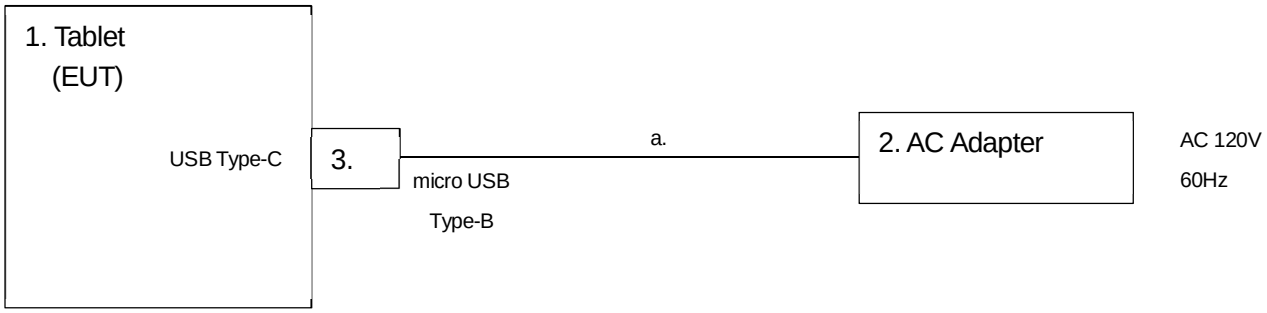
*: AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	Micro USB cable (for AC Adapter)	1.0	Yes	Metal	*

*: AC power line Conducted Emission Test.

3.3 System configuration



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 and 99% Occupied Bandwidth

4.1 Measurement procedure
[FCC 15.407(a), KDB 789033 D02, Section C, D]

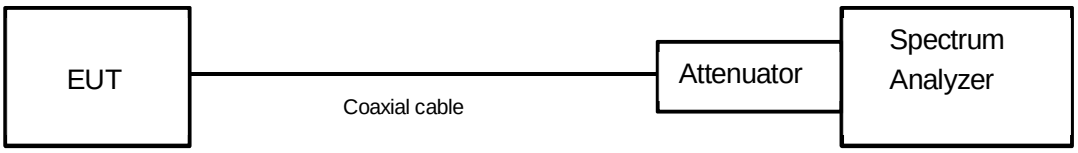
The 26dB bandwidth and 99% occupied bandwidth is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

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 : October 17, 2017
Temperature : 22.3 [˚C]
Humidity : 42.4 [%]
Test place : Shielded room No.4

Test engineer : Chiaki Kanno

Mode	Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11a	5.2GHz Band	36	5180	21.887	16.7858
		40	5200	21.611	16.7165
		48	5240	21.599	16.7596
	5.3GHz Band	52	5260	21.399	16.7237
		56	5280	21.864	16.7240
		64	5320	21.521	16.7236
	5.6GHz Band	100	5500	21.607	16.7325
		116	5580	21.470	16.7678
		140	5700	21.204	16.7197

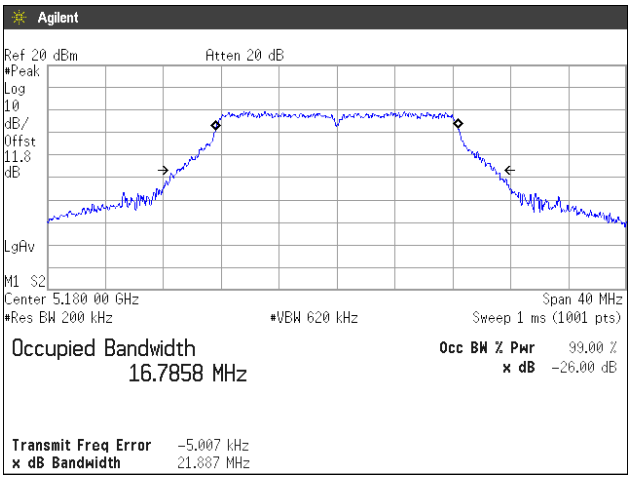
Mode	Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11n (20MHz)	5.2GHz Band	36	5180	21.763	17.7986
		40	5200	22.231	17.8342
		48	5240	21.832	17.8276
	5.3GHz Band	52	5260	22.023	17.8463
		56	5280	22.232	17.8372
		64	5320	21.876	17.8136
	5.6GHz Band	100	5500	22.206	17.8054
		116	5580	21.723	17.7782
		140	5700	21.890	17.7906

Mode	Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11n (40MHz)	5.2GHz Band	38	5190	43.049	36.1356
		46	5230	43.888	36.1319
	5.3GHz Band	54	5270	43.666	36.1114
		62	5310	43.108	36.1420
	5.6GHz Band	102	5510	42.951	36.1053
		110	5550	44.005	36.2247
		134	5670	42.657	36.1216

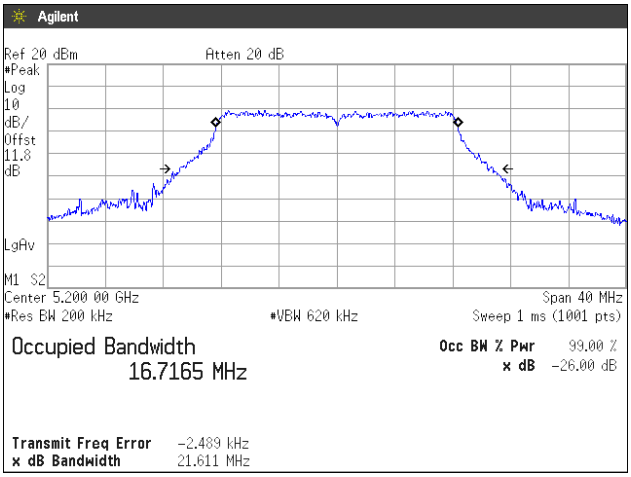
Mode	Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11ac (80MHz)	5.2GHz Band	42	5210	83.926	74.6984
	5.3GHz Band	58	5290	83.829	74.6756
	5.6GHz Band	106	5530	83.074	74.7144
		122	5610	83.343	74.6613

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

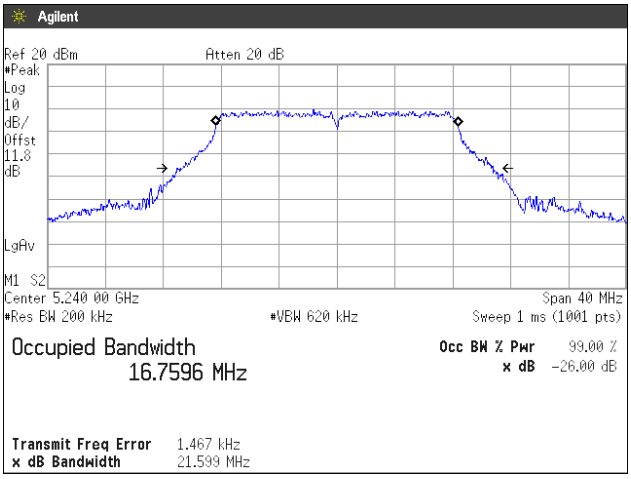
Channel: 36



Channel: 40

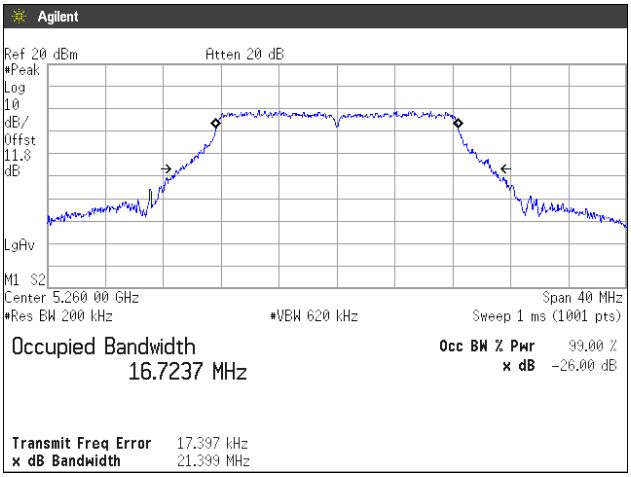


Channel: 48

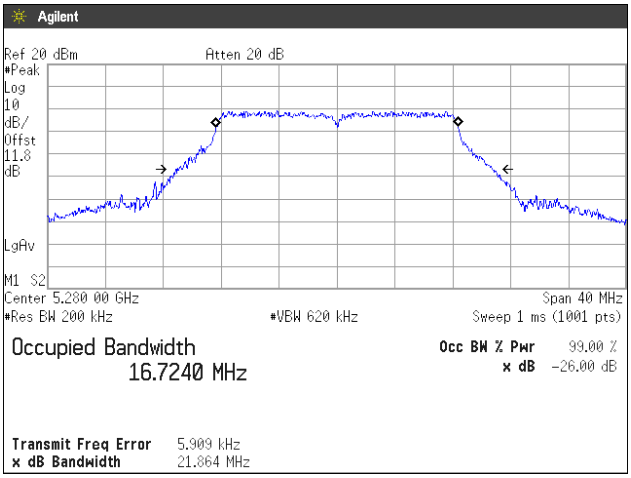


(5.3GHz Band)

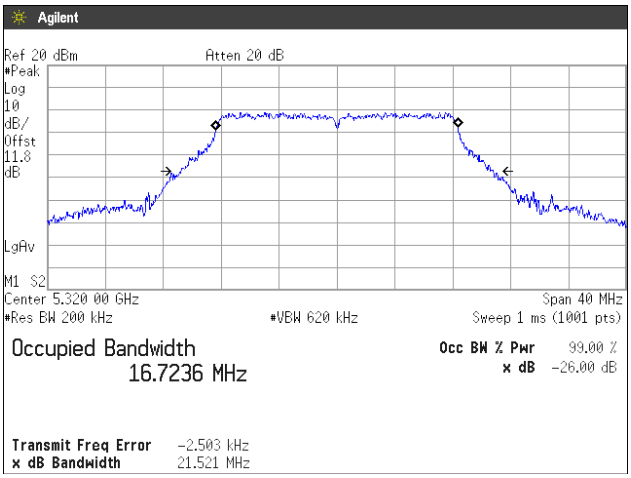
Channel: 52



Channel: 56

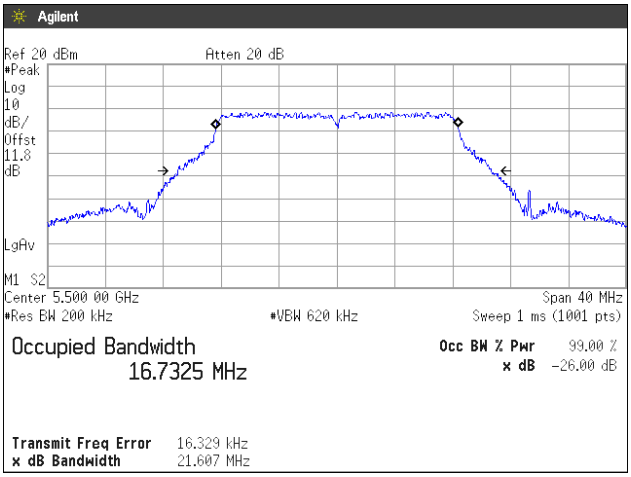


Channel: 64

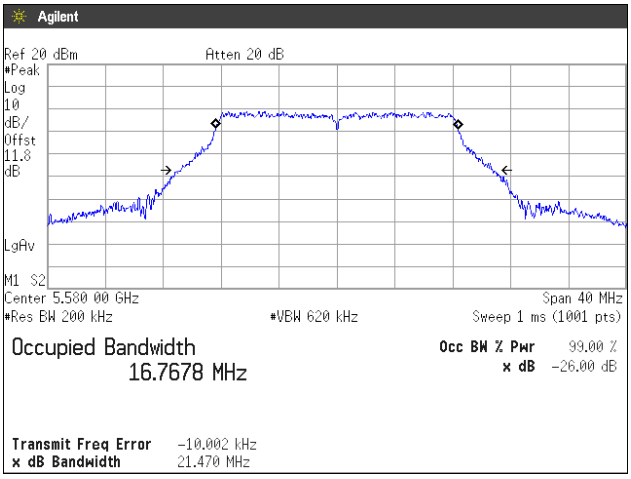


(5.6GHz Band)

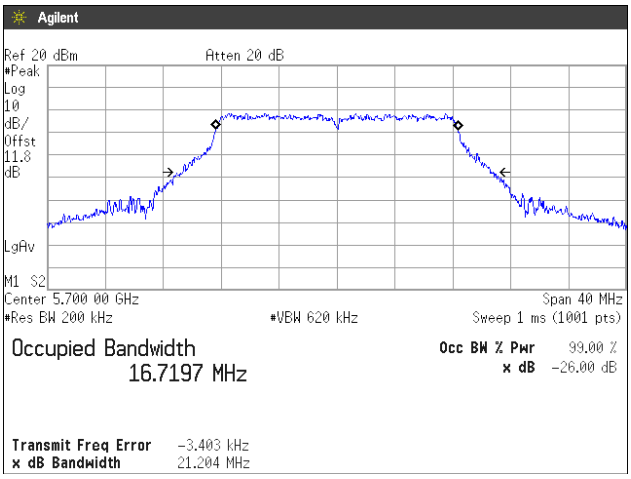
Channel: 100



Channel: 116

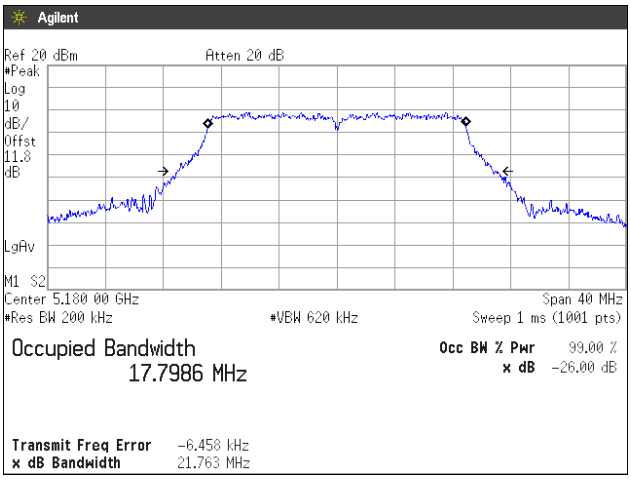


Channel: 140

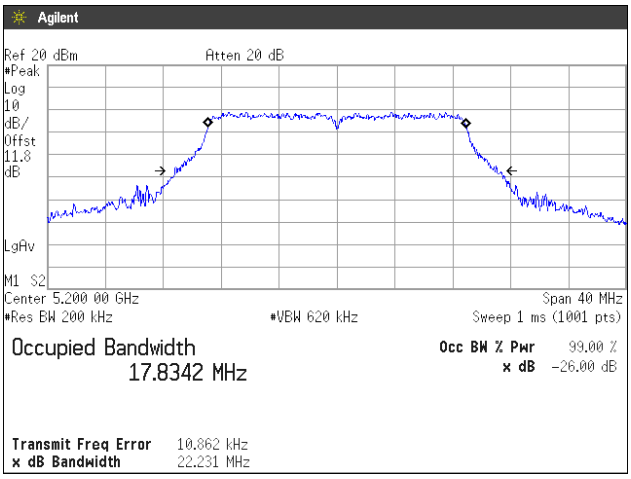


[IEEE802.11n (HT20)]
(5.2GHz Band)

Channel: 36



Channel: 40



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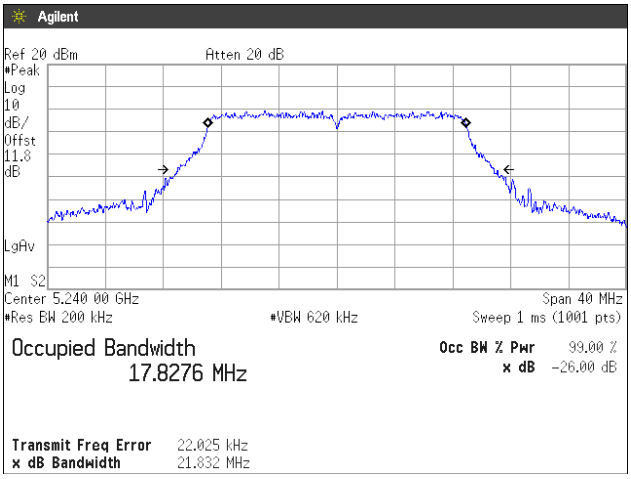
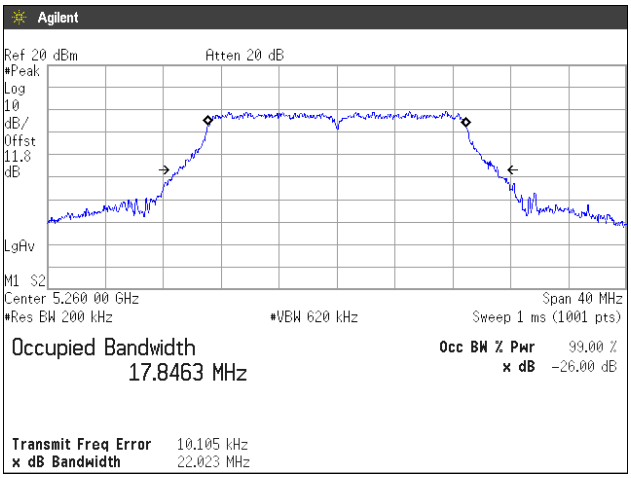
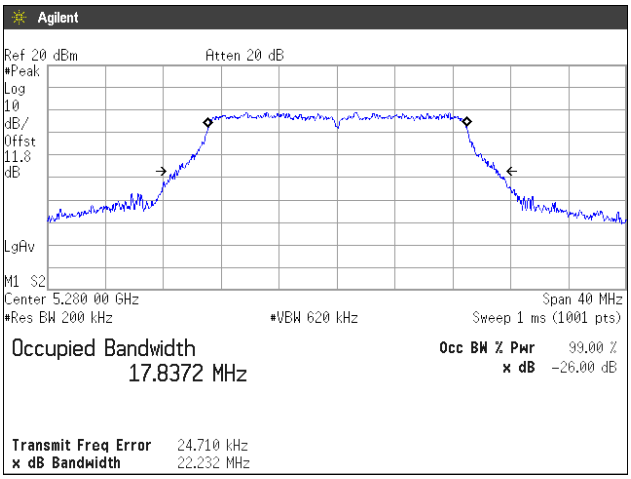


(5.3GHz Band)

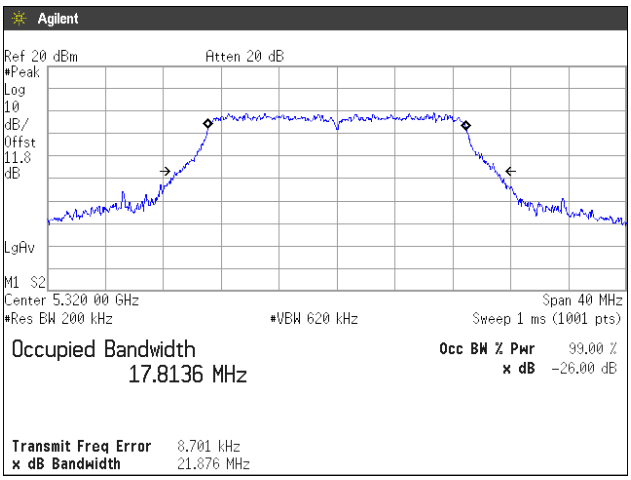
Channel: 52



Channel: 56

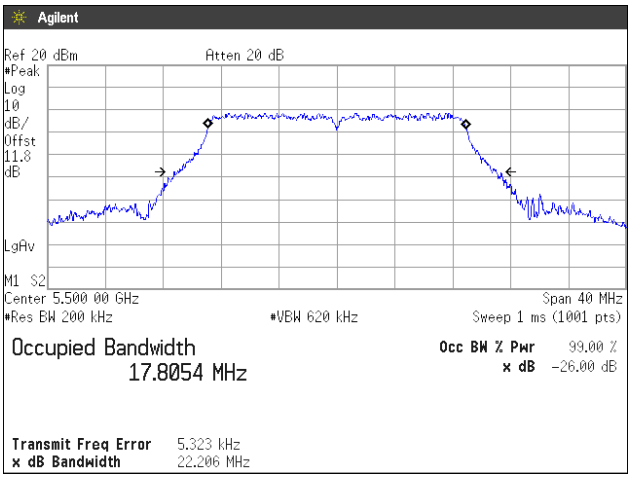


Channel: 64



(5.6GHz Band)

Channel: 100



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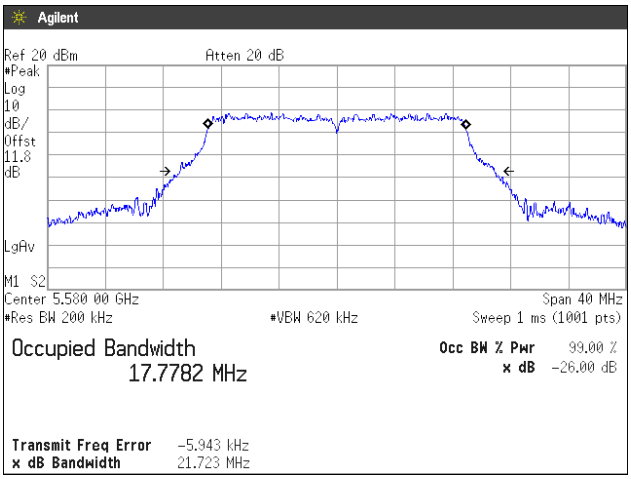

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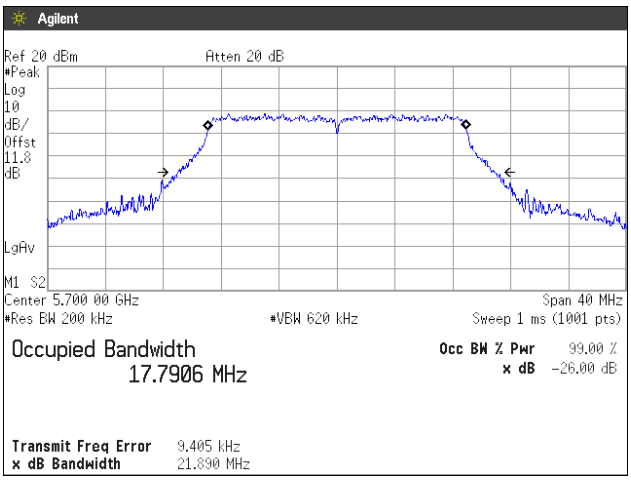
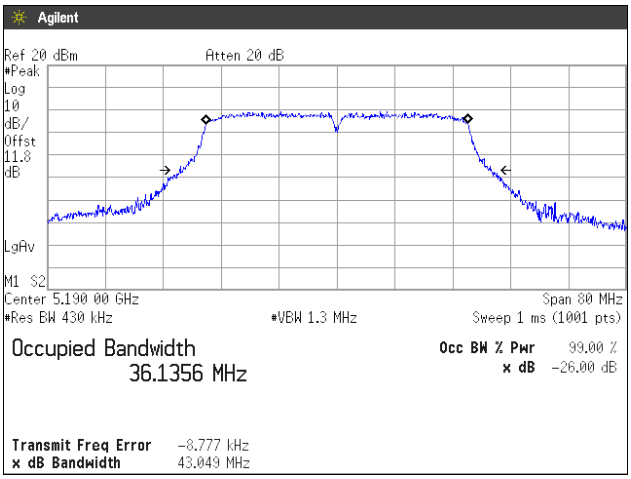
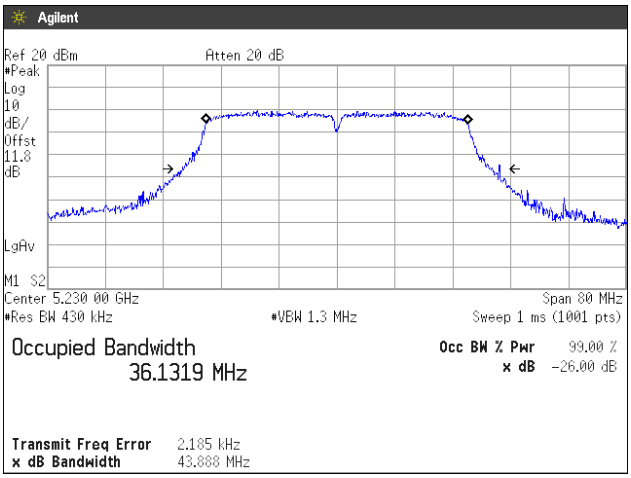


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

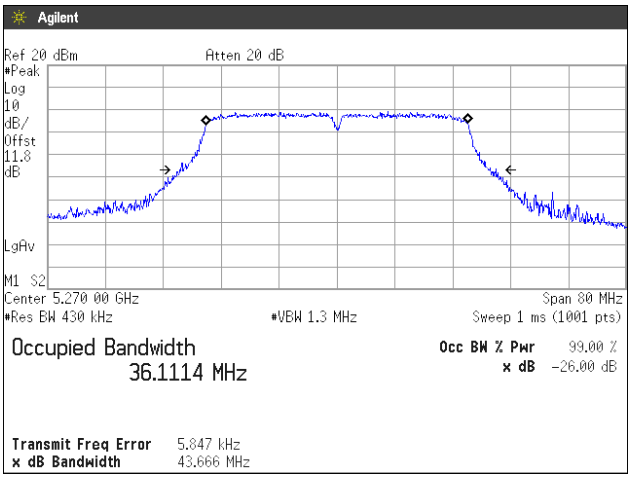


Channel: 46

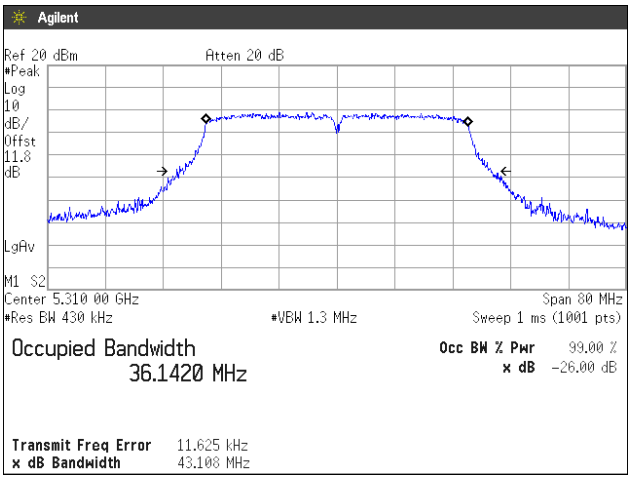


(5.3GHz Band)

