

Report on the RF Testing of:

KYOCERA Corporation
Mobile Phone, Model: CB70
FCC ID: JOYCB70

In accordance with FCC Part15 Subpart E

Prepared for: KYOCERA Corporation
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Document Number: JPD-TR-19188-0

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Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	27 NOV 2019

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EXECUTIVE SUMMARY

A sample(s) of this product was tested and found to be compliant with FCC Part15 Subpart E.



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1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-19188-0	First Issue	Refer to the cover page

1.2 Standards

CFR47 FCC Part 15 Subpart E

1.3 Test methods

ANSI C63.10-2013
KDB789033 D02 General U-NII Test Procedures New Rules v02r01

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Test item section	Test item	Condition	Result	Remark
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	-

1.6 Test information

None

1.7 Test set up

Table-top

1.8 Test period

22-October-2019 - 31-October-2019

2 Equipment Under Test

2.1 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 (EUT)	Mobile Phone
Model number	CB70
Serial number	N/A
Trade name	Kyocera
Number of sample(s)	1
EUT condition	Pre-Production
Power rating	Battery: DC 3.85 V
Size	(W) 71.0 × (D) 159.0 × (H) 8.9 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20°C to 60°C
Hardware version	DMT2
Software version	0.410HA
Firmware version	Not applicable
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): 5180 MHz-5320 MHz, 5500 MHz-5700 MHz IEEE802.11n/ac (HT40): 5190 MHz-5310 MHz, 5510 MHz-5670 MHz IEEE802.11ac (HT80): 5210 MHz, 5290 MHz, 5530 MHz, 5610 MHz
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): 20 MHz IEEE802.11n/ac (HT40): 40 MHz IEEE802.11ac (HT80): 80 MHz
Output power	19.477 mW (IEEE802.11a) 17.781 mW (IEEE802.11n: HT20) 20.405 mW (IEEE802.11n: HT40) 18.613 mW (IEEE802.11ac: HT80)
Antenna type	Internal antenna
Antenna gain	5.15-5.25 GHz band: -0.2 dBi 5.25-5.35 GHz band: -0.2 dBi 5.47-5.725 GHz band: +2.0 dBi

2.2 Modification to the EUT

The table below details modifications made to the EUT during the test project.

Modification State	Description of Modification	Modification fitted by	Date of Modification
Model: CB70, Serial Number: N/A			
0	As supplied by the applicant	Not Applicable	Not Applicable

2.3 Variation of family model(s)

2.3.1 List of family model(s)

Not applicable

2.3.2 Reason for selection of EUT

Not applicable

2.4 Operating channels and frequencies

[IEEE802.11a/n (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 (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 Description of test 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]
5.2 GHz Band	36	5180	38	5190	42	5210
	40	5200	-	-	-	-
	48	5240	46	5230	-	-
5.3 GHz Band	52	5260	54	5270	58	5290
	56	5280	-	-	-	-
	64	5320	62	5310	-	-
5.6 GHz 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
5.2 GHz 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)
5.3 GHz 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)
5.6 GHz 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 X axis and the worst case recorded.

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.6 Operating flow

- Tx mode

- Test program setup to the Software
- Select a Test mode
Operating frequency: 5.2GHz Band, 5.3GHz Band, 5.6GHz Band
- Start test mode

- Rx mode

- Test program setup to the Software
- Select a Test mode
Operating frequency: 5.2GHz Band, 5.3GHz Band, 5.6GHz Band
- Start test mode

3 Configuration of Equipment

Numbers assigned to equipment on the diagram in “3.3 System configuration” correspond to the lists in “3.1 Equipment used” and “3.2 Cable(s) used”.

Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

3.1 Equipment used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Mobile Phone	KYOCERA	CB70	N/A	JOYCB70	EUT
2	AC Adapter	KDDI	0301PQA	N/A	N/A	*

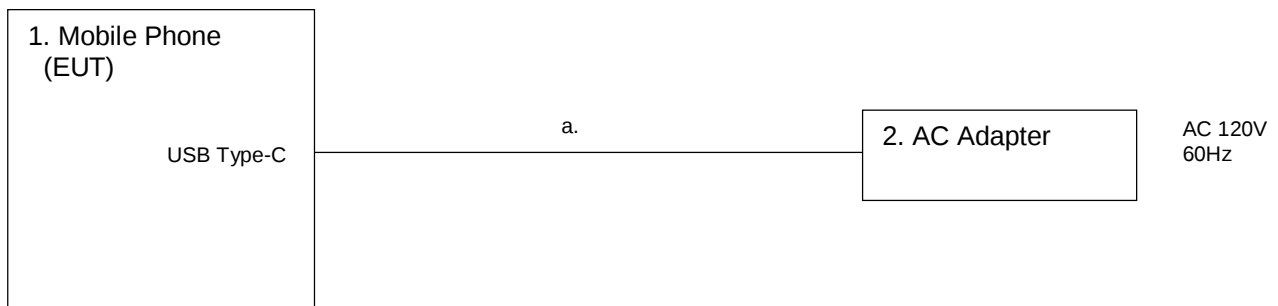
*: AC power line Conducted Emission Test.

3.2 Cable(s) used

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

*: AC power line Conducted Emission Test.

3.3 System configuration



4 Test Result

4.1 26dB Bandwidth and 99% Occupied Bandwidth

4.1.1 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=200 kHz/430 kHz/820 kHz, VBW=620 kHz/1.3 MHz/2.4 MHz, Span=40 MHz/80 MHz/160 MHz
- Sweep=auto, Detector=Peak, Trace mode=Max hold

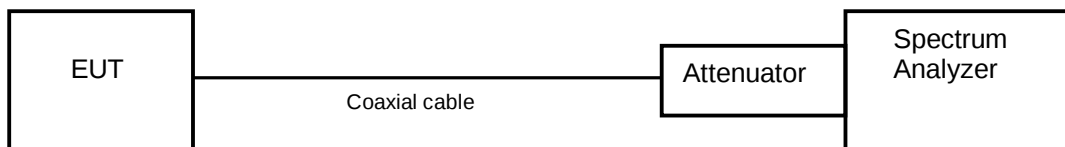
The EUT was set to operate with following conditions.

- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band

The test mode of EUT is as follows.

- Tx mode

- Test configuration



4.1.2 Limit

None

4.1.3 Measurement result

Date : 23-October-2019

Temperature : 20.6 [°C]

Humidity : 60.8 [%]

Test place : Shielded room No.4

Test engineer :

Taiki Watanabe

Mode	Band	Channel	Frequency (MHz)	26 dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11a	5.2 GHz Band	36	5180	19.667	16.4350
		40	5200	19.912	16.3964
		48	5240	19.983	16.4468
	5.3 GHz Band	52	5260	19.992	16.4573
		56	5280	19.924	16.4214
		64	5320	20.022	16.4571
	5.6 GHz Band	100	5500	19.887	16.4145
		116	5580	19.890	16.4189
		140	5700	20.019	16.4037

Mode	Band	Channel	Frequency (MHz)	26 dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11n (20 MHz)	5.2 GHz Band	36	5180	20.093	17.5693
		40	5200	20.126	17.5341
		48	5240	20.272	17.5364
	5.3 GHz Band	52	5260	20.217	17.5733
		56	5280	20.