Channel: 54

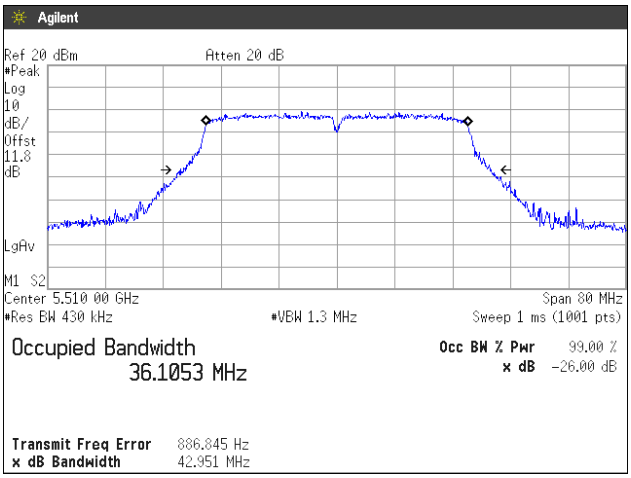


Channel: 62

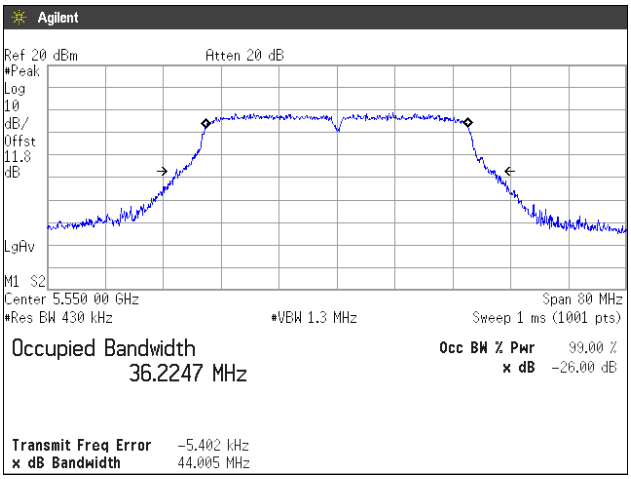


(5.6GHz Band)

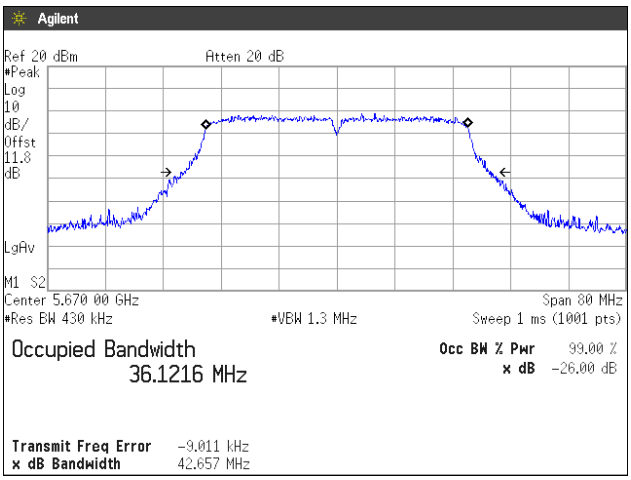
Channel: 102



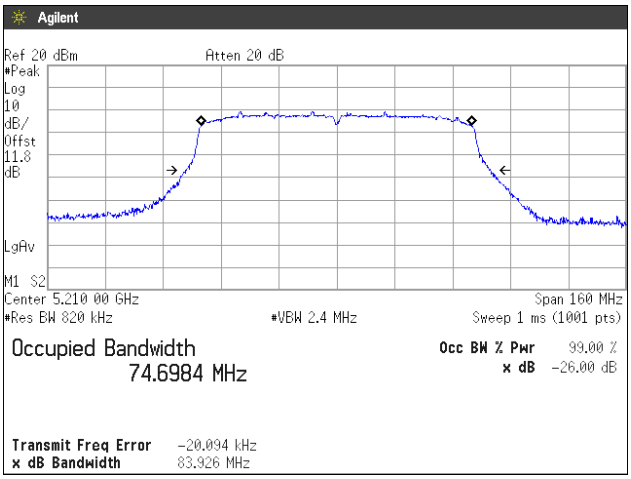
Channel: 110



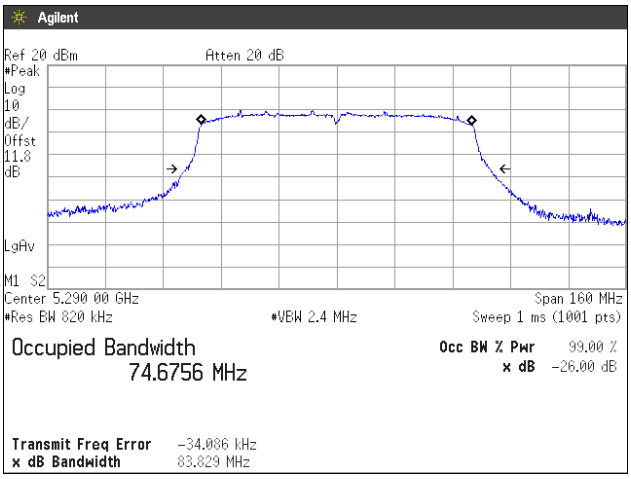
Channel: 134



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



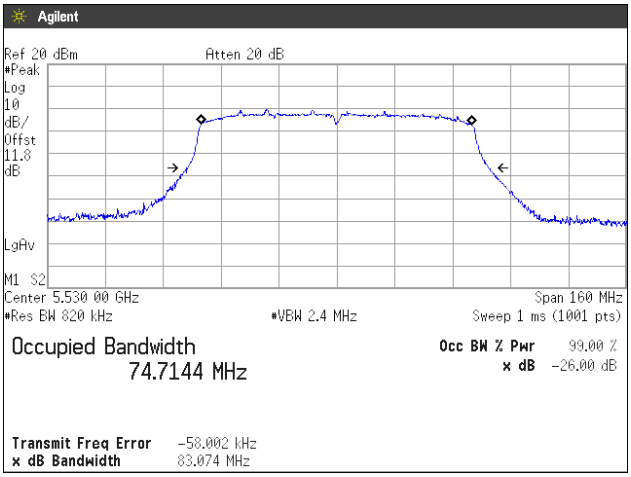
(5.3GHz Band)
Channel: 58



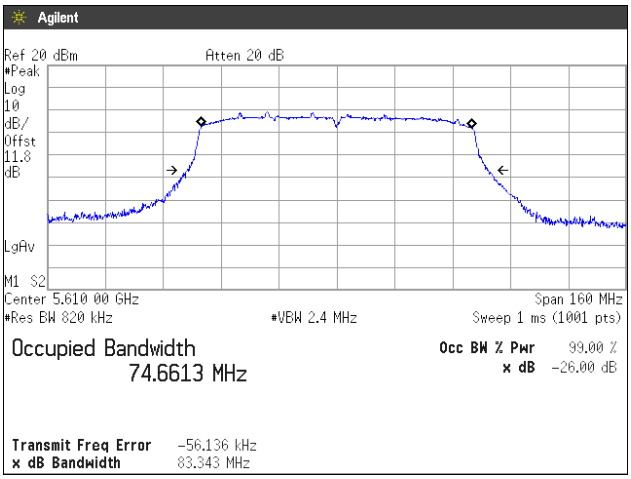
Zacta

(5.6GHz Band)

Channel: 106



Channel: 122



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5. Maximum Conducted Output Power

5.1 Measurement procedure
[FCC 15.407(a), KDB 789033 D02, Section E.2.b)Method SA-1, d)Method SA-2]

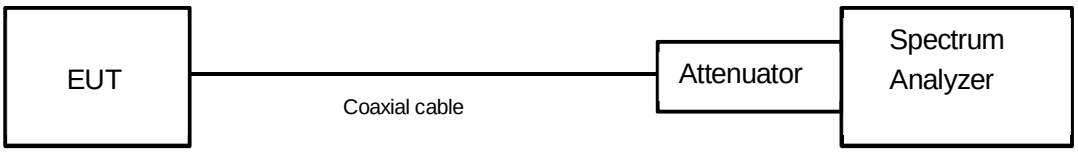
The peak power is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=3MHz, Span=35MHz/70MHz/140MHz, 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)	Calculated Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.2GHz Band	802.11a	250	23.97	2.9	23.97
	802.11n HT20				
	802.11n HT40				
	802.11ac HT80				

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	2.9	23.97
		21.399	24.30		
	802.11n HT20	250	23.97		23.97
		21.876	24.40		
	802.11n HT40	250	23.97		23.97
		43.108	27.35		
	802.11ac HT80	250	23.97		23.97
		83.829	30.23		

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	4.0	23.97
		21.204	24.26		
	802.11n HT20	250	23.97		23.97
		21.723	24.37		
	802.11n HT40	250	23.97		23.97
		42.657	27.30		
	802.11ac HT80	250	23.97		23.97
		83.074	30.19		

5.3 Measurement result

Date : October 17, 2017
Temperature : 22.3 [˚C]
Humidity : 42.4 [%]
Test place : Shielded room No.4

Test engineer : Chiaki Kanno

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	9.30	1.364	1.372	0.994	0.025	9.325	8.561
	40	5200	9.24					9.265	8.444
	48	5240	9.63					9.655	9.237
	52	5260	9.51	1.364	1.372	0.994	0.025	9.535	8.985
	56	5280	9.37					9.395	8.700
	64	5320	9.35					9.375	8.660
	100	5500	8.99	1.364	1.372	0.994	0.025	9.015	7.971
	116	5580	8.82					8.845	7.665
	140	5700	8.98					9.005	7.953

Note: X = On time / (On + Off time), DCF=10log (1/x)

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	9.43	1.276	1.284	0.994	0.027	9.457	8.825
	40	5200	9.45					9.477	8.866
	48	5240	9.48					9.507	8.927
	52	5260	9.54	1.274	1.284	0.992	0.034	9.574	9.066
	56	5280	9.37					9.404	8.718
	64	5320	9.37					9.404	8.718
	100	5500	8.77	1.274	1.284	0.992	0.034	8.804	7.593
	116	5580	8.89					8.924	7.805
	140	5700	8.83					8.864	7.698

Note: X = On time / (On + Off time), DCF=10log (1/x)

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	9.19	0.636	0.645	0.986	0.061	9.251	8.416
	46	5230	9.46					9.521	8.956
	54	5270	9.41	0.636	0.646	0.985	0.068	9.478	8.867
	62	5310	9.38					9.448	8.806
	102	5510	8.98	0.636	0.645	0.986	0.061	9.041	8.019
	110	5550	8.57					8.631	7.296
	134	5670	8.44					8.501	7.081

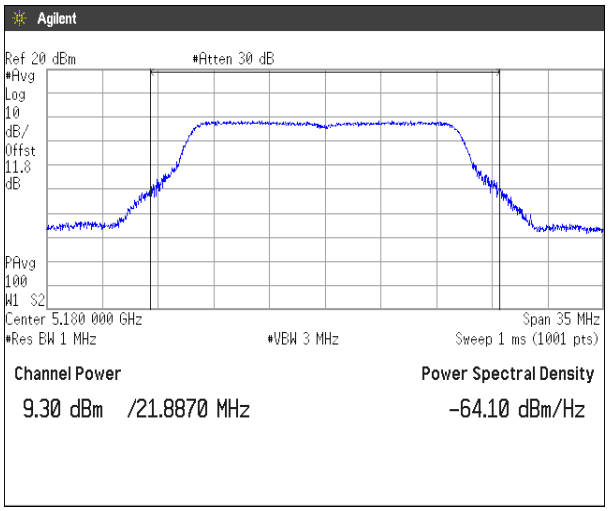
Note: X = On time / (On + Off time), DCF=10log (1/x)

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	8.77	0.2475	0.2579	0.960	0.179	8.949	7.850
	58	5290	8.87	0.2475	0.2579	0.960	0.179	9.049	8.033
	106	5530	8.42	0.2475	0.2579	0.960	0.179	8.599	7.242
	122	5610	8.13	0.2480	0.2579	0.962	0.170	8.300	6.761

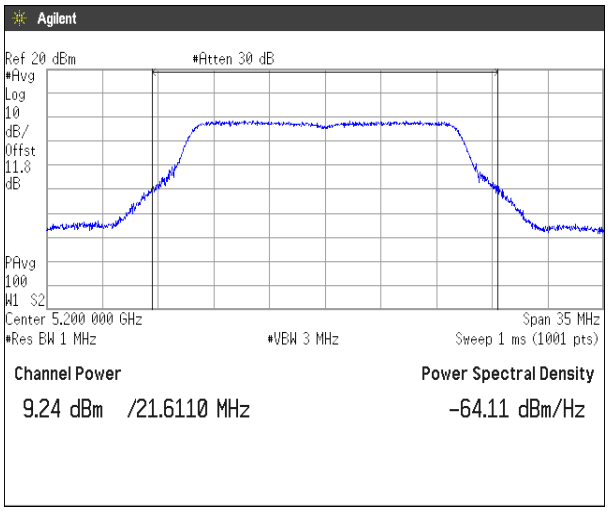
Note: X = On time / (On + Off time), DCF=10log (1/x)

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

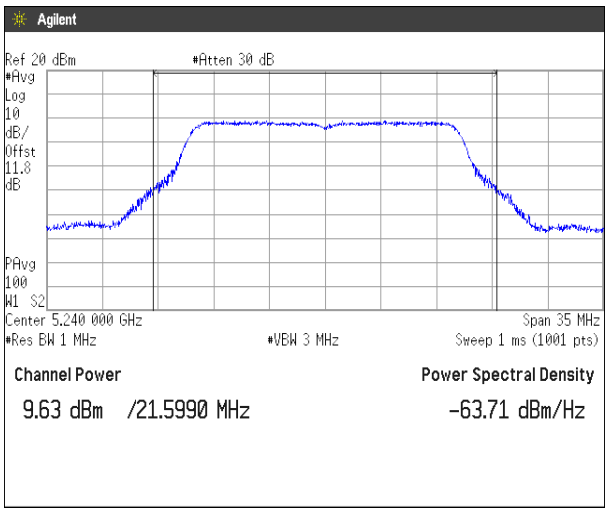
Channel: 36



Channel: 40

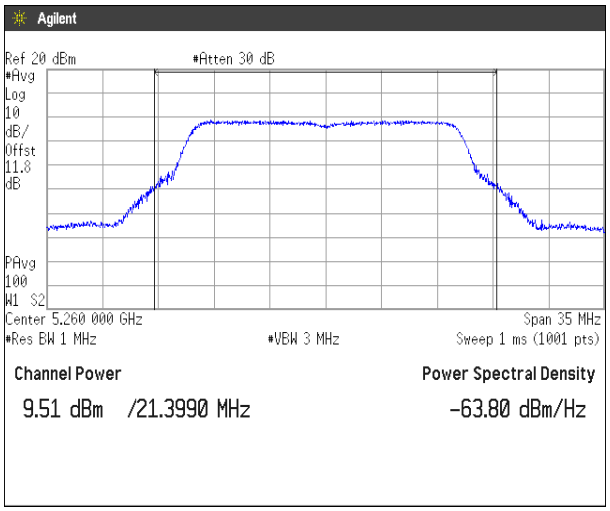


Channel: 48

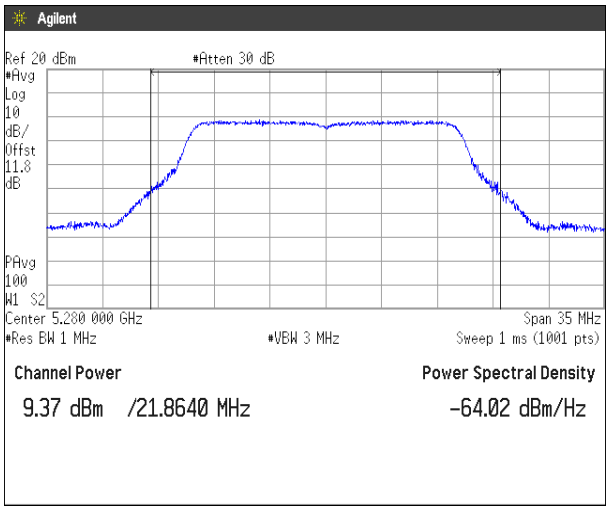


(5.3GHz Band)

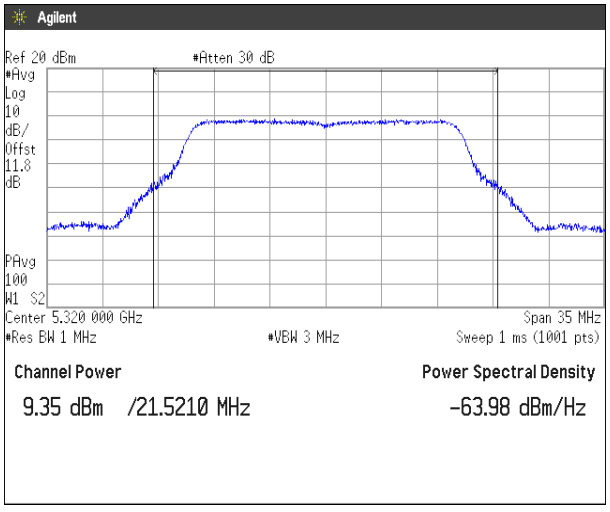
Channel: 52



Channel: 56

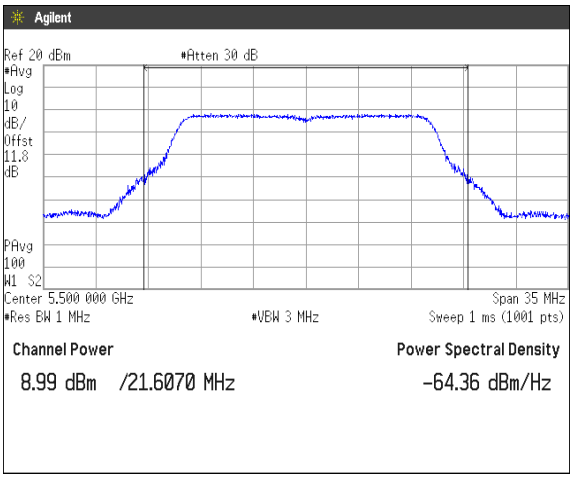


Channel: 64

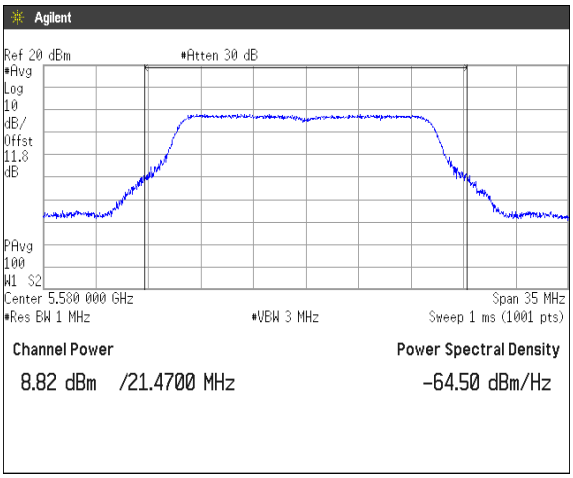


(5.6GHz Band)

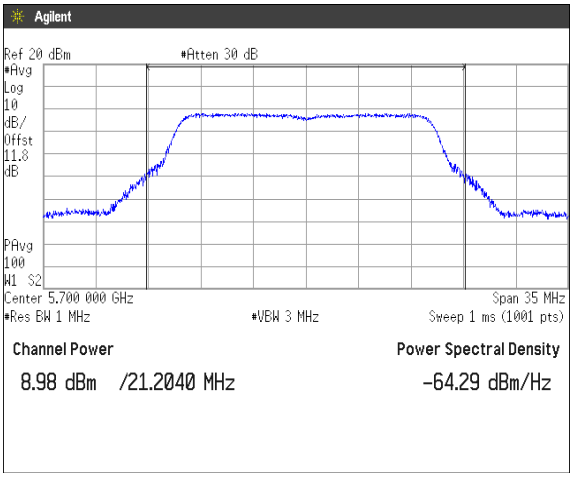
Channel: 100



Channel: 116

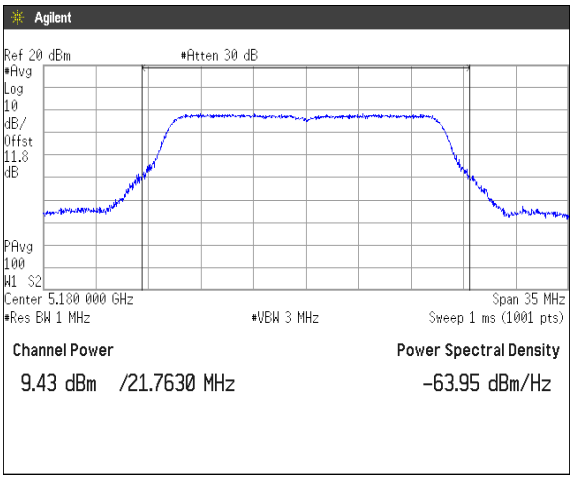


Channel: 140

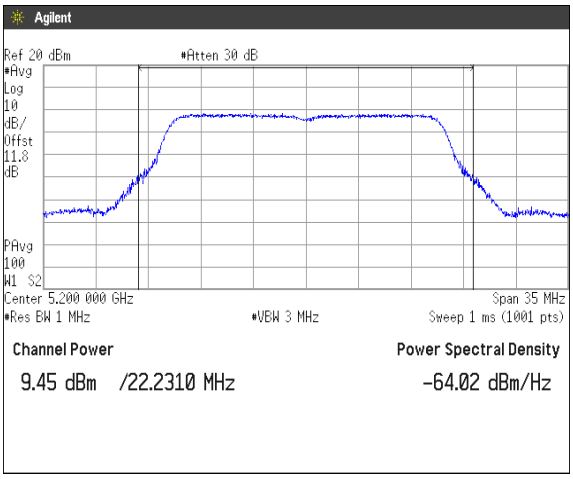


[IEEE802.11n (HT20)]
(5.2GHz Band)

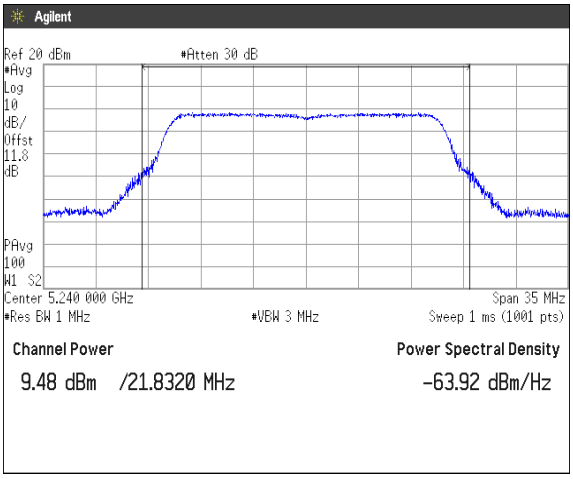
Channel: 36



Channel: 40

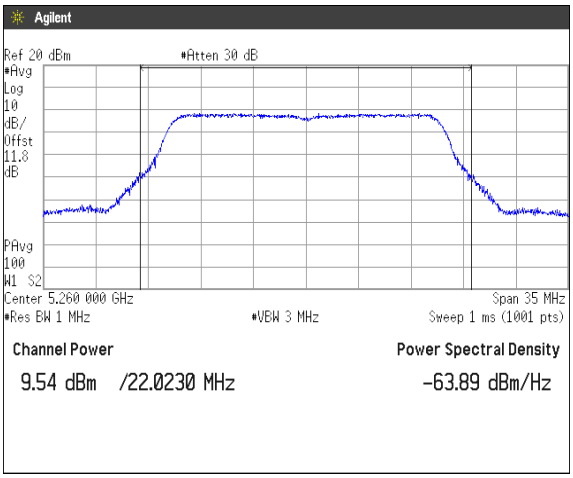


Channel: 48

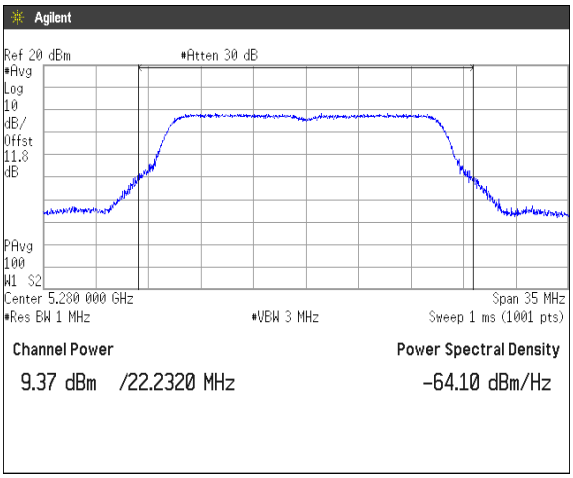


(5.3GHz Band)

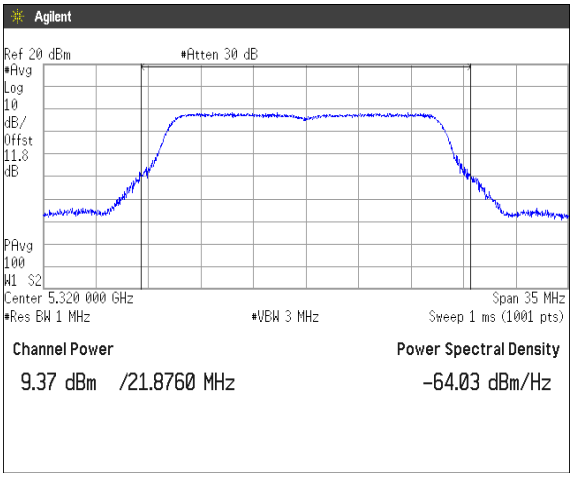
Channel: 52



Channel: 56

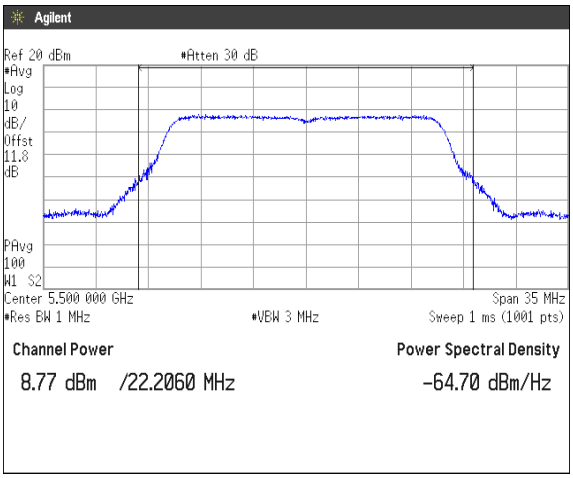


Channel: 64

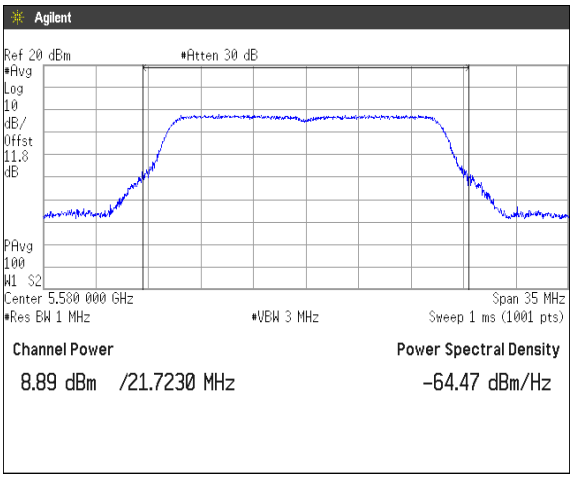


(5.6GHz Band)

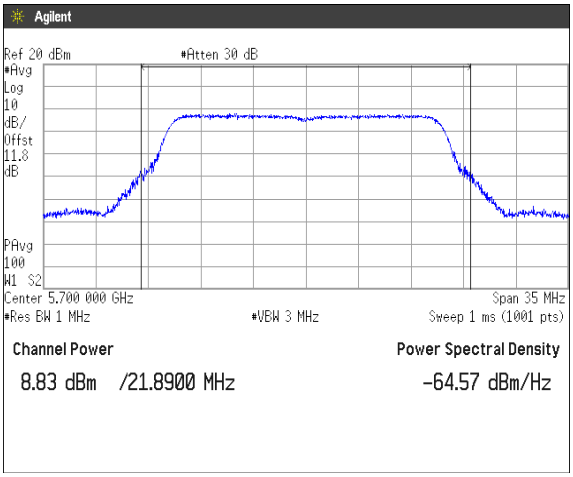
Channel: 100



Channel: 116

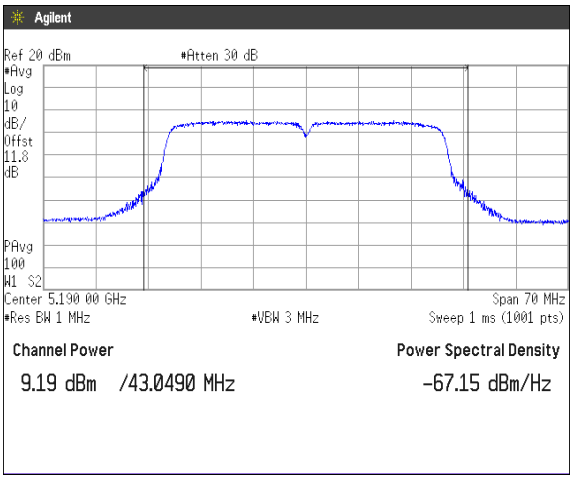


Channel: 140

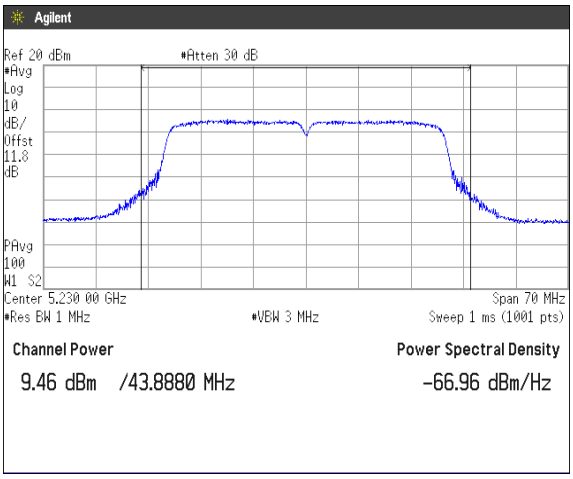


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

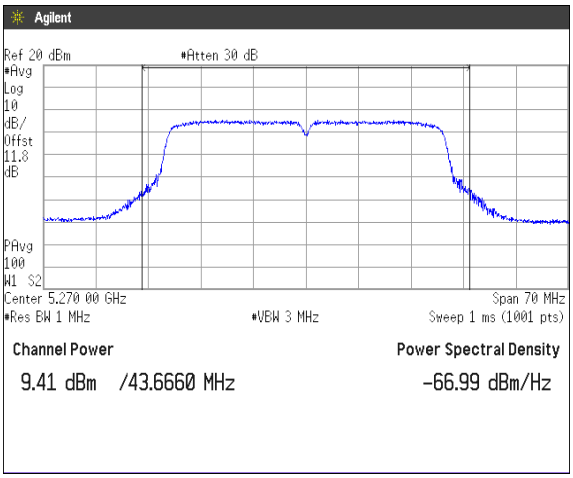


Channel: 46

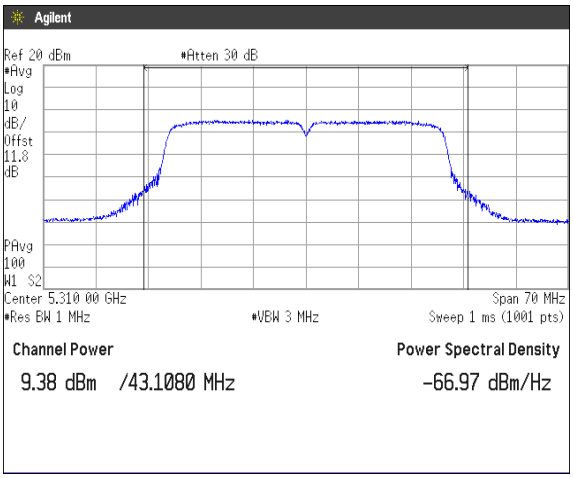


(5.3GHz Band)

Channel: 54

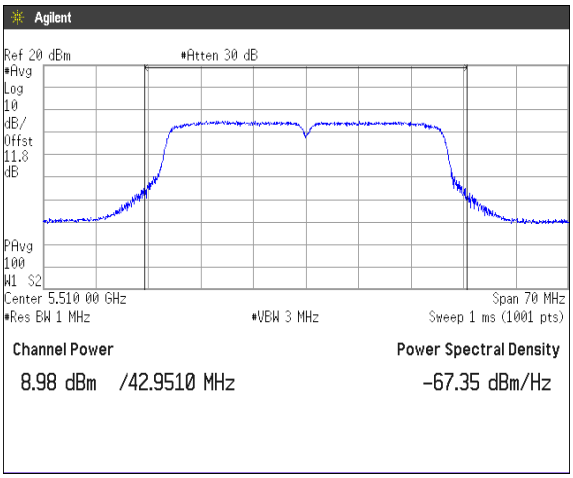


Channel: 62

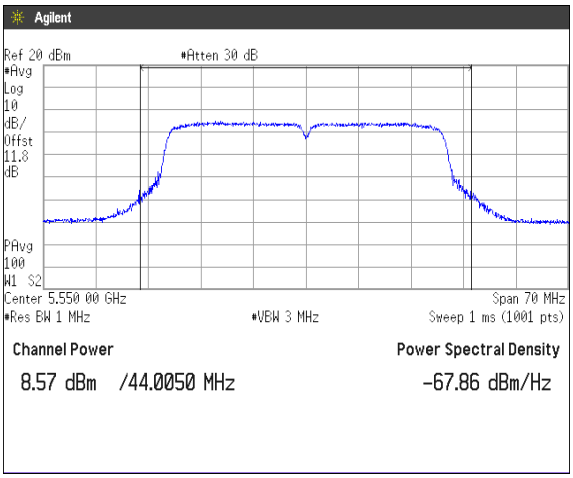


(5.6GHz Band)

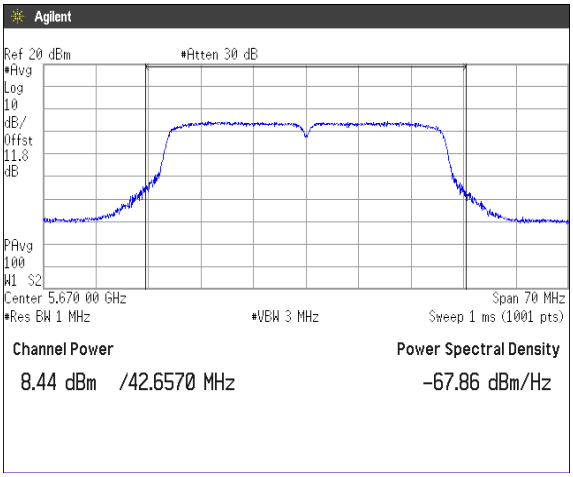
Channel: 102



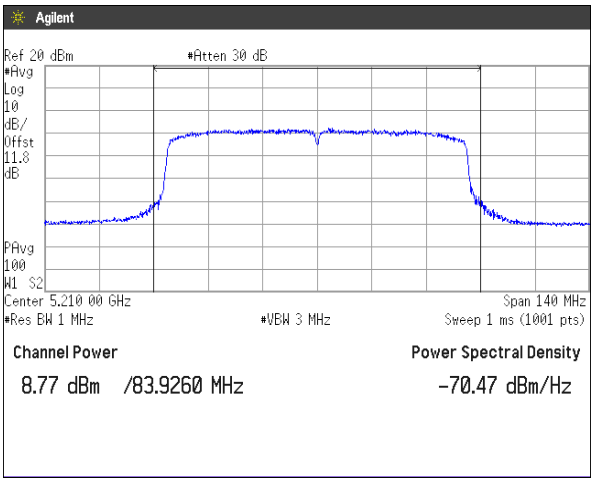
Channel: 110



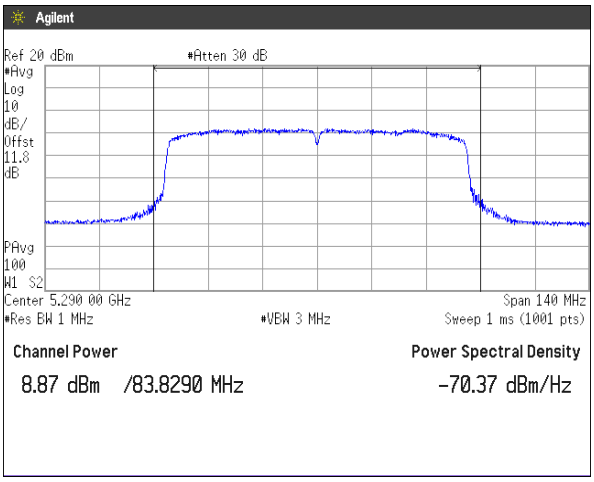
Channel: 134



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

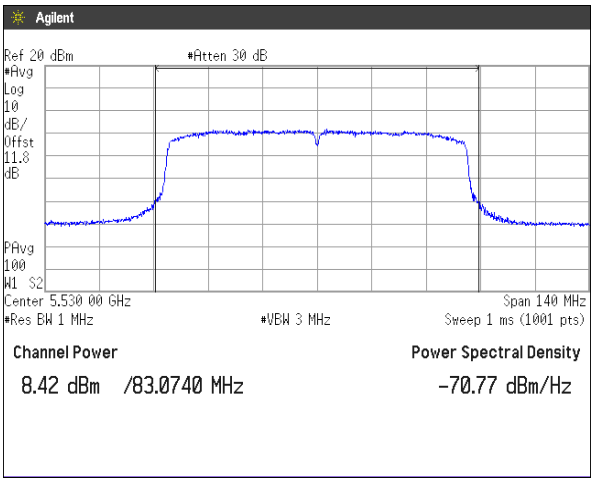


(5.3GHz Band)
Channel: 58

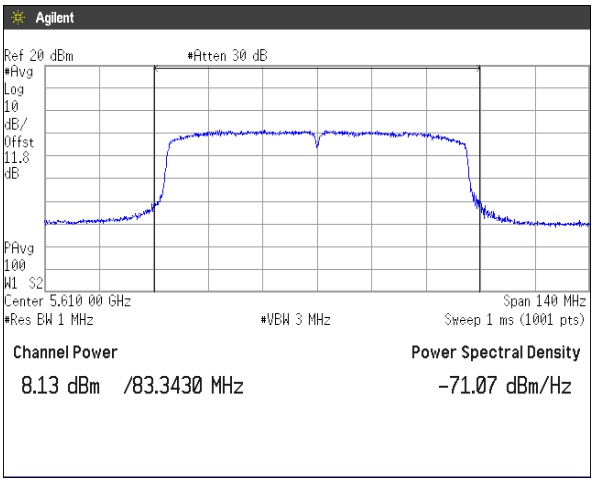


(5.6GHz Band)

Channel: 106



Channel: 122



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6. Peak Power Spectral Density

6.1 Measurement procedure
[FCC 15.407(a), KDB 789033 D02, Section F]

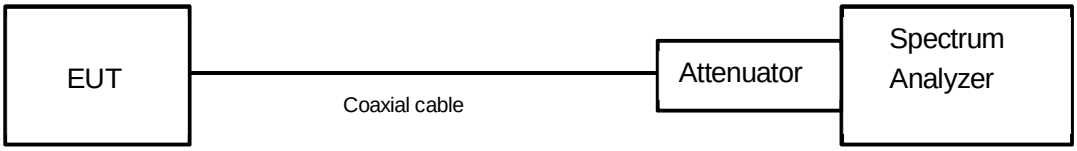
The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=3MHz, 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
5.2GHz Band	2.9	13.9dBm/MHz
5.3GHz Band	2.9	13.9dBm/MHz
5.6GHz Band	4.0	15.0dBm/MHz

6.3 Measurement result

Date : October 19, 2017
Temperature : 21.9 [˚C]
Humidity : 60.1 [%]
Test place : Shielded room No.4

Test engineer : Chiaki Kanno

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	0.316	1.364	1.372	0.994	0.025	0.341
	40	5200	0.263					0.288
	48	5240	0.411					0.436
	52	5260	0.185	1.364	1.372	0.994	0.025	0.210
	56	5280	0.312					0.337
	64	5320	0.549					0.574
	100	5500	-0.205	1.364	1.372	0.994	0.025	-0.180
	116	5580	-0.099					-0.074
	140	5700	0.365					0.390

Note: X = On time / (On + Off time), DCF=10log (1/x)

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	-0.011	1.276	1.284	0.994	0.027	0.016
	40	5200	0.061					0.088
	48	5240	0.282					0.309
	52	5260	-0.169	1.274	1.284	0.992	0.034	-0.135
	56	5280	0.082					0.116
	64	5320	-0.256					-0.222
	100	5500	-0.327	1.274	1.284	0.992	0.034	-0.293
	116	5580	-0.291					-0.257
	140	5700	-0.144					-0.110

Note: X = On time / (On + Off time), DCF=10log (1/x)

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	-3.061	0.636	0.645	0.986	0.061	-3.000
	46	5230	-3.038					-2.977
	54	5270	-2.832	0.636	0.646	0.985	0.068	-2.764
	62	5310	-3.283					-3.215
	102	5510	-3.303	0.636	0.645	0.986	0.061	-3.242
	110	5550	-3.479					-3.418
	134	5670	-4.024					-3.963

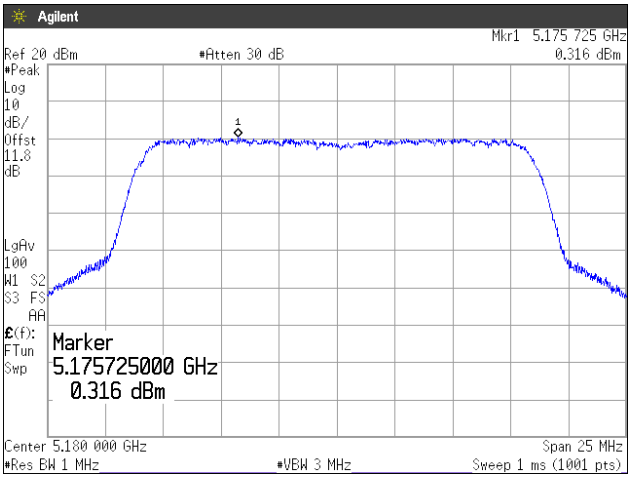
Note: X = On time / (On + Off time), DCF=10log (1/x)

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	-6.434	0.2475	0.2579	0.960	0.179	-6.255
	58	5290	-6.735	0.2475	0.2579	0.960	0.179	-6.556
	106	5530	-7.373	0.2475	0.2579	0.960	0.179	-7.194
	122	5610	-6.918	0.2480	0.2579	0.962	0.170	-6.748

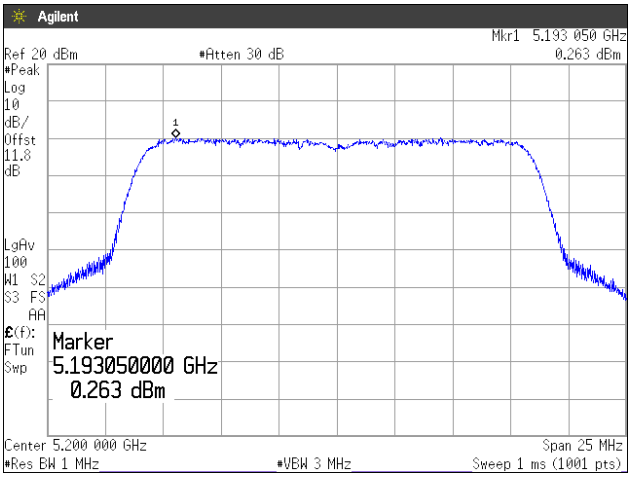
Note: X = On time / (On + Off time), DCF=10log (1/x)

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

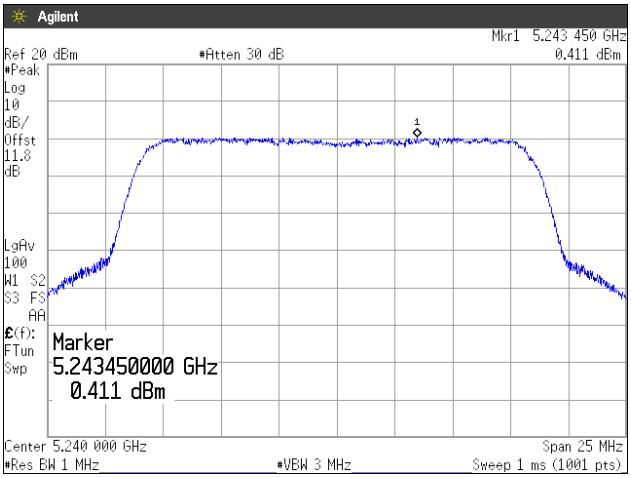
Channel: 36



Channel: 40

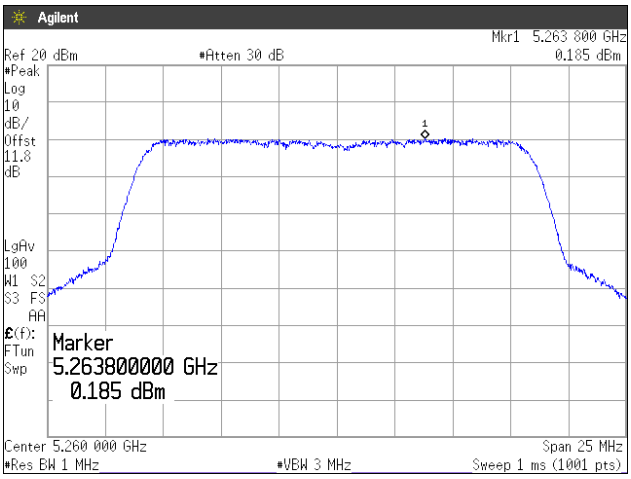


Channel: 48

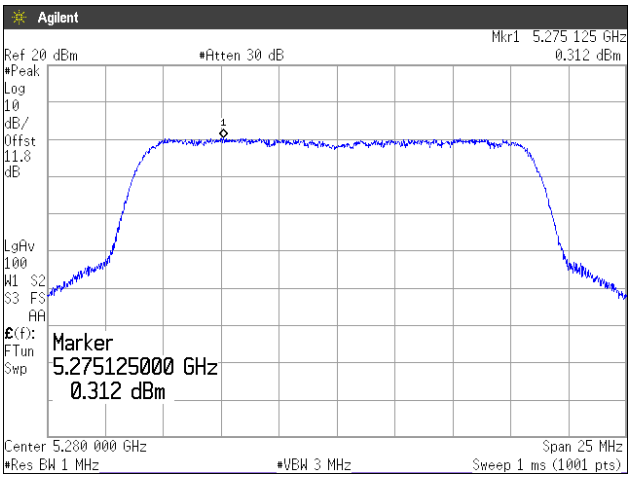


(5.3GHz Band)

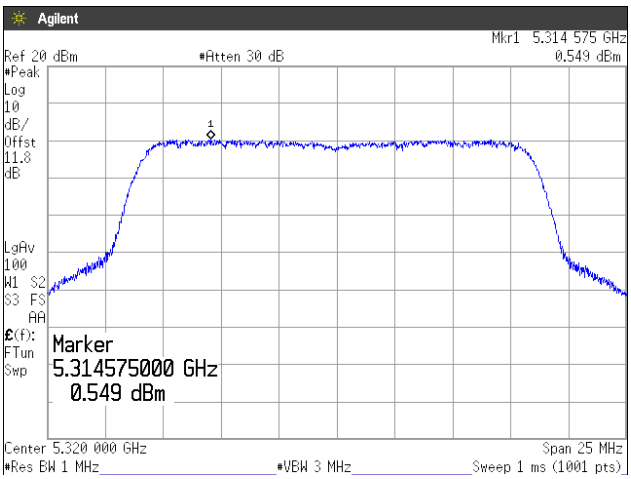
Channel: 52



Channel: 56

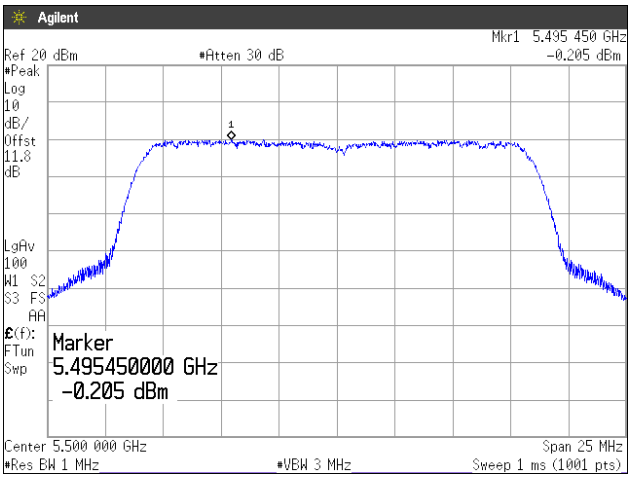


Channel: 64

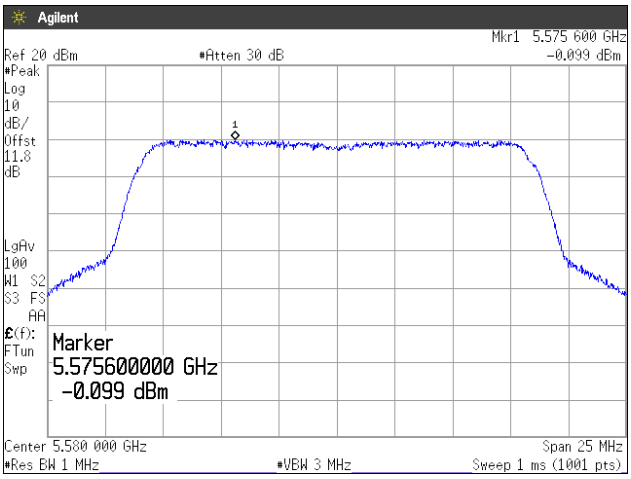


(5.6GHz Band)

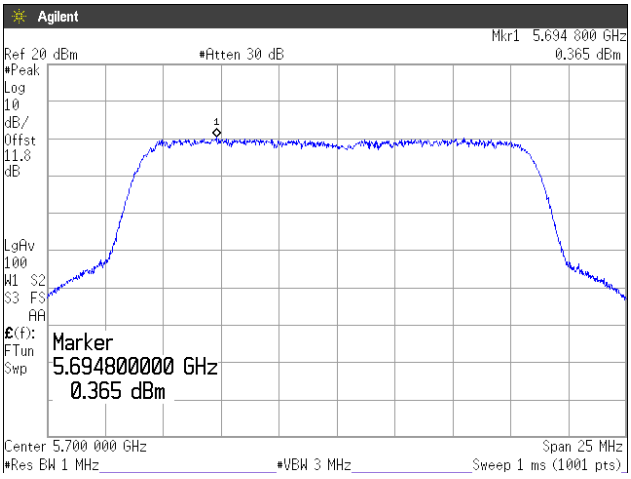
Channel: 100



Channel: 116

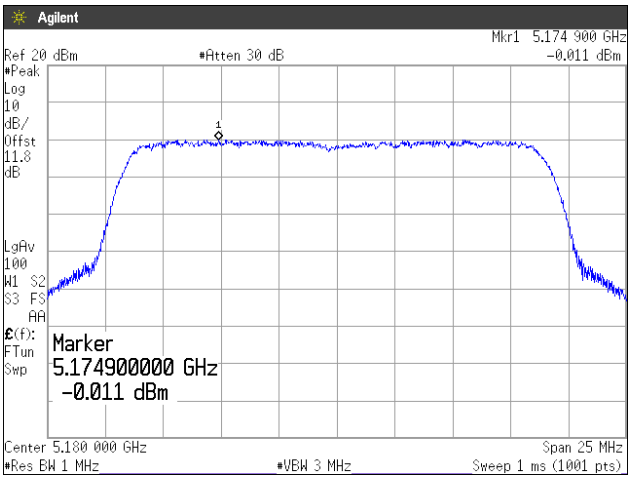


Channel: 140

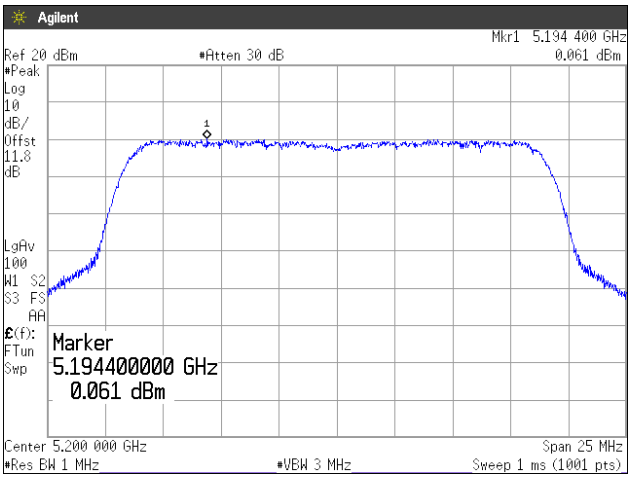


[IEEE802.11n (HT20)]
(5.2GHz Band)

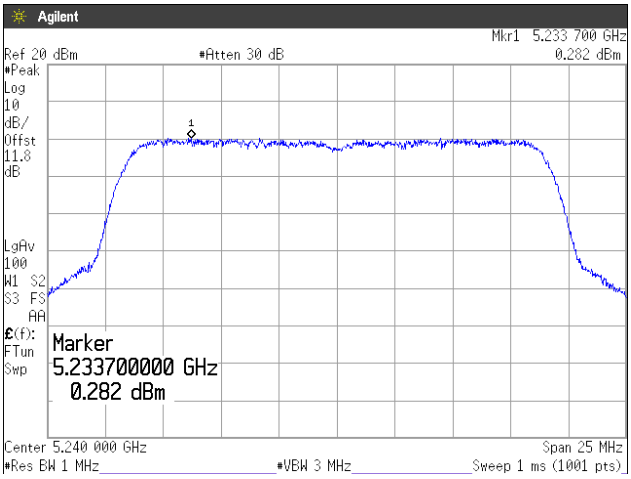
Channel: 36



Channel: 40

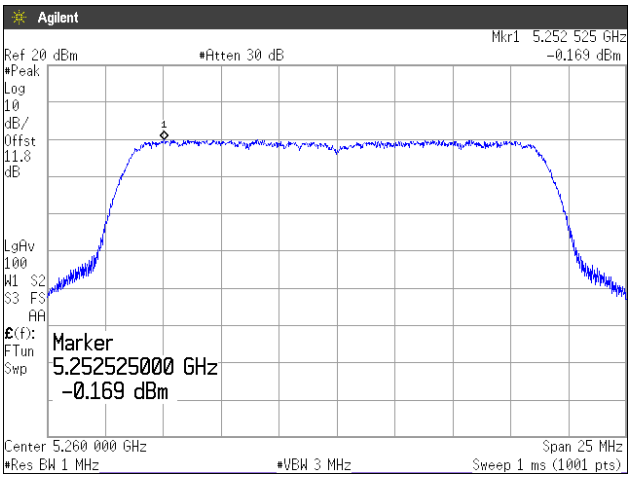


Channel: 48

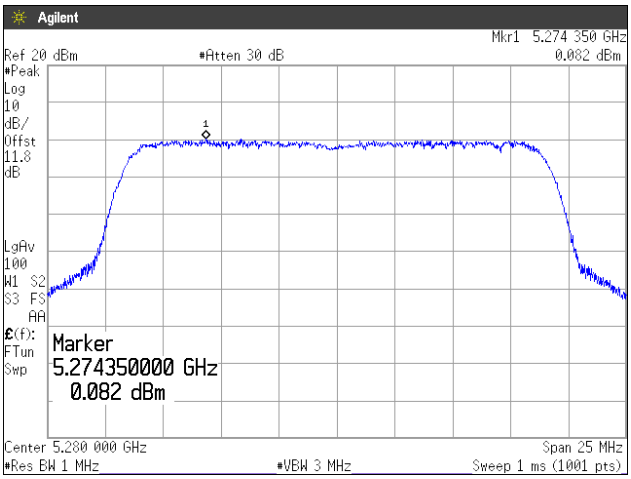


(5.3GHz Band)

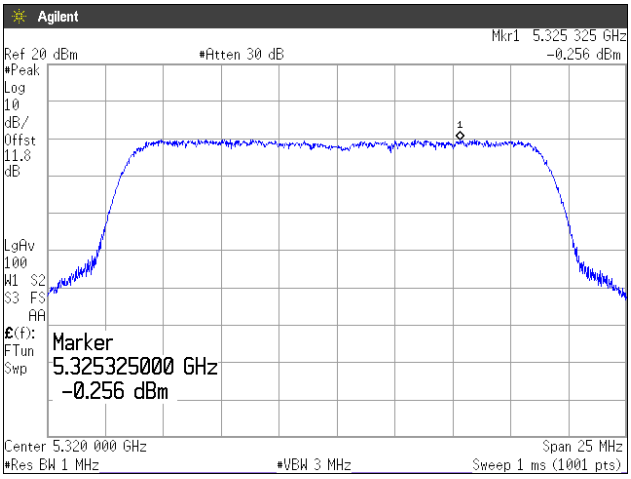
Channel: 52



Channel: 56

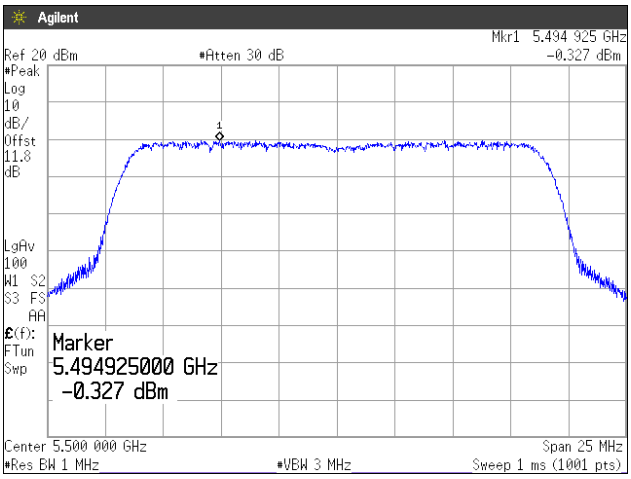


Channel: 64

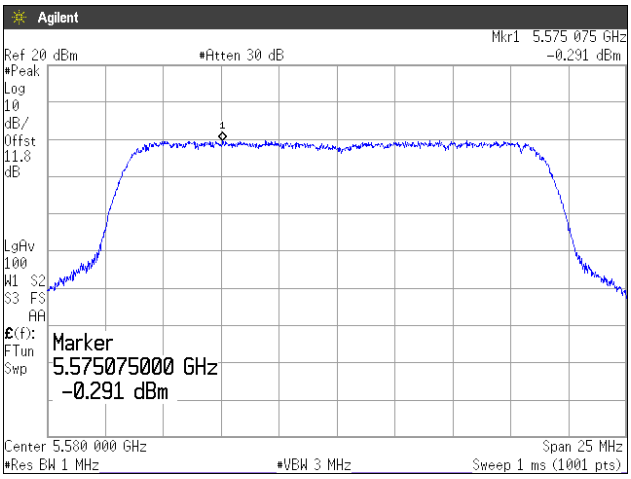


(5.6GHz Band)

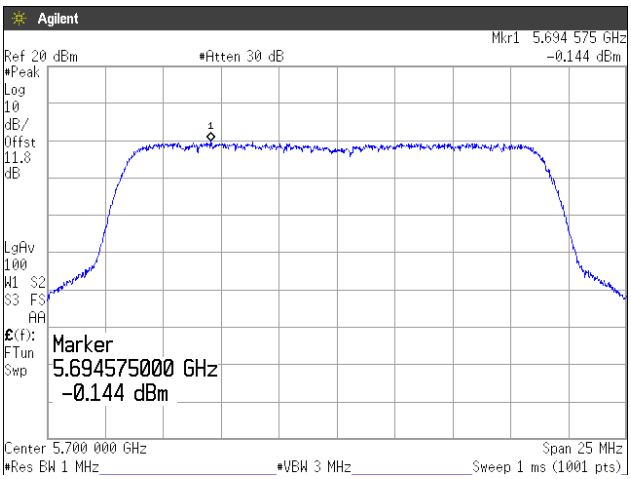
Channel: 100



Channel: 116

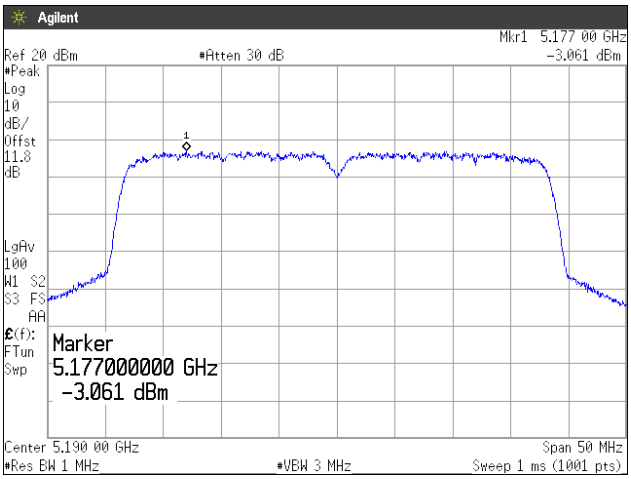


Channel: 140

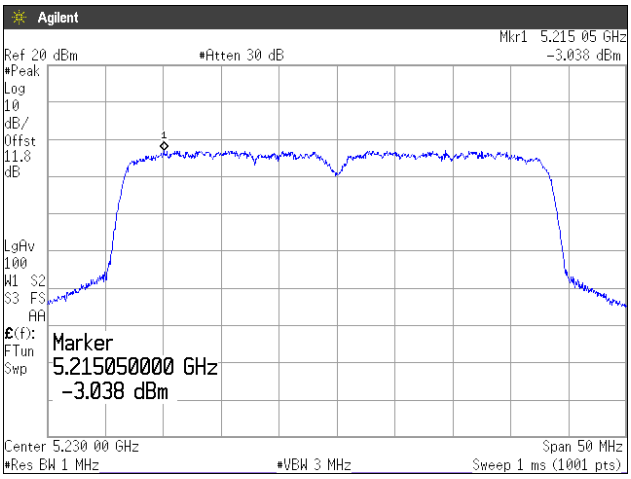


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

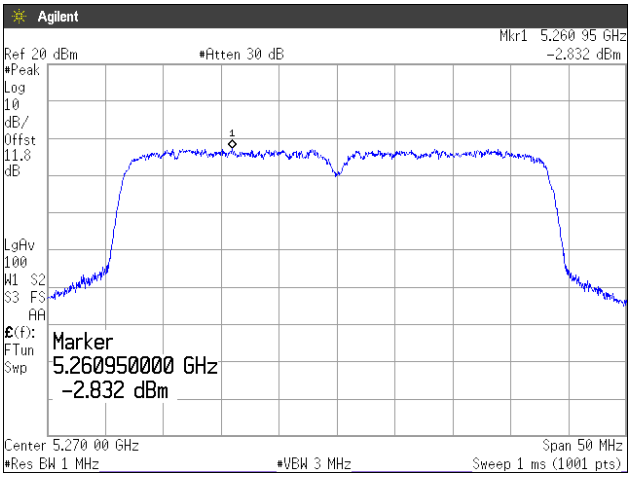


Channel: 46

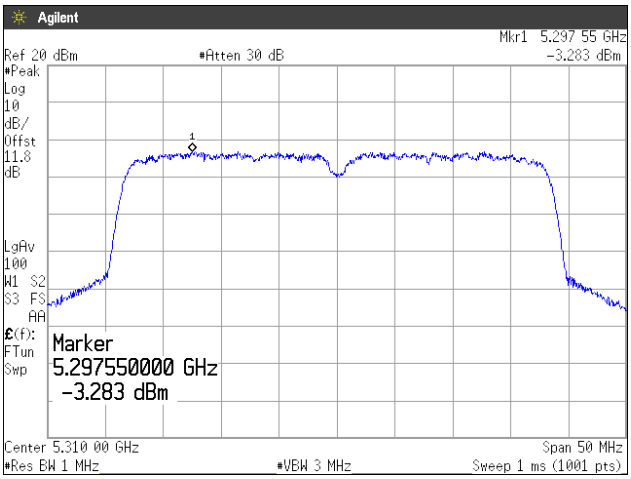


(5.3GHz Band)

Channel: 54

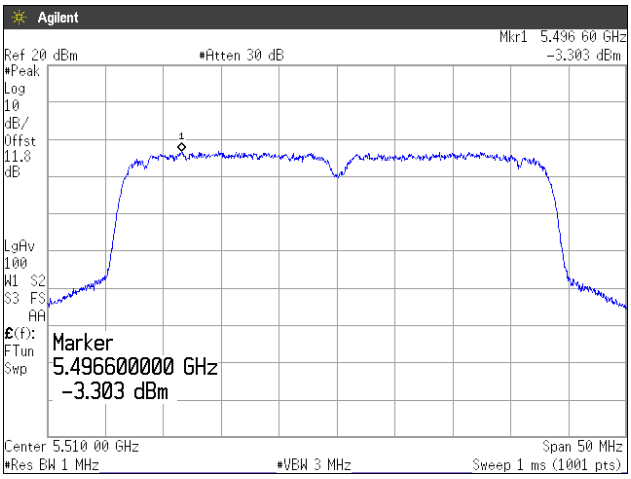


Channel: 62

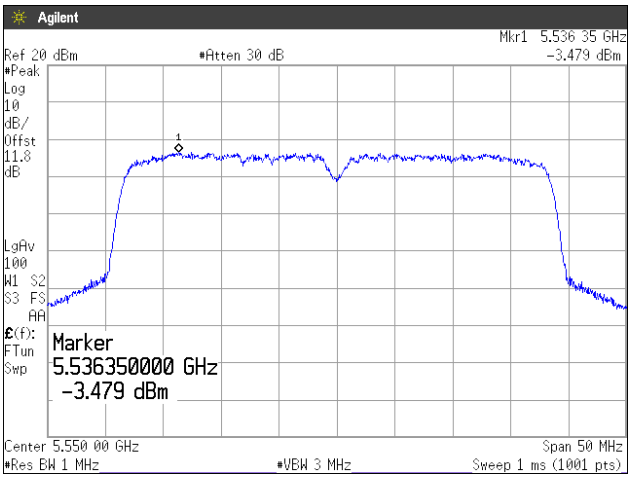


(5.6GHz Band)

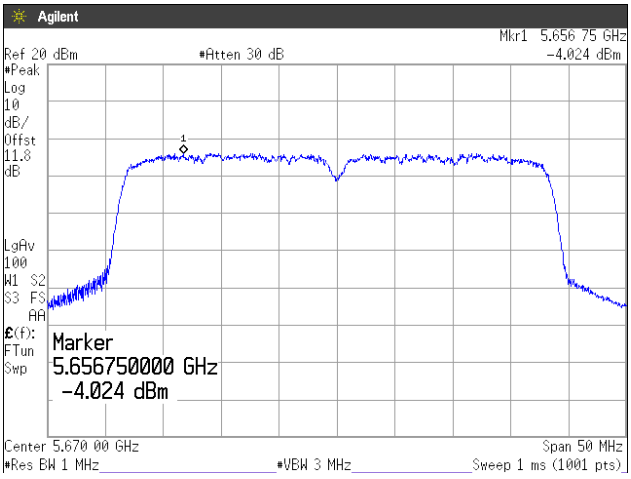
Channel: 102



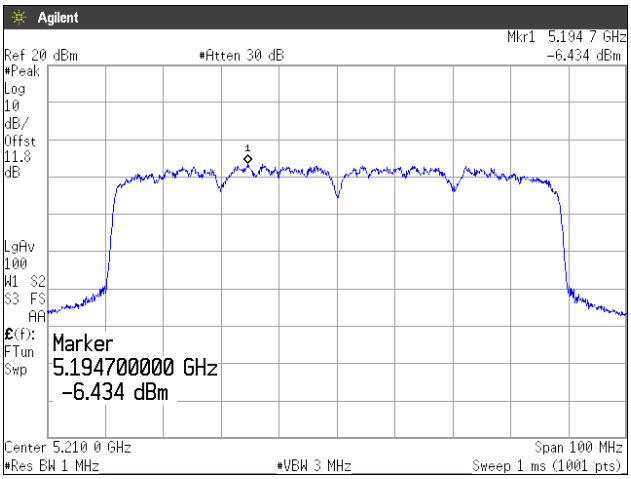
Channel: 110



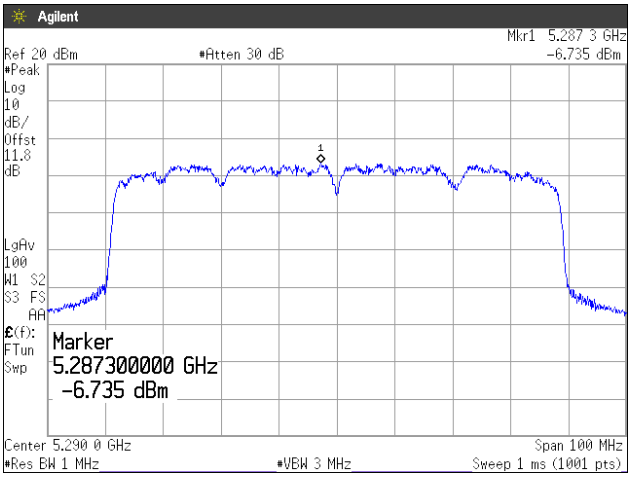
Channel: 134



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

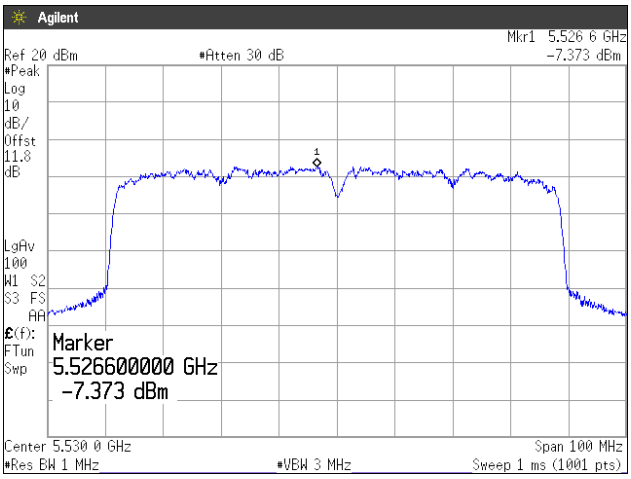


(5.3GHz Band)
Channel: 58

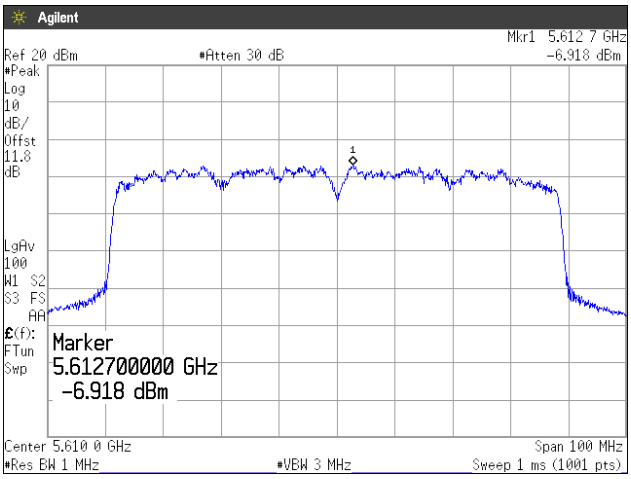


(5.6GHz Band)

Channel: 106



Channel: 122



7. Radiated Emissions (Restricted Bands of Operation)

7.1 Measurement procedure
[FCC 15.407(b), 15.205, 15.209, KDB 789033 D02, Section G.4, 5, 6.c)Method AD]

Test was applied by following conditions.

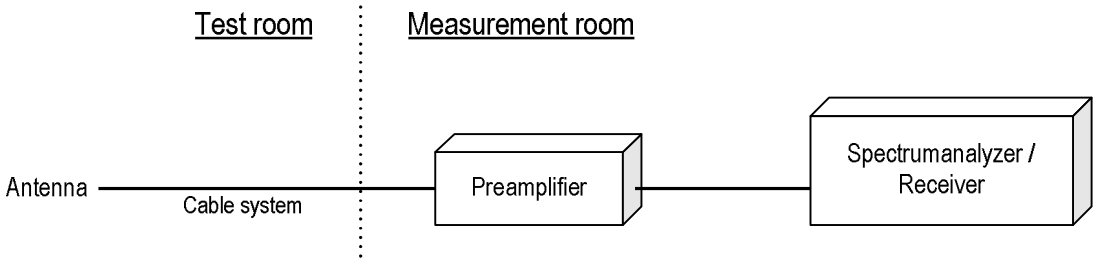
Test method	:	ANSI C63.10
Frequency range	:	30MHz to 40GHz
Test place	:	3m Semi-anechoic chamber No.1
EUT was placed on	:	Styrofoam table / (W)1.0m × (D)1.0m ×(H)0.8m (below 1GHz) Styrofoam table / (W)0.6m × (D)0.6m ×(H)1.5m (above 1GHz)
Antenna distance	:	3m
Test receiver setting		Below 1GHz
- Detector	:	Quasi-peak
- Bandwidth	:	120kHz
Spectrum analyzer setting		Above 1GHz
- Peak	:	RBW=1MHz, VBW=3MHz, Span=0Hz, Sweep=auto, Detector=Peak Trace mode=Max hold
- Average	:	RBW=1MHz, VBW=3MHz, Span=0Hz, Sweep=auto, Detector=RMS Trace mode=Averaging(300 counts)

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, Log periodic antenna, Double ridged guide antenna and Bload-band horn 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. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane.
The EUT is Placed on a turntable, which is 0.8m (below 1GHz) and 1.5m (above 1GHz) 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



Duty cycle result

Mode	Band	On Time(ms)	On+Off Time(ms)	Duty Cycle (%)	DCF (dB)
802.11a	W52	1.364	1.372	99.417	-
	W53	1.364	1.372	99.417	-
	W56	1.364	1.372	99.417	-
802.11n (20MHz)	W52	1.276	1.284	99.377	-
	W53	1.274	1.284	99.221	-
	W56	1.276	1.284	99.377	-
802.11n (40MHz)	W52	0.636	0.645	98.605	-
	W53	0.636	0.646	98.452	-
	W56	0.636	0.645	98.605	-
802.11ac (80MHz)	W52	0.2475	0.2579	95.967	0.179
	W53	0.2475	0.2579	95.967	0.179
	W56	0.2475	0.2579	95.967	0.179

7.2 Calculation method

[150kHz to 25GHz]
Emission level = Reading + (Ant. factor + Cable system loss - Amp. Gain)
Margin = Limit - Emission level

Example:
Detector: Peak
Limit @ 5147.0MHz : 74.0dBuV/m (Peak Limit)
S.A Reading = 40.9dBuV Cable system loss = 16.4dB
Result = 40.9 + 16.4 = 57.3dBuV/m
Margin = 74.0 - 57.3 = 16.7dB

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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.

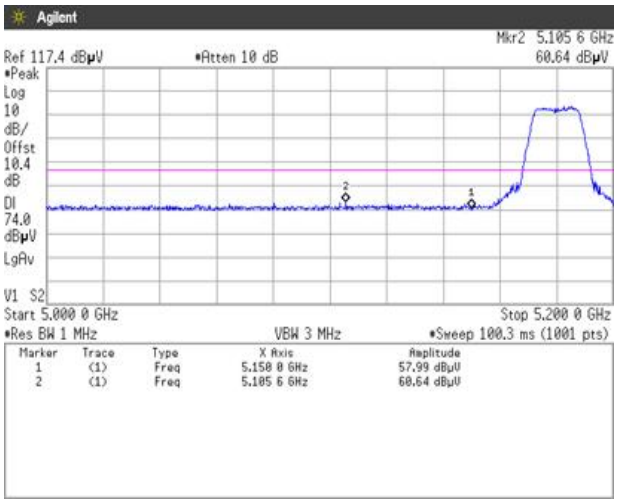
7.4 Test data

Date	:	October 25, 2017			
Temperature	:	23.3 [˚C]			
Humidity	:	36.5 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe
Date	:	October 26, 2017			
Temperature	:	21.2 [˚C]			
Humidity	:	34.2 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

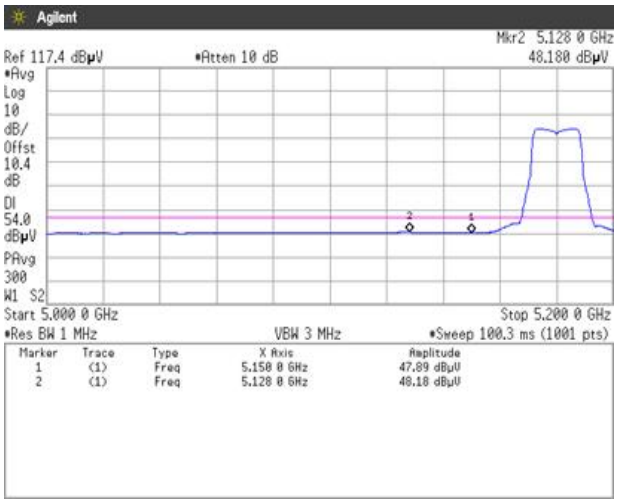
7.4.1 Restricted Bandedge

[IEEE802.11a]

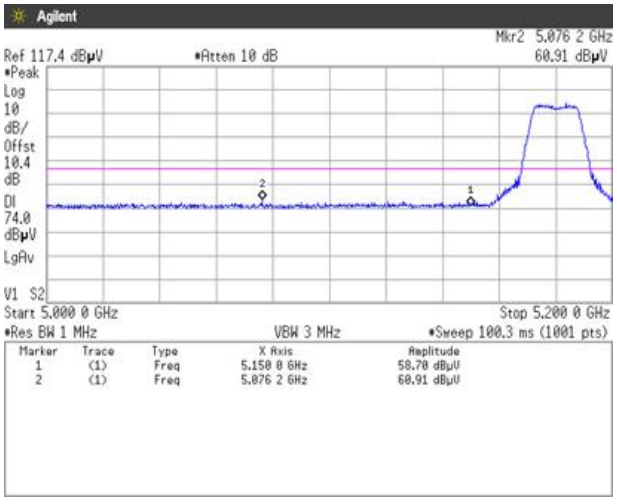
5.2GHz Band, Channel Low
Horizontal
Peak



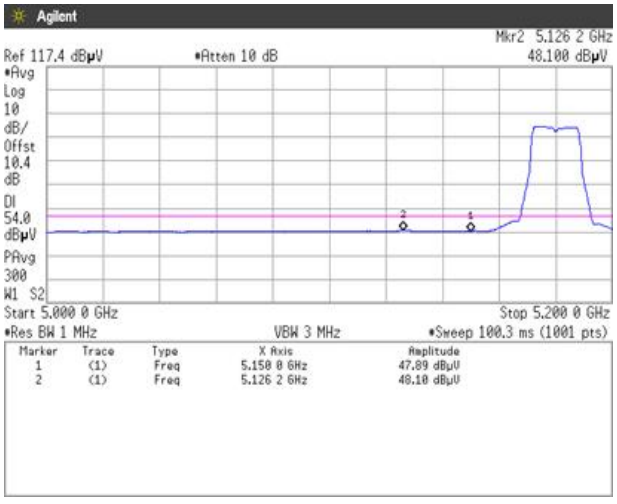
Average



Vertical
Peak



Average



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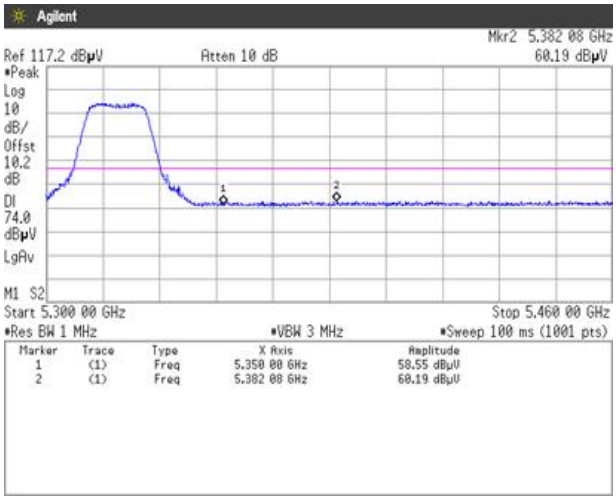
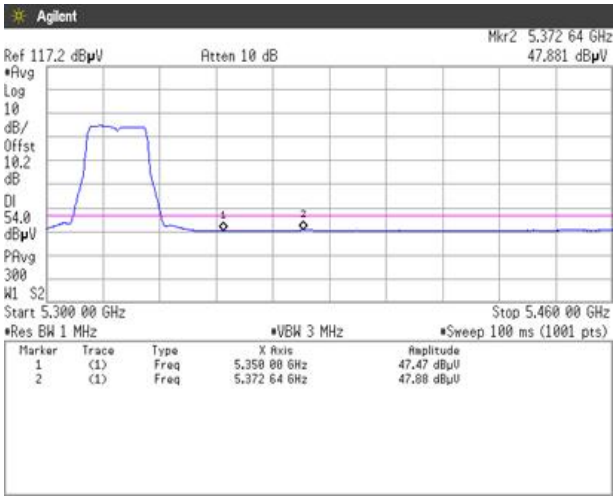
[IEEE802.11a]

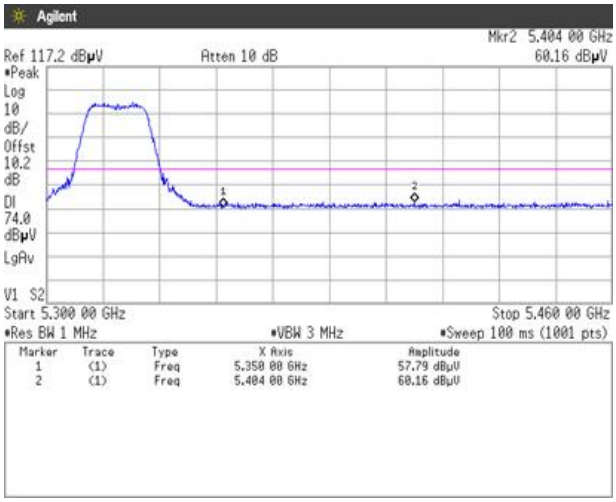
5.3GHz Band, Channel High
Horizontal
Peak



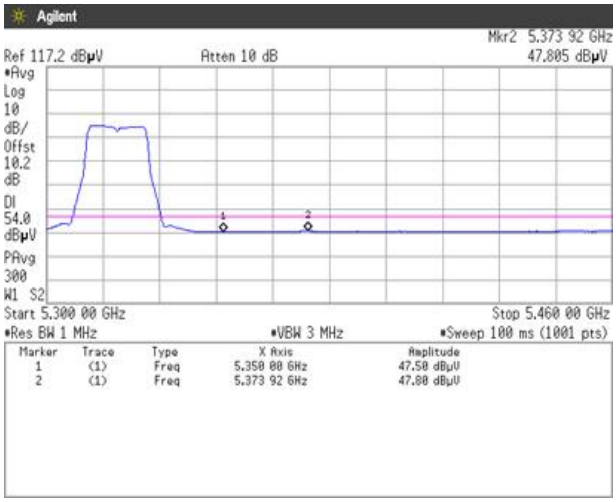
Average



Vertical
Peak



Average



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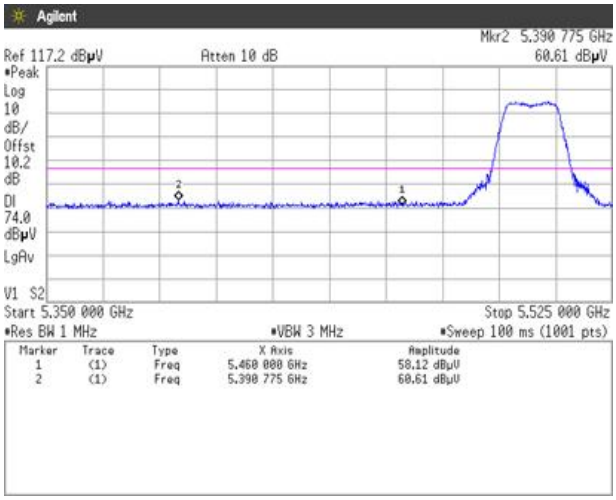
[IEEE802.11a]

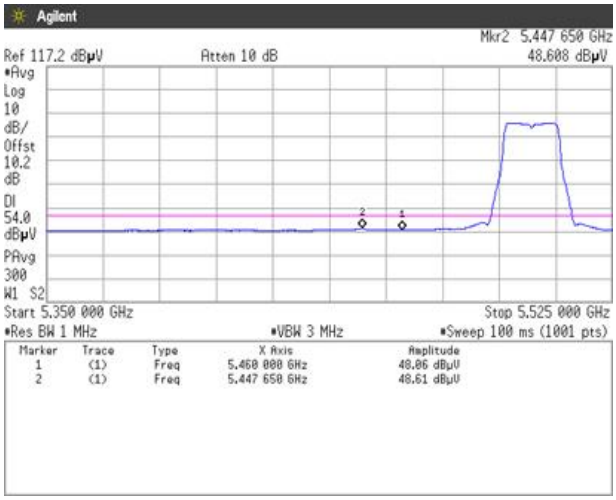
5.6GHz Band, Channel Low

Horizontal

Peak

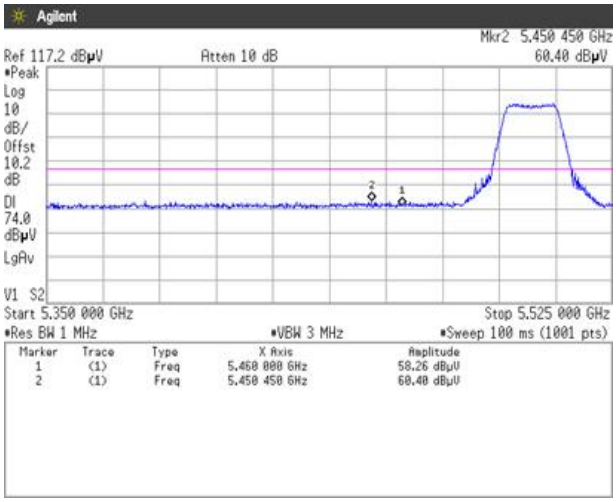


Average

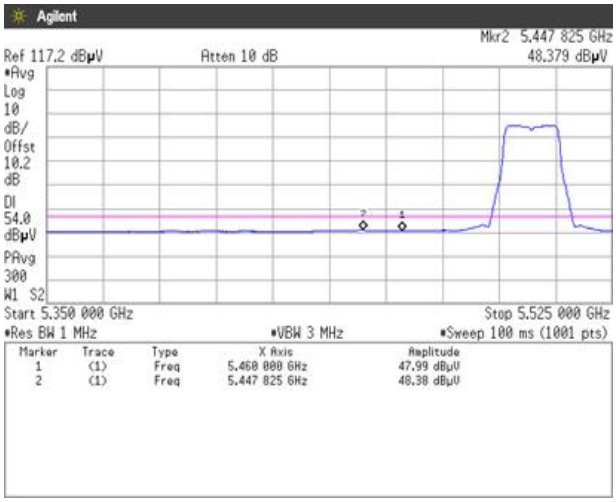


Vertical

Peak



Average



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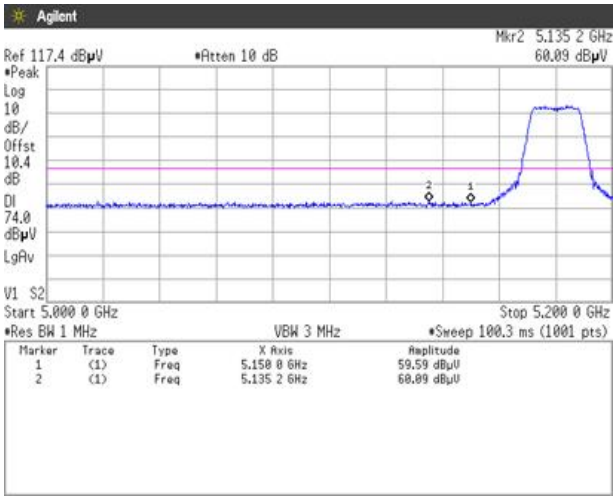
[IEEE802.11n (HT20)]

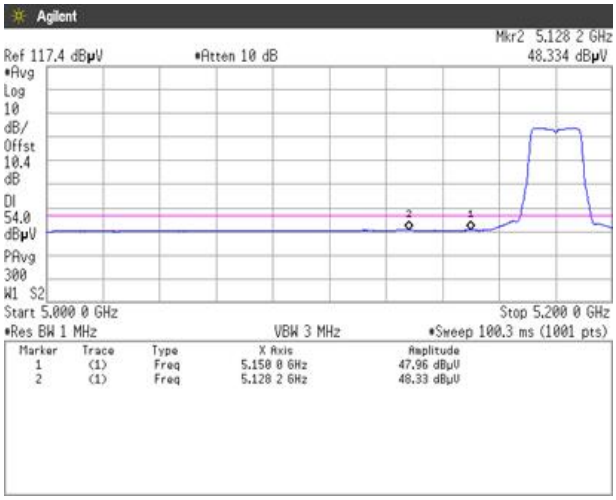
5.2GHz Band, Channel Low

Horizontal

Peak

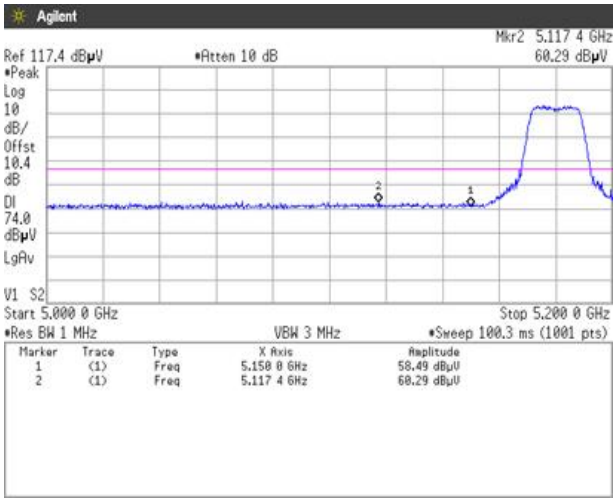


Average

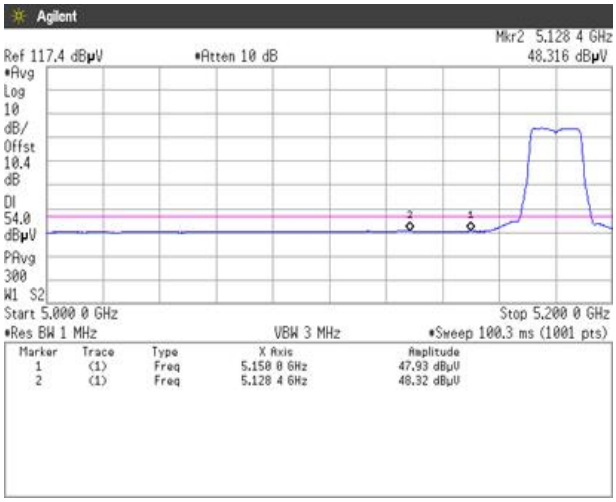


Vertical

Peak



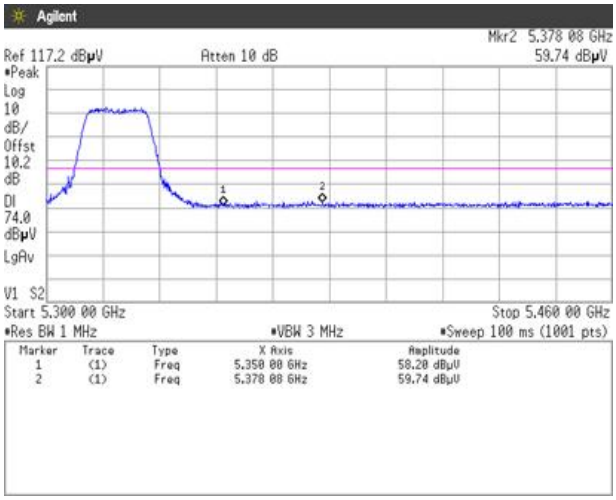
Average



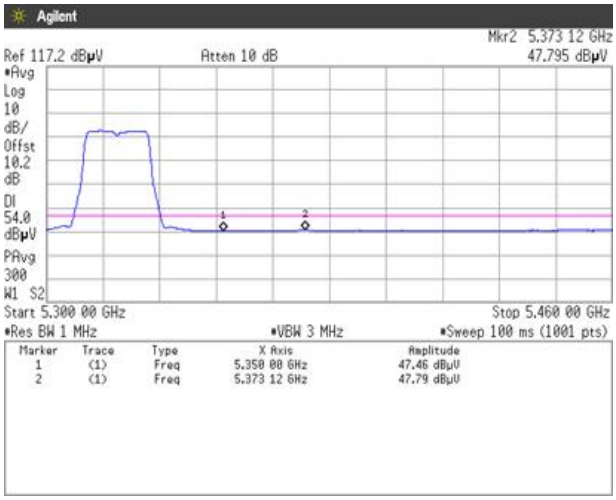
Zacta

[IEEE802.11n (HT20)]

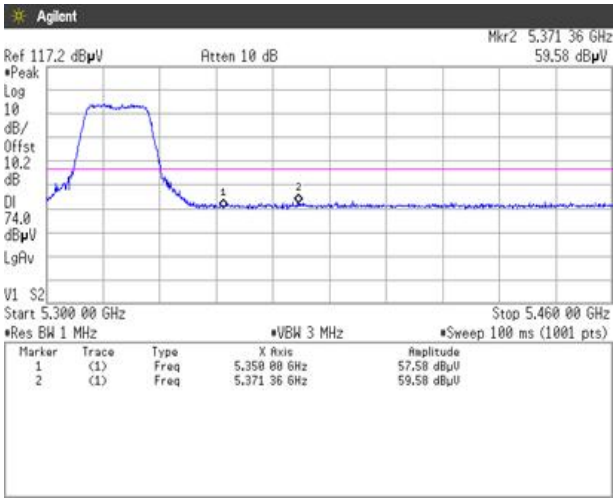
5.3GHz Band, Channel High
Horizontal
Peak



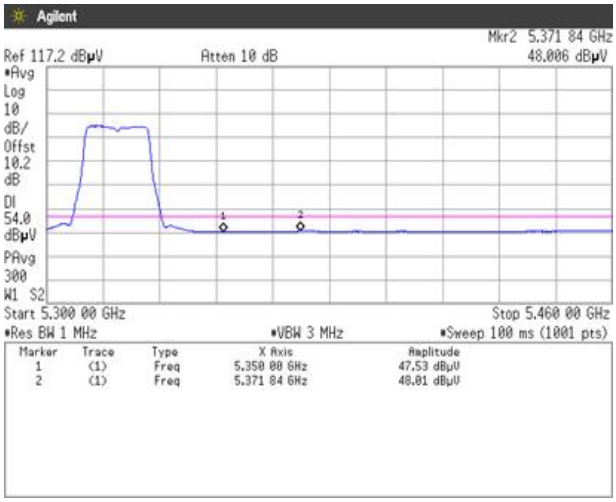
Average



Vertical
Peak



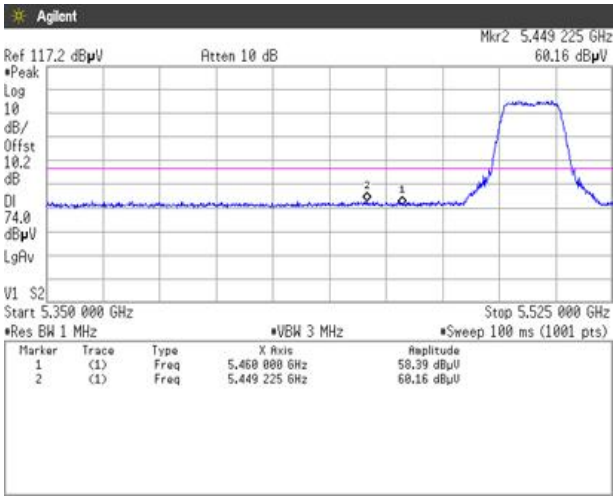
Average



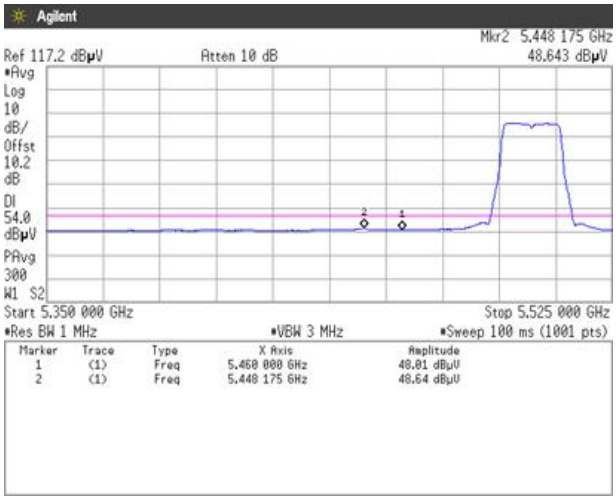
Zacta

[IEEE802.11n (HT20)]

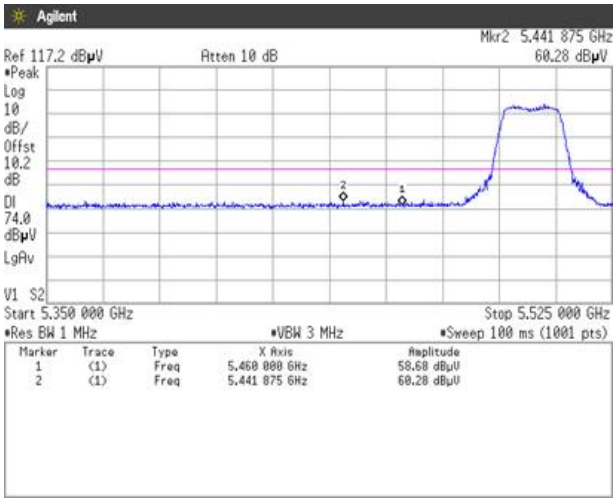
5.6GHz Band, Channel Low
Horizontal
Peak



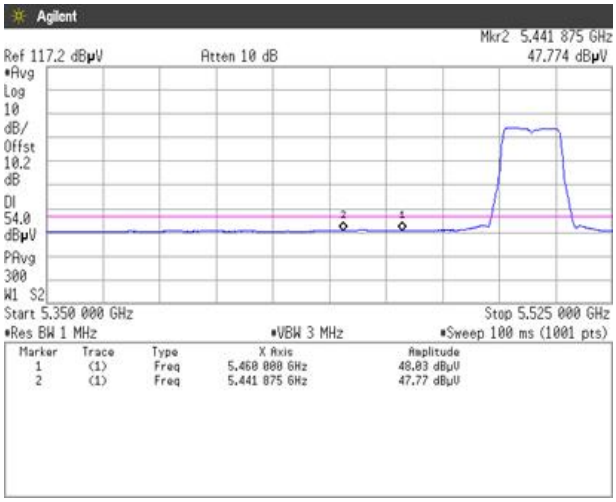
Average



Vertical
Peak



Average



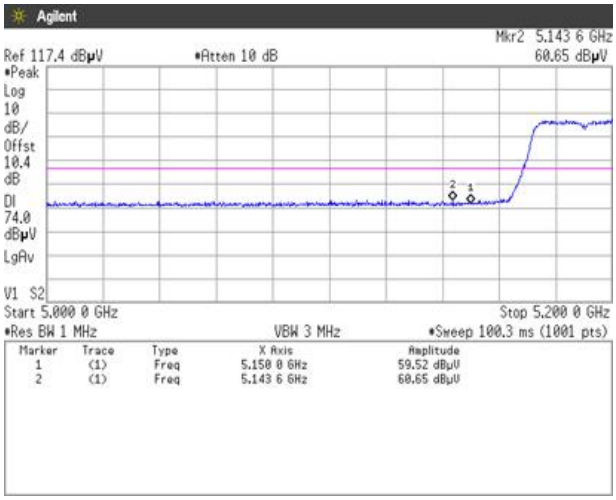
Zacta

[IEEE802.11n (HT40)]

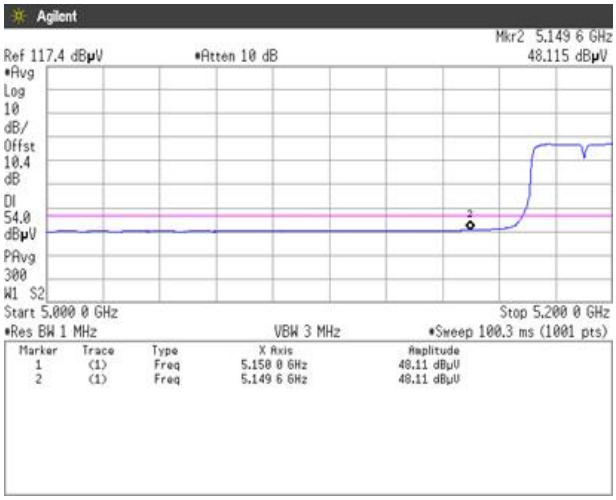
5.2GHz Band, Channel Low

Horizontal

Peak

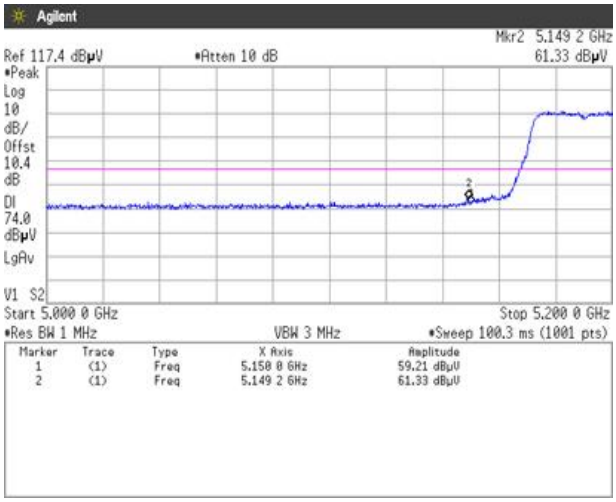


Average

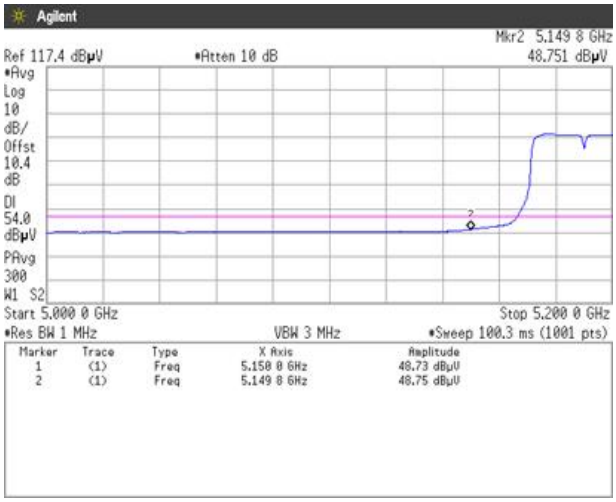


Vertical

Peak



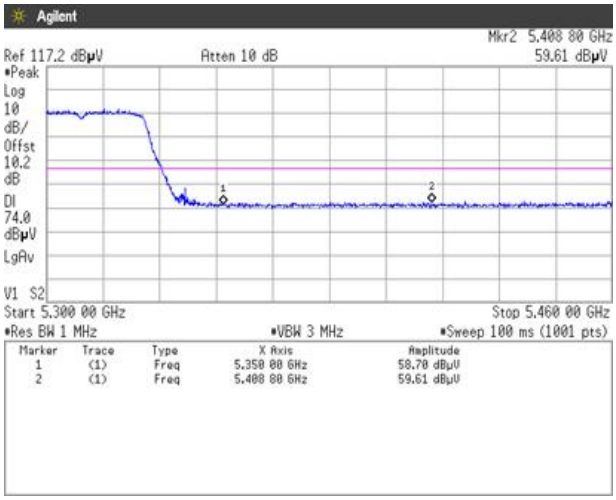
Average



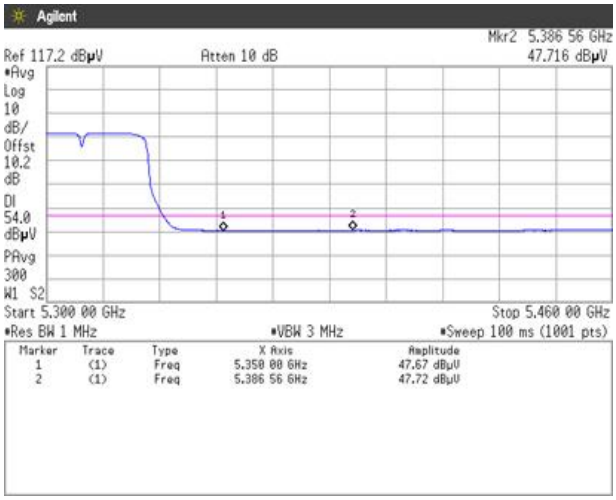
Zacta

[IEEE802.11n (HT40)]

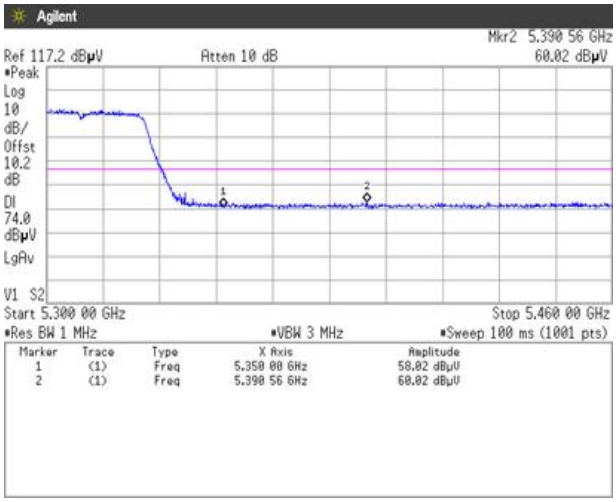
5.3GHz Band, Channel High
Horizontal
Peak



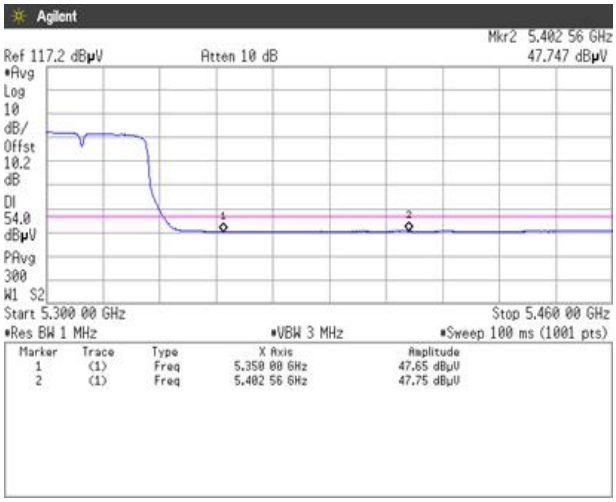
Average



Vertical
Peak



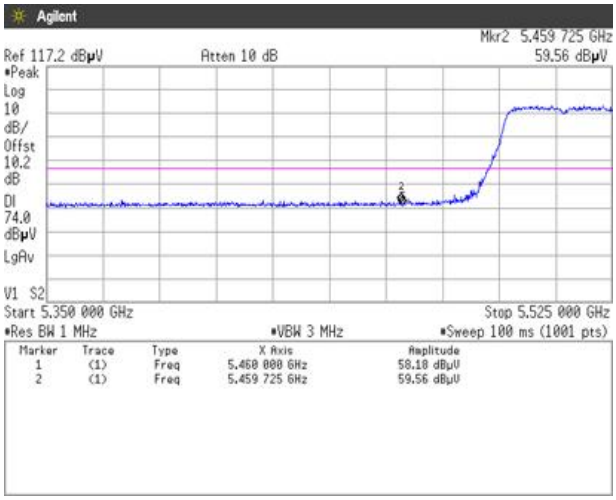
Average



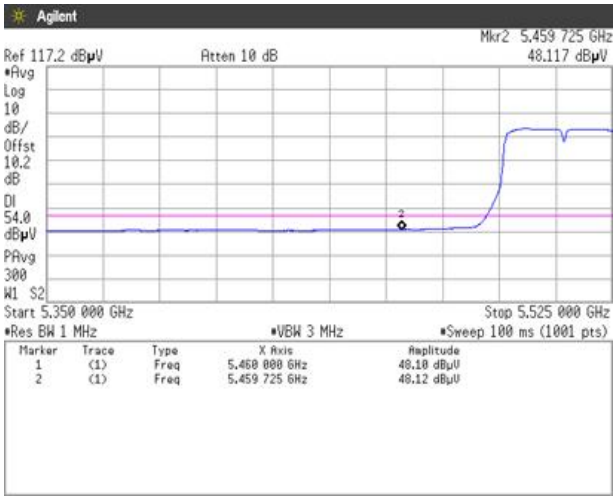
Zacta

[IEEE802.11n (HT40)]

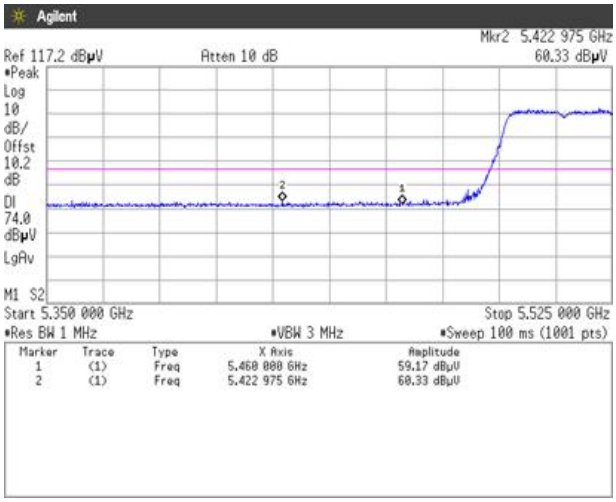
5.6GHz Band, Channel Low
Horizontal
Peak



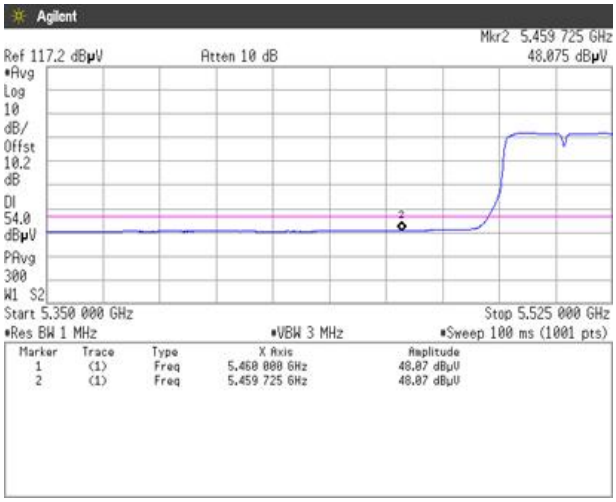
Average



Vertical
Peak



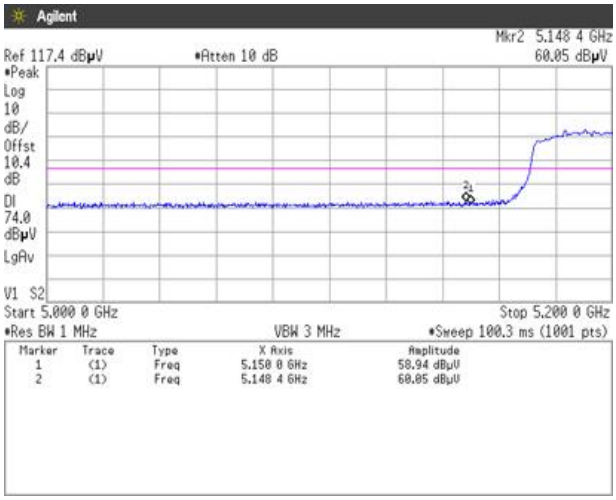
Average



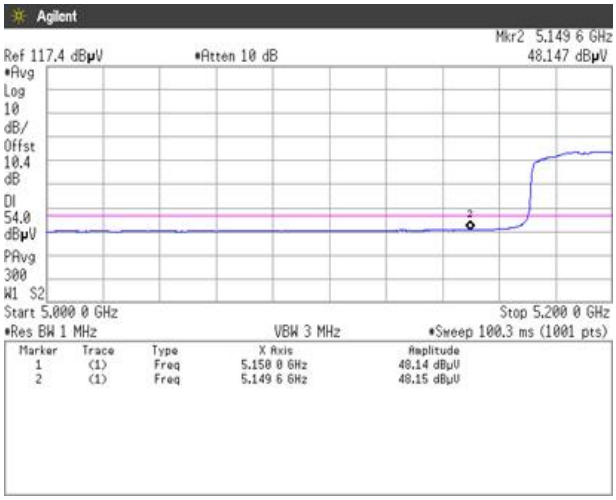
Zacta

[IEEE802.11ac (HT80)]

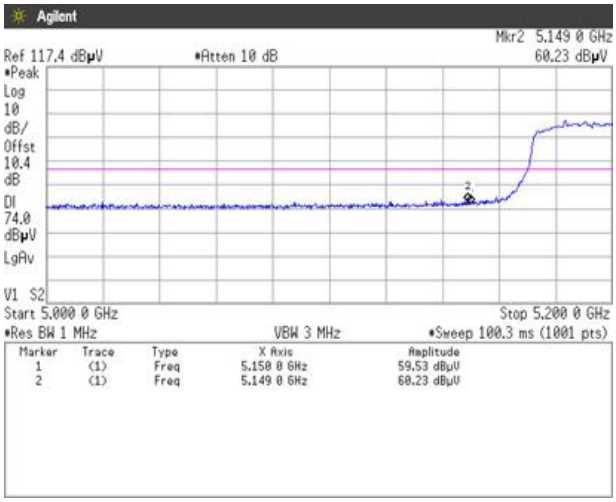
5.2GHz Band, Channel Low
Horizontal
Peak



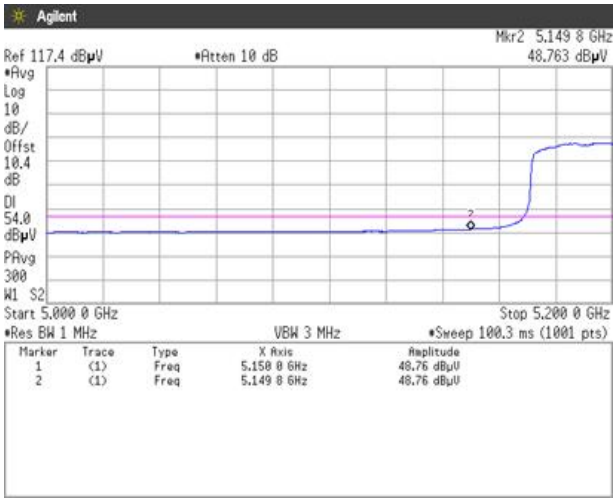
Average



Vertical
Peak



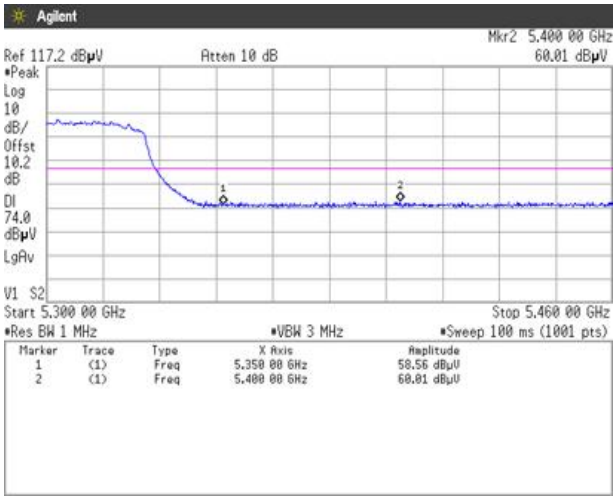
Average



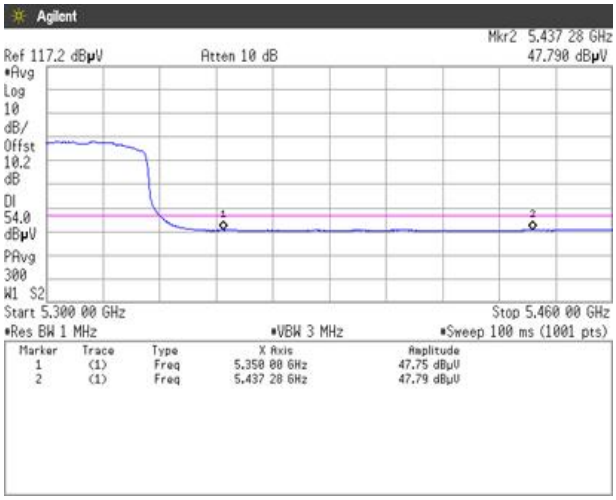
Zacta

[IEEE802.11ac (HT80)]

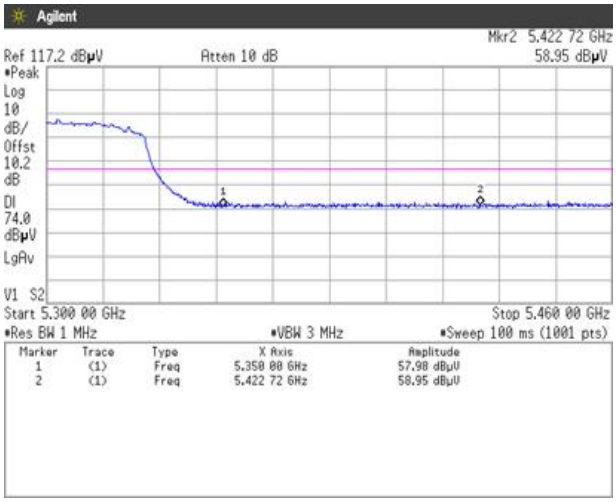
5.3GHz Band, Channel High
Horizontal
Peak



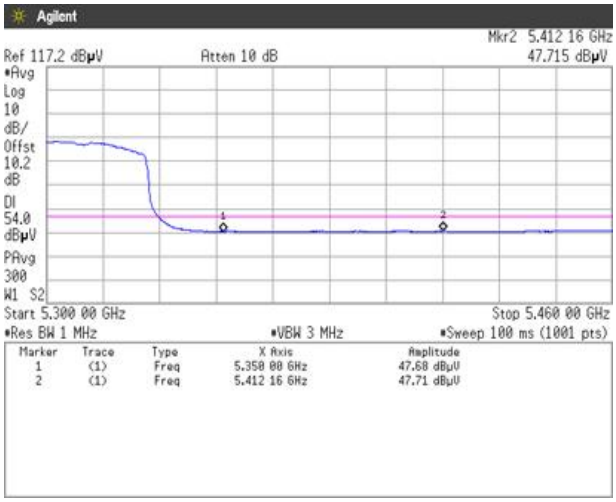
Average



Vertical
Peak



Average



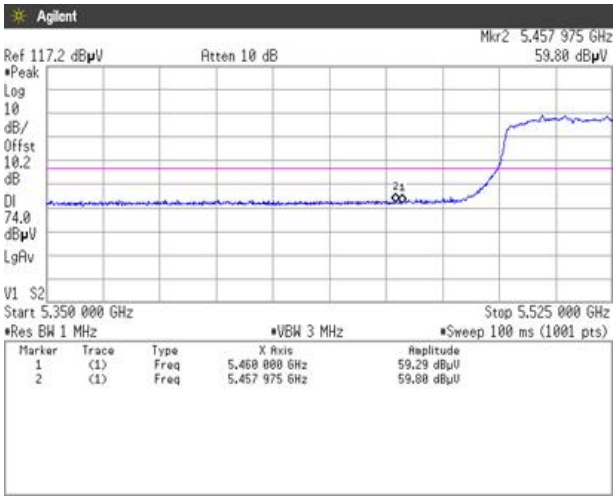
Zacta

[IEEE802.11ac (HT80)]

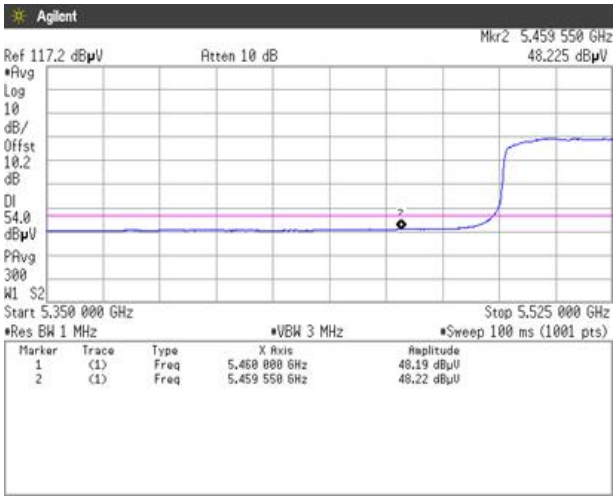
5.6GHz Band, Channel Low

Horizontal

Peak

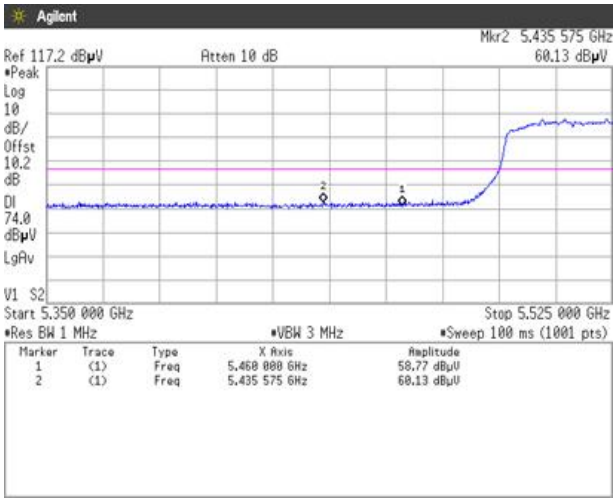


Average

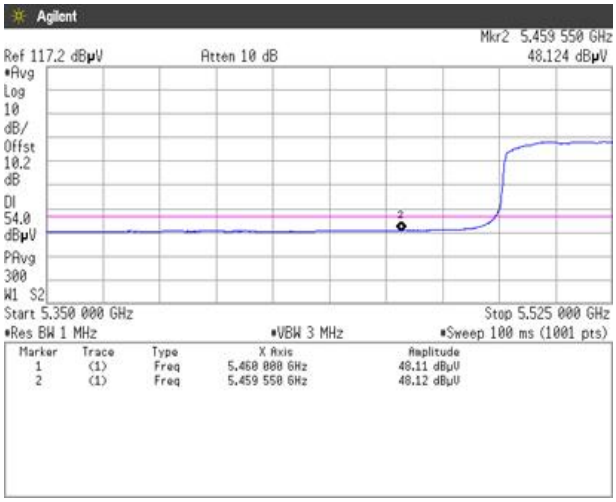


Vertical

Peak



Average

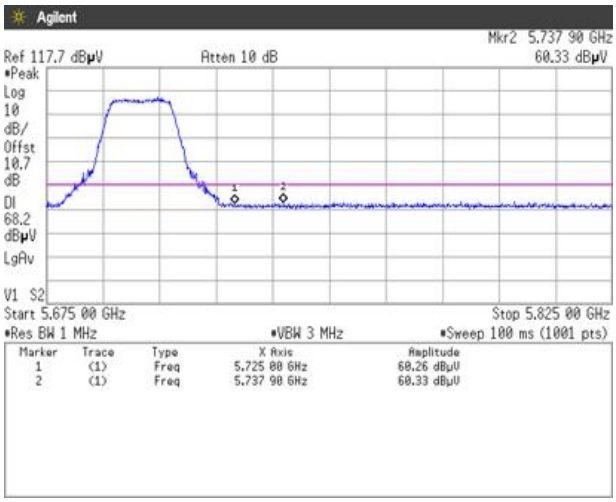


Zacta

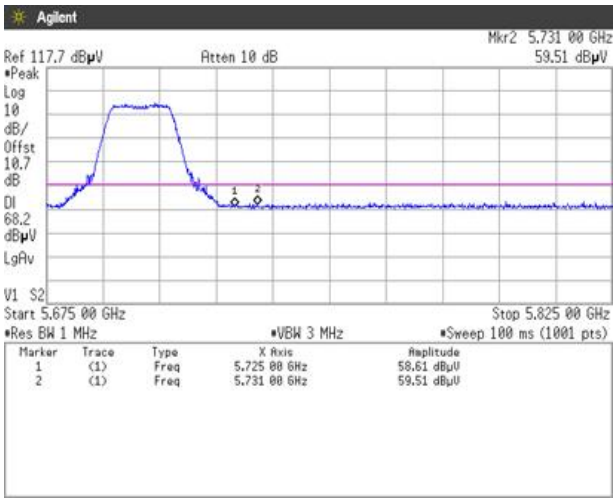
7.4.2 Non-Restricted Bandedge

[IEEE802.11a]

5.6GHz Band, Channel High
Peak
Horizontal

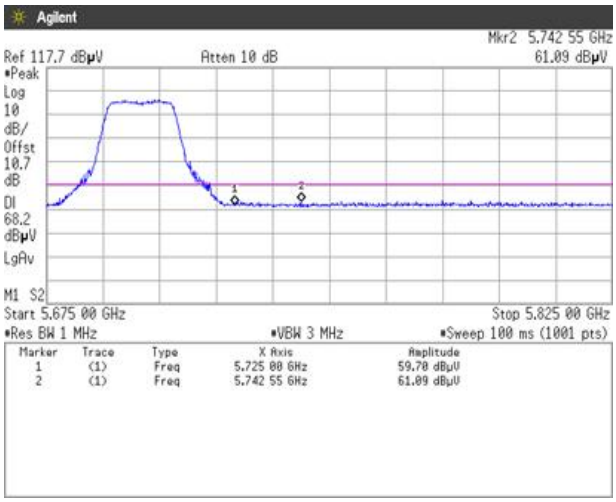


Vertical

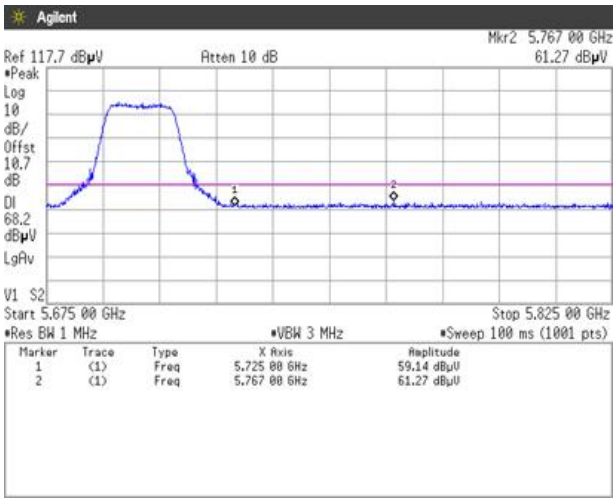


[IEEE802.11n (HT20)]

5.6GHz Band, Channel High
Peak
Horizontal



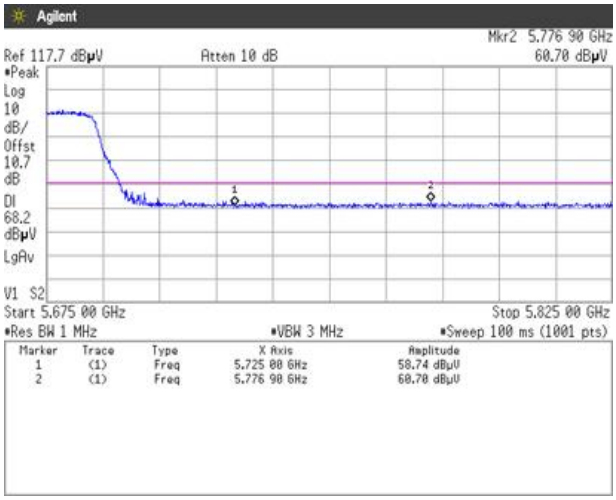
Vertical



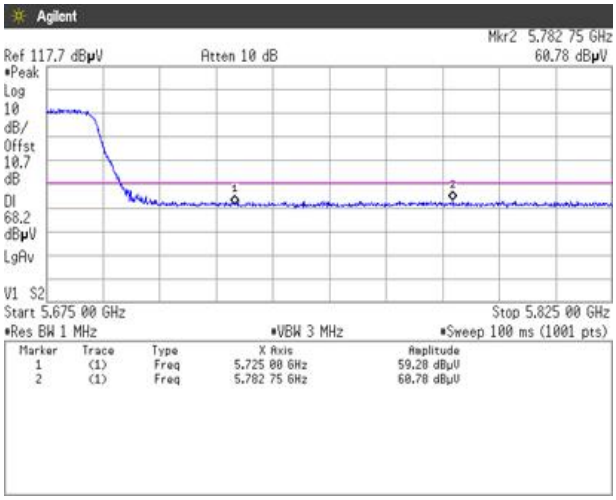
Zacta

[IEEE802. 11n (HT40)]

5.6GHz Band, Channel High
Peak
Horizontal

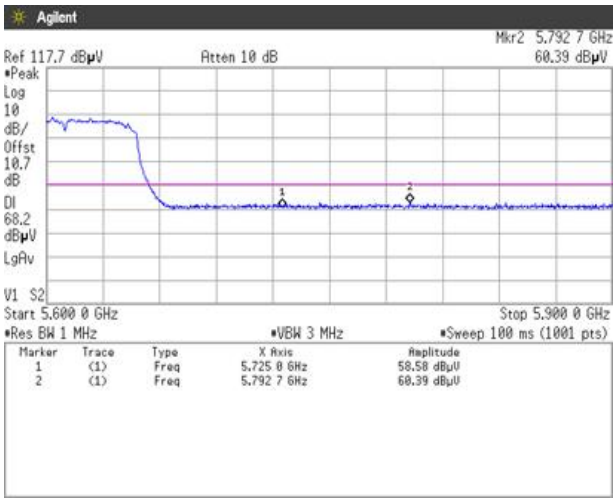


Vertical

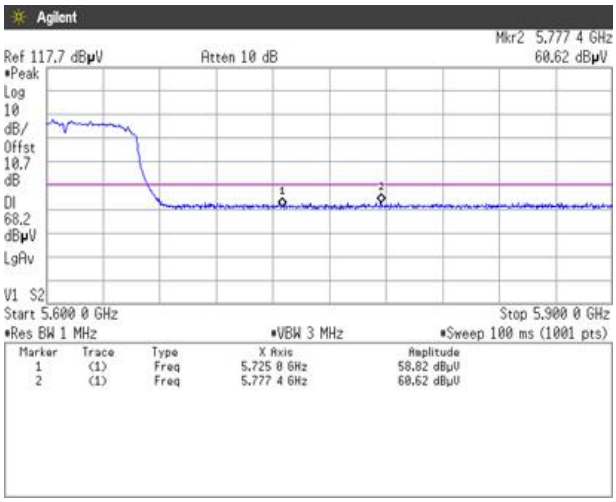


[IEEE802.11ac (HT80)]

5.6GHz Band, Channel High
Peak
Horizontal



Vertical



7.4.3 Radiated Emissions

Date	:	October 19, 2017			
Temperature	:	20.0 [˚C]			
Humidity	:	31.2 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Tadahiro Seino
Date	:	October 19 - 20, 2017			
Temperature	:	23.1 [˚C]			
Humidity	:	27.6 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe
Date	:	October 20, 2017			
Temperature	:	23.3 [˚C]			
Humidity	:	32.2 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Tadahiro Seino
Date	:	October 21, 2017			
Temperature	:	21.4 [˚C]			
Humidity	:	42.1 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe
Date	:	October 24, 2017			
Temperature	:	20.0 [˚C]			
Humidity	:	45.3 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe
Date	:	October 25, 2017			
Temperature	:	23.3 [˚C]			
Humidity	:	36.5 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

Zacta

[IEEE802.11a]
(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	36	5180	10360.00	H	PK	47.2	9.9		57.1	68.2	11.1
	40	5200	10400.00	H	PK	46.0	9.9		55.9	68.2	12.3
	48	5240	10480.00	H	PK	45.7	10.0		55.7	68.2	12.5

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	52	5260	10520.00	H	PK	45.9	10.0		55.9	68.2	12.3
	56	5280	10560.00	H	PK	46.3	10.1		56.4	68.2	11.8
	64	5320	10640.00	H	PK	46.4	10.2		56.6	74.0	17.4
			10640.00	H	AV	34.8	10.2		45.0	54.0	9.0

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a	100	5500	5467.40	H	PK	49.8	10.2		60.0	68.2	8.2
			5465.60	V	PK	50.3	10.2		60.5	68.2	7.7
			11000.00	H	PK	45.6	10.6		56.2	74.0	17.8
			11000.00	H	AV	34.1	10.6		44.7	54.0	9.3
	116	5580	11160.00	H	PK	46.8	10.9		57.7	74.0	16.3
			11160.00	H	AV	34.8	10.9		45.7	54.0	8.3
	140	5700	11400.00	H	PK	46.0	11.2		57.2	74.0	16.8
			11400.00	H	AV	34.3	11.2		45.5	54.0	8.5

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.

Zacta

[IEEE802.11n (HT20)]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	36	5180	10360.00	H	PK	45.8	9.9		55.7	68.2	12.5
	40	5200	10400.00	H	PK	45.5	9.9		55.4	68.2	12.8
	48	5240	10480.00	H	PK	45.3	10.0		55.3	68.2	12.9

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	52	5260	10520.00	H	PK	45.7	10.0		55.7	68.2	12.5
	56	5280	10560.00	H	PK	45.6	10.1		55.7	68.2	12.5
	64	5320	10640.00	H	PK	46.5	10.2		56.7	74.0	17.3
			10640.00	H	AV	34.2	10.2		44.4	54.0	9.6

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11n (20MHz)	100	5500	5463.40	H	PK	50.5	10.2		60.7	68.2	7.5
			5464.53	V	PK	50.1	10.2		60.3	68.2	7.9
			11000.00	H	PK	45.9	10.6		56.5	74.0	17.5
			11000.00	H	AV	33.6	10.6		44.2	54.0	9.8
	116	5580	11160.00	H	PK	46.2	10.9		57.1	74.0	16.9
			11160.00	H	AV	34.0	10.9		44.9	54.0	9.1
	140	5700	11400.00	H	PK	46.5	11.2		57.7	74.0	16.3
			11400.00	H	AV	34.0	11.2		45.2	54.0	8.8

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.

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

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11n (40MHz)	38	5190	10380.00	H	PK	46.1	9.9		56.0	68.2	12.2
	46	5230	10460.00	H	PK	44.2	10.0		54.2	68.2	14.0

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11n (40MHz)	54	5270	10540.00	H	PK	46.2	10.1		56.3	68.2	11.9
	62	5310	10620.00	H	PK	46.4	10.2		56.6	74.0	17.4
			10620.00	H	AV	34.0	10.2		44.2	54.0	9.8

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11n (40MHz)	102	5510	5469.42	H	PK	50.1	10.2		60.3	68.2	7.9
			5465.38	V	PK	50.3	10.2		60.5	68.2	7.7
			11020.00	H	PK	45.3	10.6		55.9	74.0	18.1
			11020.00	H	AV	33.5	10.6		44.1	54.0	9.9
	110	5550	11100.00	H	PK	46.1	10.8		56.9	74.0	17.1
			11100.00	H	AV	33.9	10.8		44.7	54.0	9.3
	134	5670	11340.00	H	PK	46.8	11.1		57.9	74.0	16.1
			11340.00	H	AV	34.3	11.1		45.4	54.0	8.6

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.

Zacta

[IEEE802.11ac (HT80)]

(5.2GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	42	5210	10420.00	H	PK	45.6	9.9		55.5	68.2	12.7

(5.3GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	58	5290	10580.00	H	PK	45.9	10.1		56.0	68.2	12.2

(5.6GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBμV)	C.F (dB)	DCF (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ac (80MHz)	106	5530	5462.09	H	PK	50.4	10.2		60.6	68.2	7.6
			5467.87	V	PK	50.2	10.2		60.4	68.2	7.8
			11060.00	H	PK	45.3	10.7		56.0	74.0	18.0
			11060.00	H	AV	33.7	10.7	0.179	44.6	54.0	9.4
	122	5610	11220.00	H	PK	46.1	11.0		57.1	74.0	16.9
			11220.00	H	AV	34.2	11.0	0.170	45.4	54.0	8.6

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.

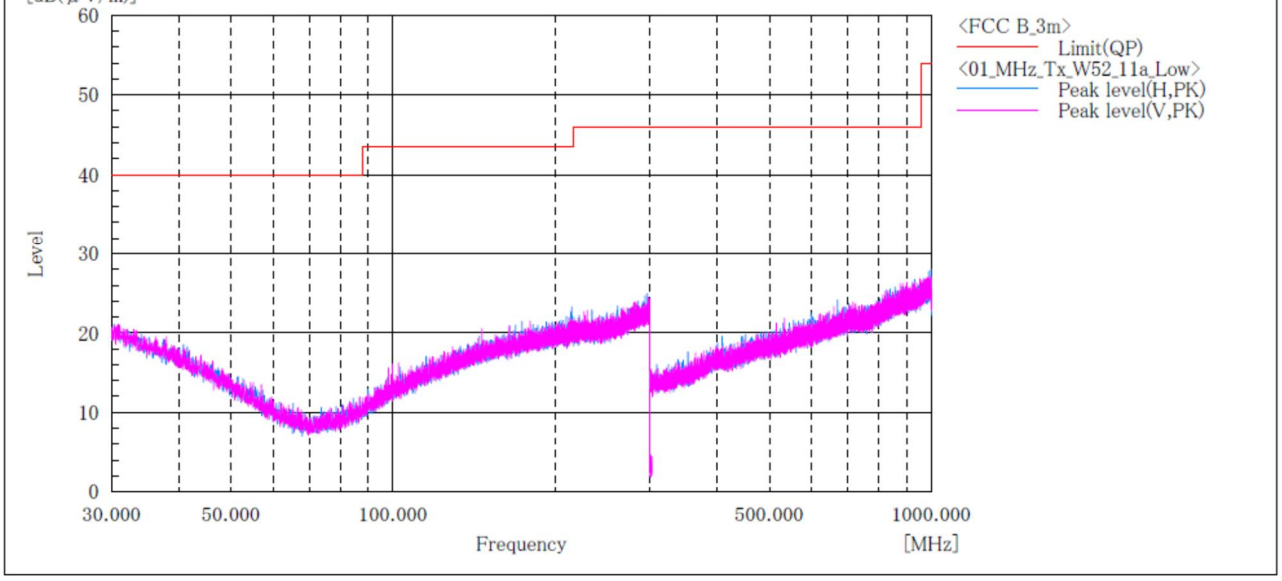
7.4.4 Measurement chart
7.4.4.1 Transmission mode

[11a]
W52 / Channel Low
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.01>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:36_5180MHz
Test mode	: 5GHz_W52_11a_Tx_Low	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

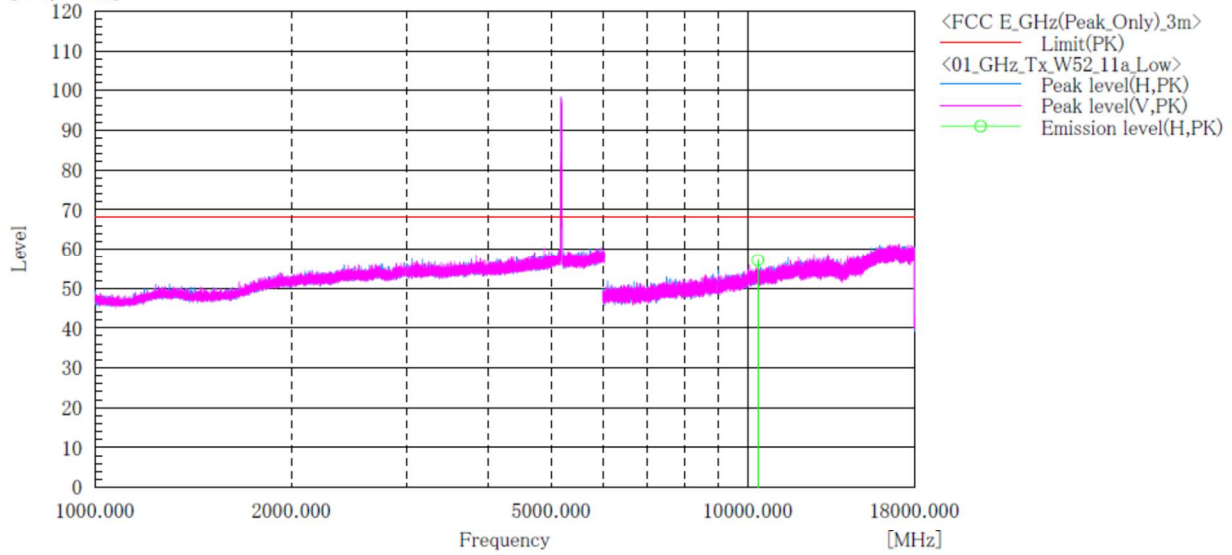
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W52 / Channel Low
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.02>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:36_5180MHz
Test mode	: 5GHz_W52_11a_Tx_Low	Note2	:



Final Result

No.	Frequency	(P)	Reading PK	c.f	Result PK	Limit PK	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	10360.000	H	47.2	9.9	57.1	68.2	11.1	144.0	160.0

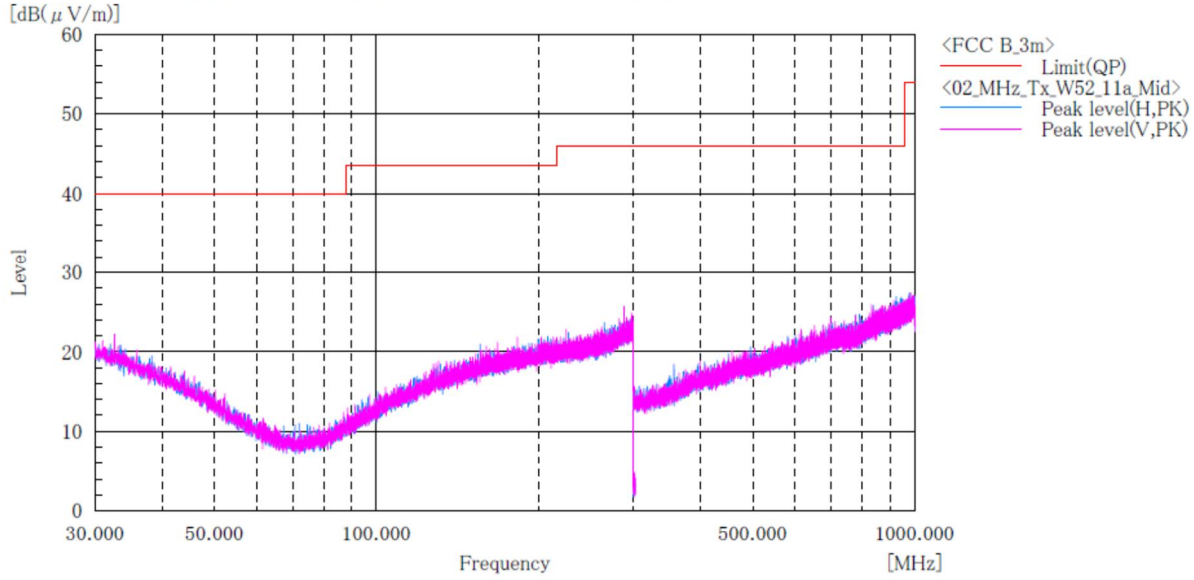
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W52 / Channel Middle
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.03>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:40_5200MHz
Test mode	: 5GHz_W52_11a_Tx_Middle	Note2	:



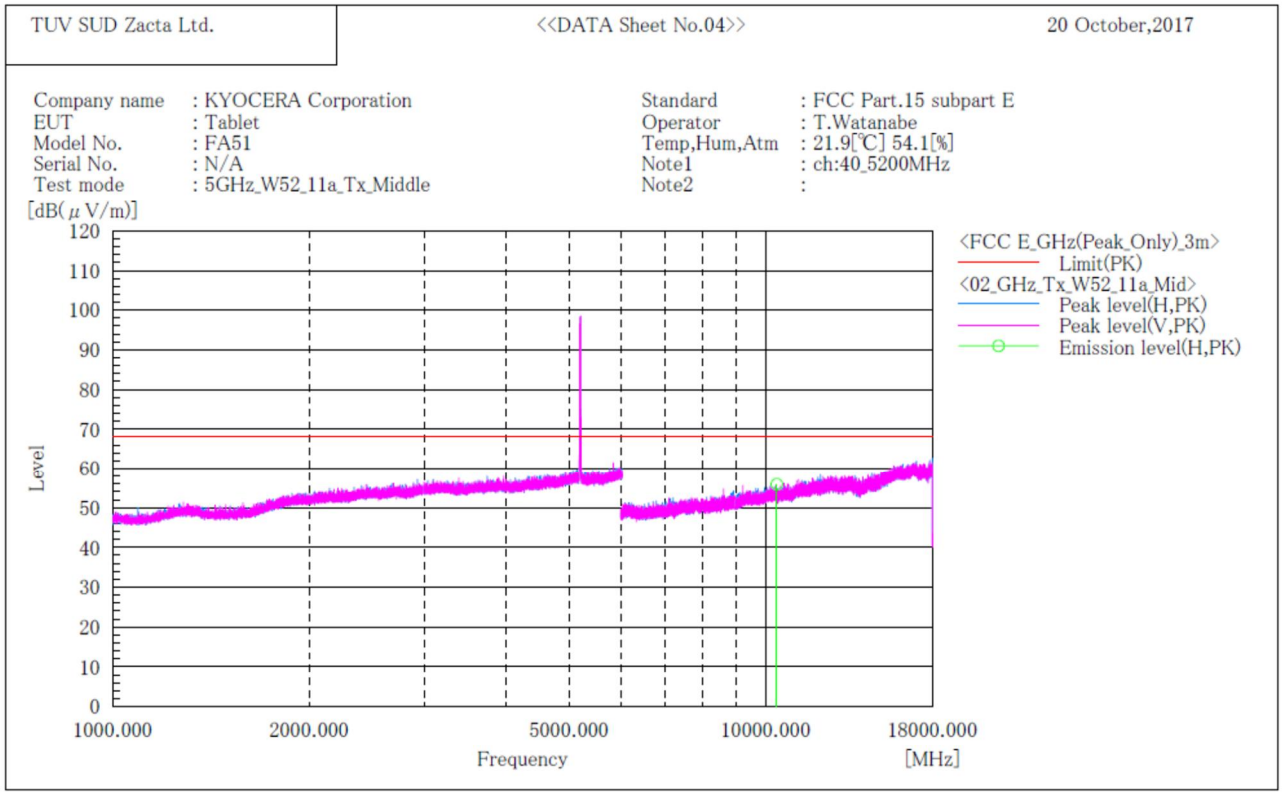
Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W52 / Channel Middle
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]



Final Result

No.	Frequency	(P)	Reading PK	c.f	Result PK	Limit PK	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	10400.000	H	46.0	9.9	55.9	68.2	12.3	118.0	166.0

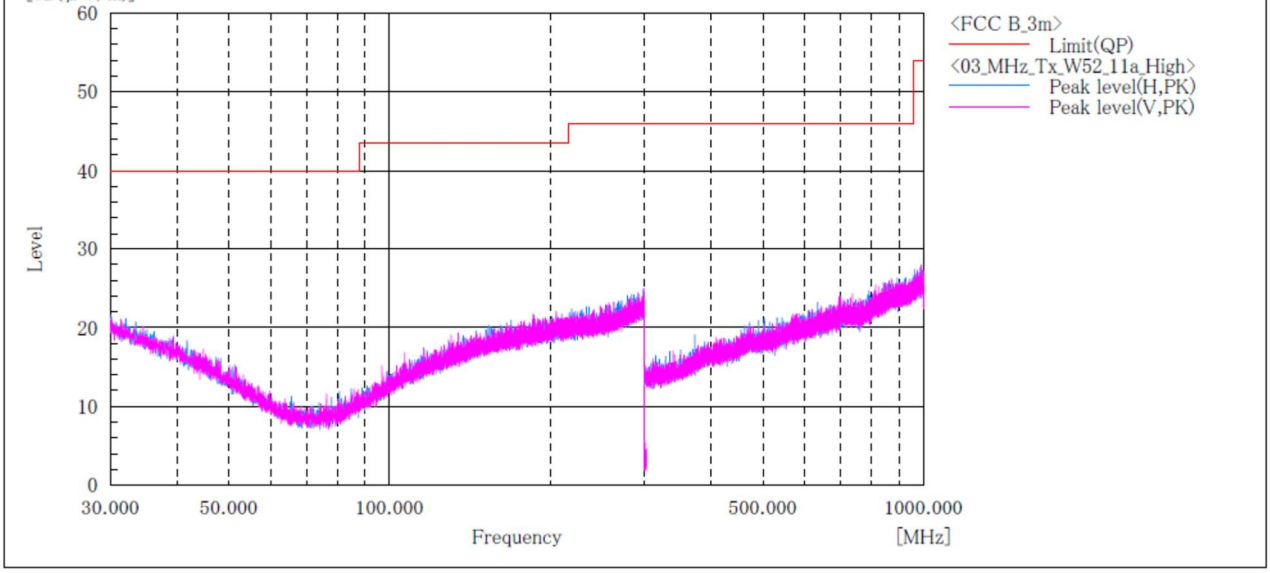
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W52 / Channel High
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.05>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:48_5240MHz
Test mode	: 5GHz_W52_11a_Tx_High	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

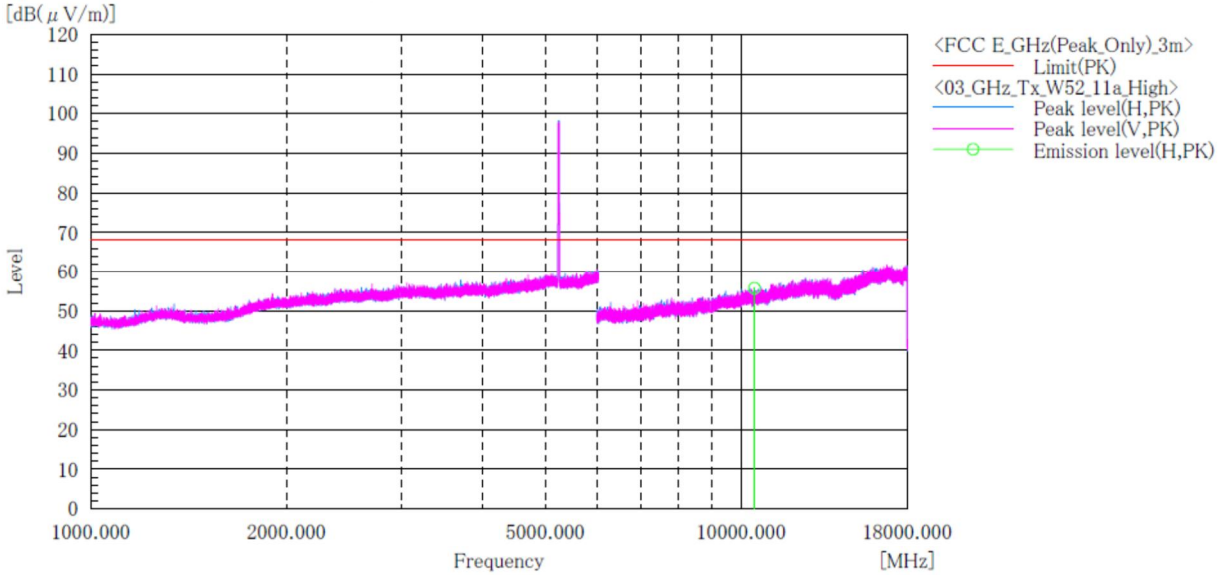
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W52 / Channel High
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.06>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:48_5240MHz
Test mode	: 5GHz_W52_11a_Tx_High	Note2	:



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [°]
1	10480.000	H	45.7	10.0	55.7	68.2	12.5	113.0	277.0

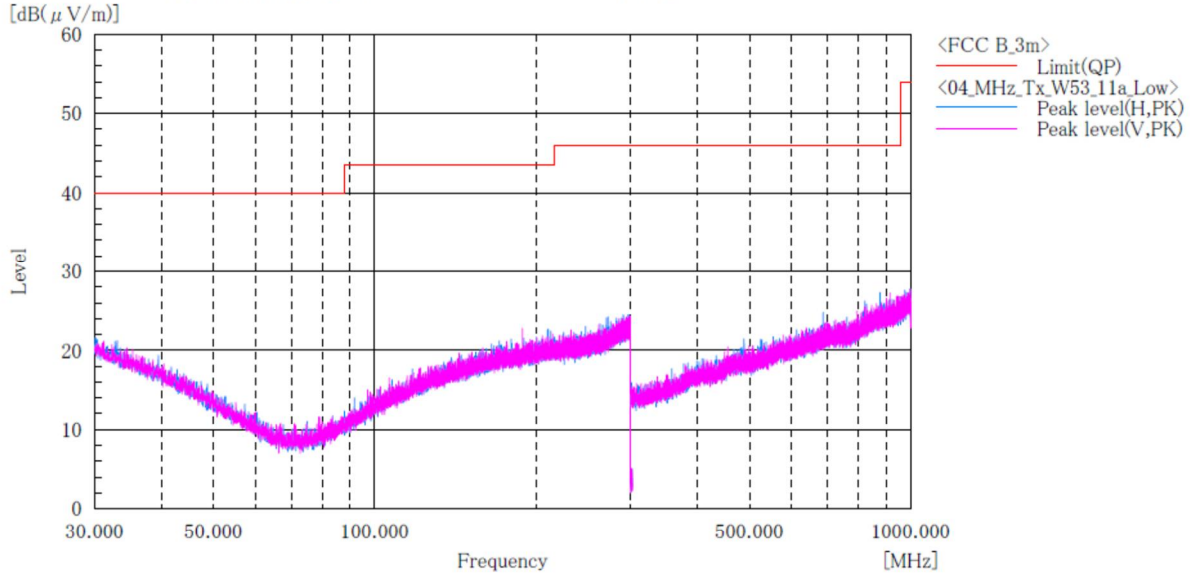
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W53 / Channel Low
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.07>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:52_5260MHz
Test mode	: 5GHz_W53_11a_Tx_Low	Note2	:



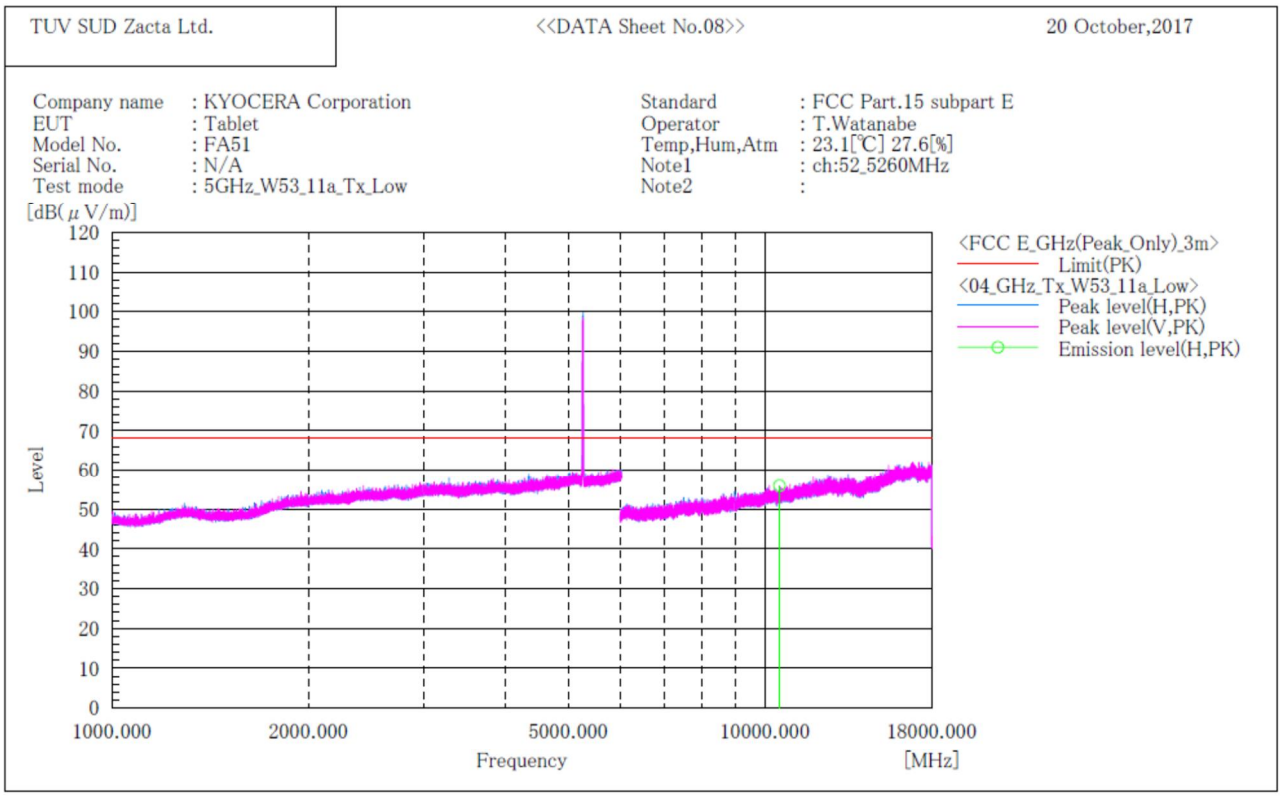
Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W53 / Channel Low
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]



Final Result

No.	Frequency	(P)	Reading PK	c.f	Result PK	Limit PK	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	10520.000	H	45.9	10.0	55.9	68.2	12.3	153.0	67.0

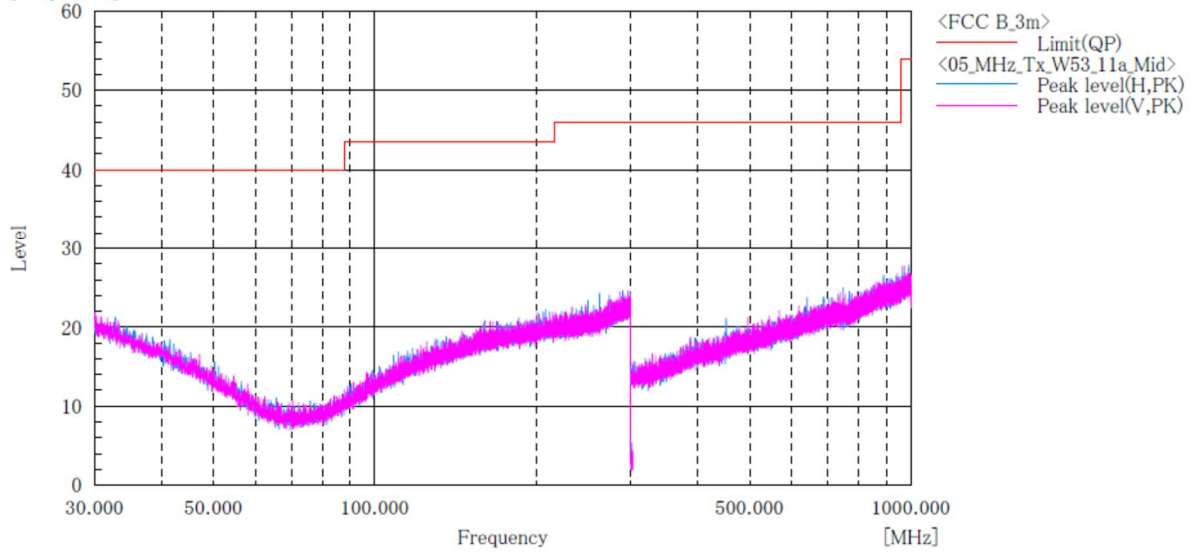
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W53 / Channel Middle
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.09>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:56_5280MHz
Test mode	: 5GHz_W53_11a_Tx_Middle	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

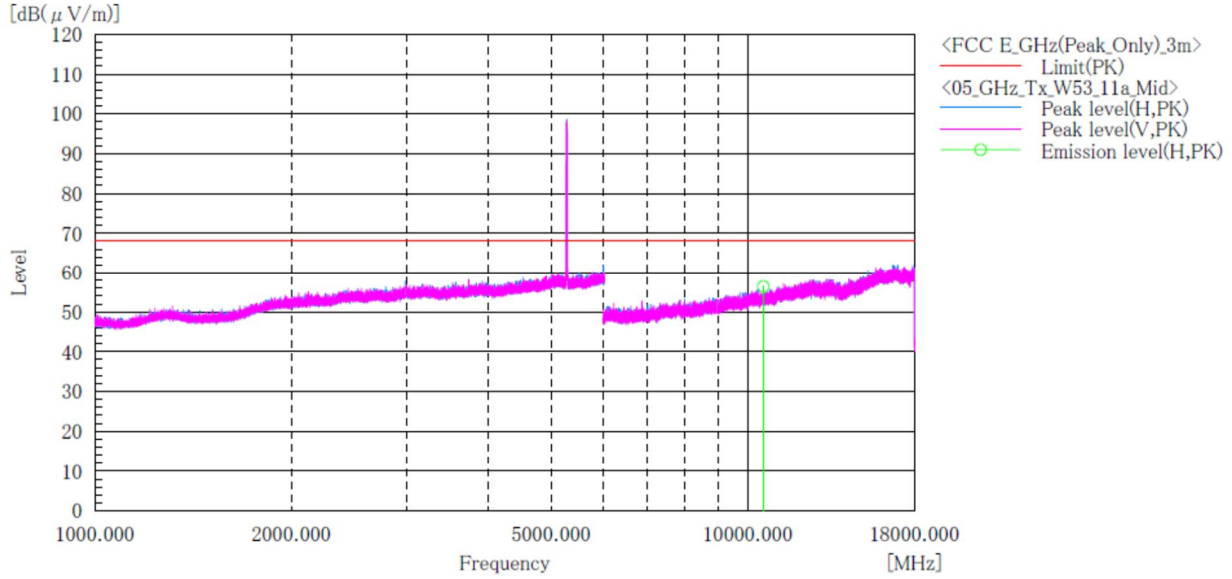
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W53 / Channel Middle
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.10>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:56_5280MHz
Test mode	: 5GHz_W53_11a_Tx_Middle	Note2	:



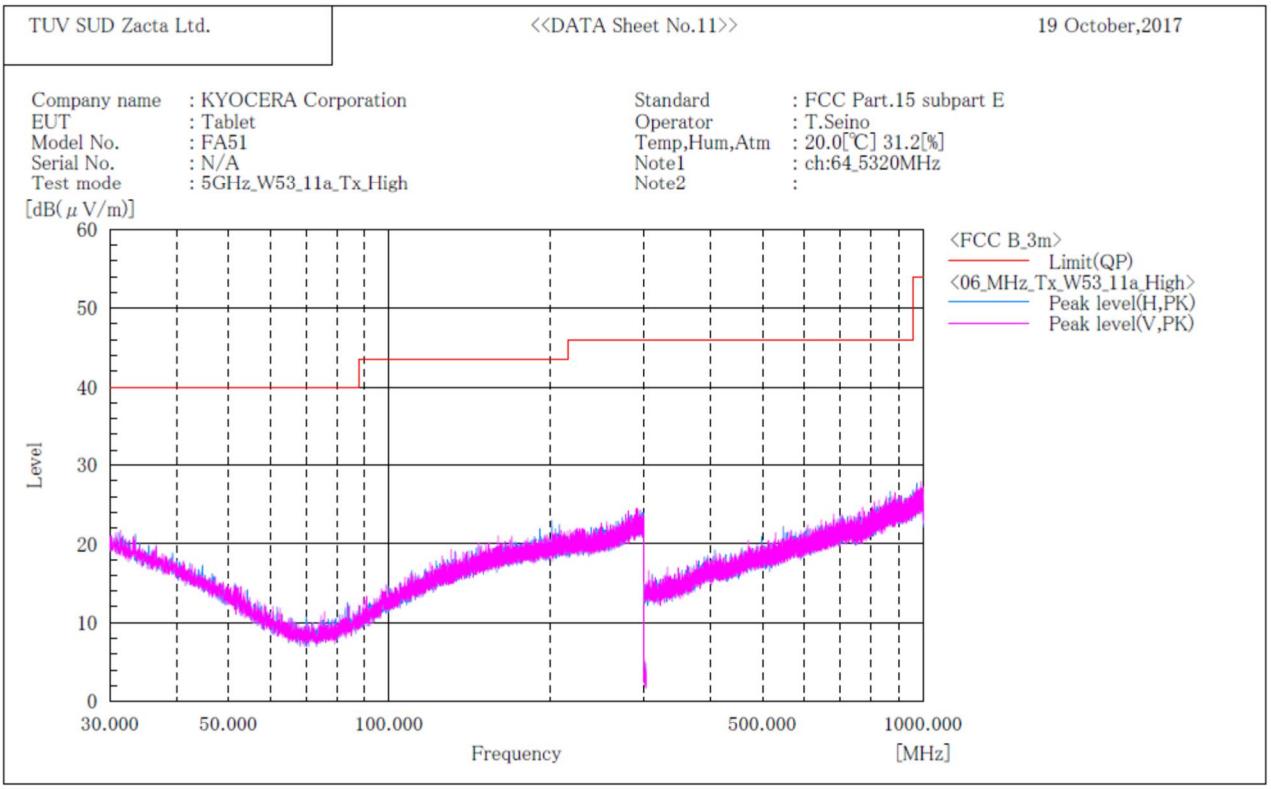
Final Result

No.	Frequency	(P)	Reading PK	c.f	Result PK	Limit PK	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]
1	10560.000	H	46.3	10.1	56.4	68.2	11.8	140.0	93.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W53 / Channel High
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

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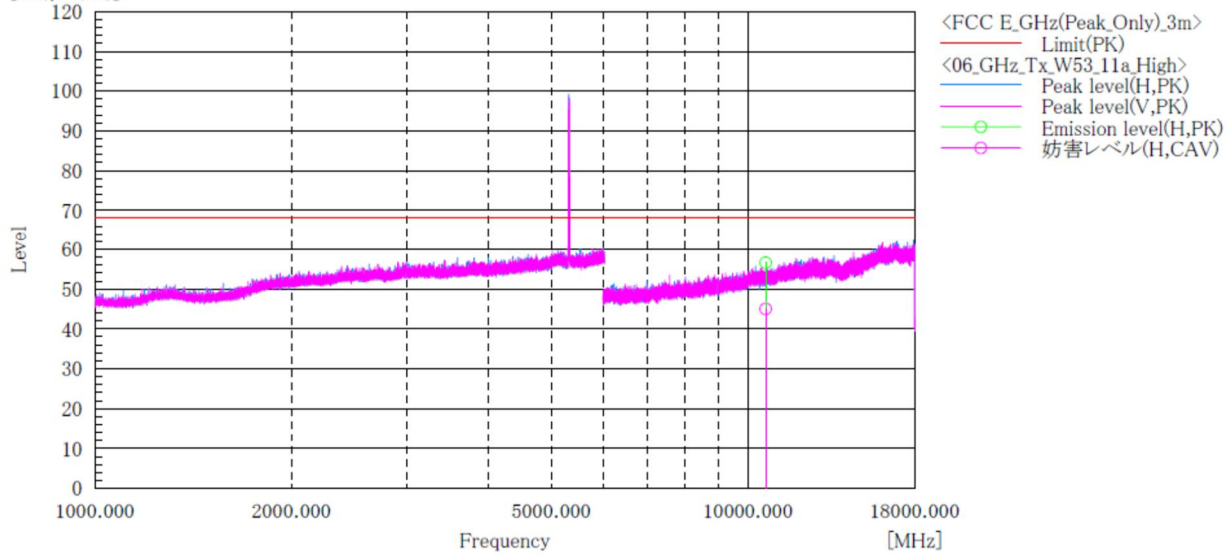
[11a]
W53 / Channel High
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.12>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:64_5320MHz
Test mode	: 5GHz_W53_11a_Tx_High	Note2	:



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	10640.000	H	46.4	34.8	10.2	56.6	45.0	74.0	17.4	9.0	130.0	151.0

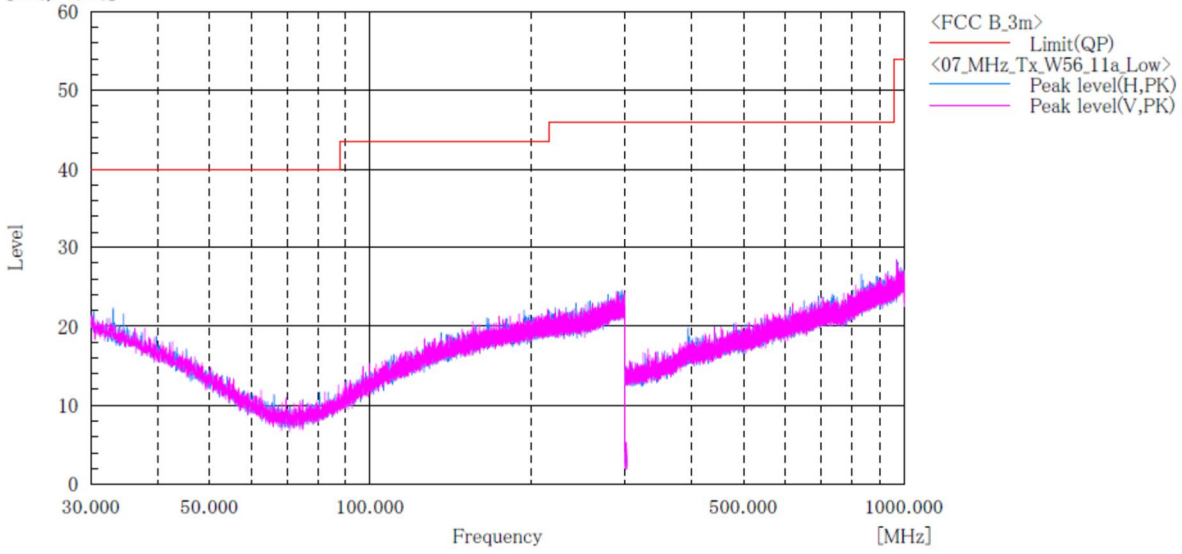
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W56 / Channel Low
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.13>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:100_5500MHz
Test mode	: 5GHz_W56_11a_Tx_Low	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

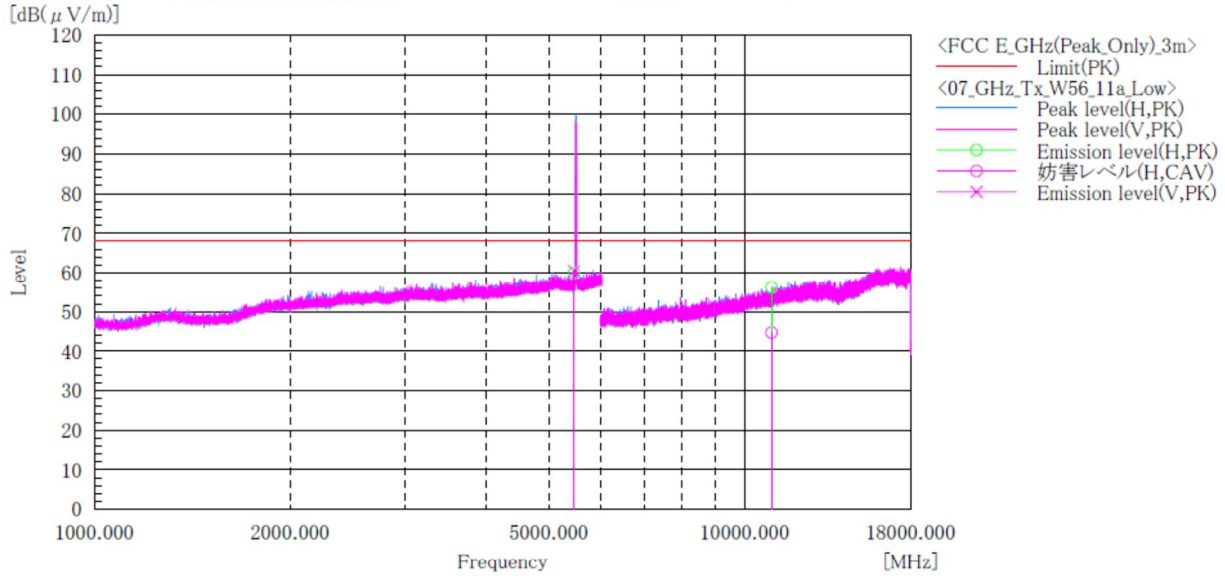
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W56 / Channel Low
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.14>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:100_5500MHz
Test mode	: 5GHz_W56_11a_Tx_High	Note2	:



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result CAV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [°]
1	5467.400	H	49.8	--------	10.2	60.0	--------	68.2	8.2	--------	129.0	248.0
2	5465.600	V	50.3	--------	10.2	60.5	--------	68.2	7.7	--------	162.0	275.0
3	11000.000	H	45.6	34.1	10.6	56.2	44.7	74.0	17.8	9.3	155.0	79.0

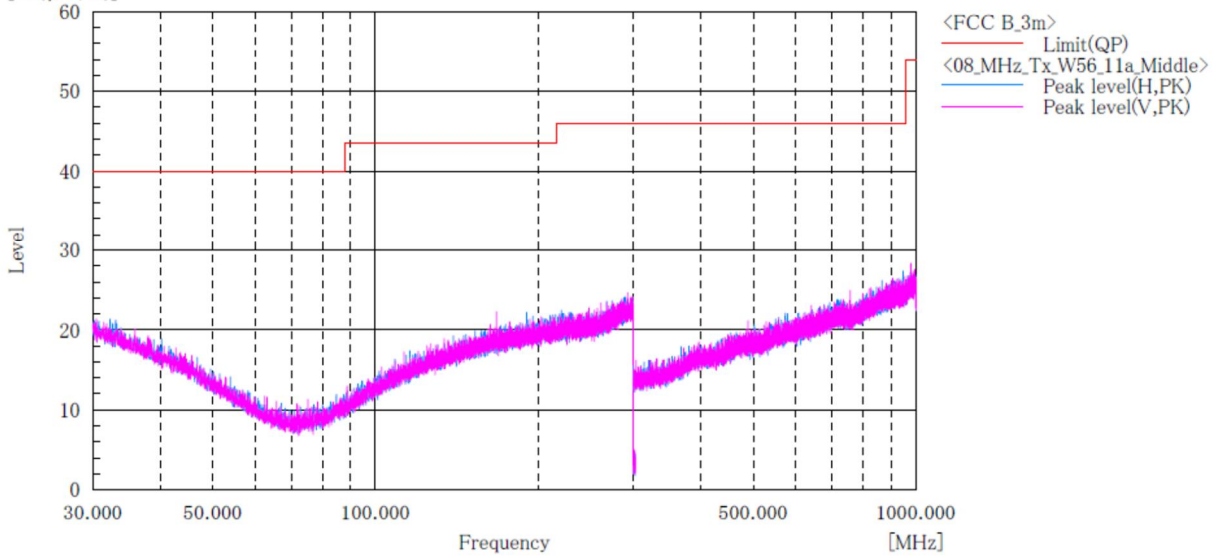
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W56 / Channel Middle
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.15>> 19 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Seino
Model No.	: FA51	Temp,Hum,Atm	: 20.0[℃] 31.2[%]
Serial No.	: N/A	Note1	: ch:116_5580MHz
Test mode	: 5GHz_W56_11a_Tx_Middle	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

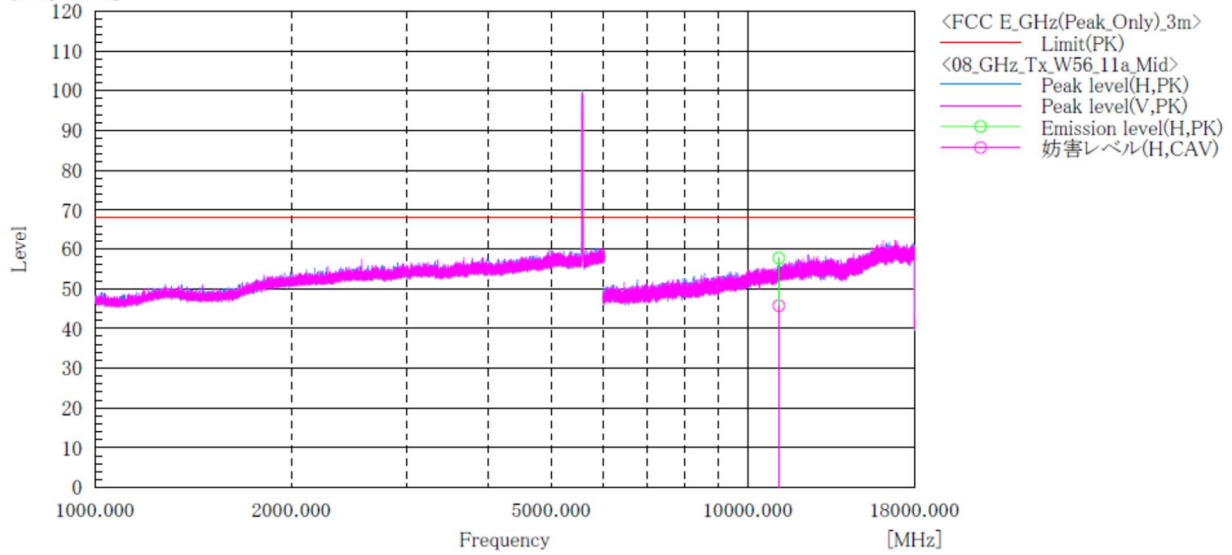
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11a]
W56 / Channel Middle
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.16>> 20 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 23.1[℃] 27.6[%]
Serial No.	: N/A	Note1	: ch:116_5580MHz
Test mode	: 5GHz_W56_11a_Tx_Mid	Note2	:



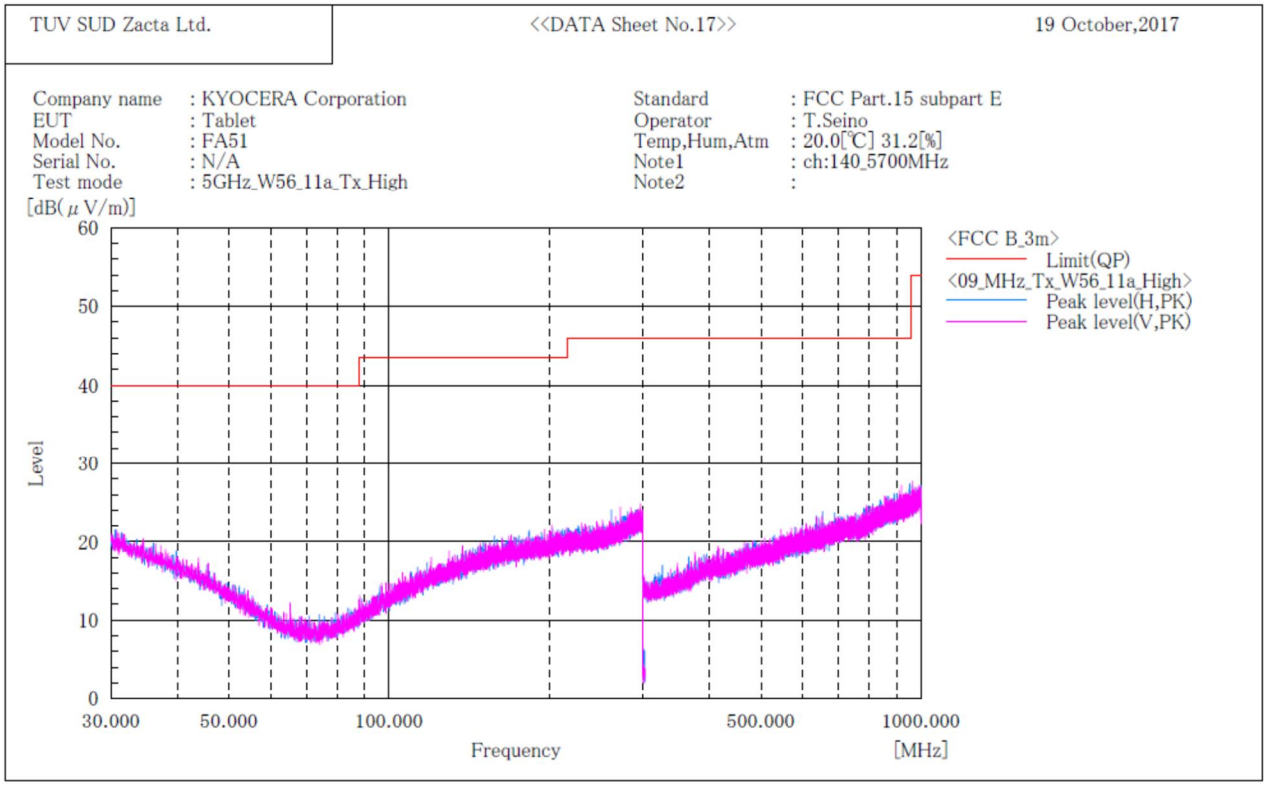
Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	11160.000	H	46.8	34.8	10.9	57.7	45.7	74.0	16.3	8.3	181.0	241.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W56 / Channel High
BELOW 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

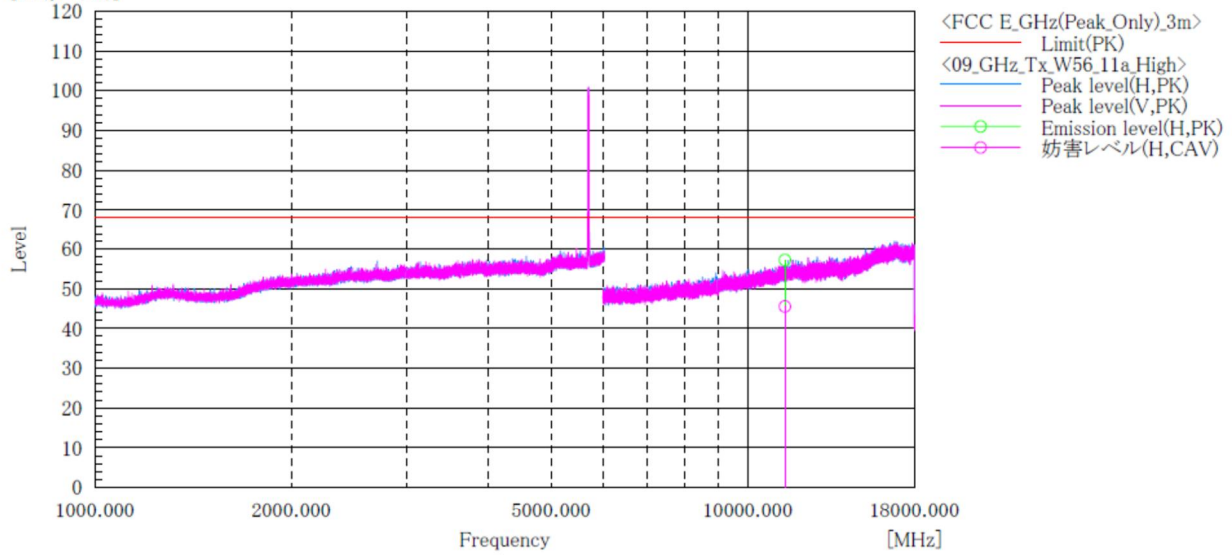
Zacta

[11a]
W56 / Channel High
ABOVE 1GHz

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.18>> 21 October,2017

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart E
EUT	: Tablet	Operator	: T.Watanabe
Model No.	: FA51	Temp,Hum,Atm	: 21.4[℃] 42.1[%]
Serial No.	: N/A	Note1	: ch:140_5700MHz
Test mode	: 5GHz_W56_11a_Tx_High	Note2	:



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	11400.000	H	46.0	34.3	11.2	57.2	45.5	74.0	16.8	8.5	128.0	212.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.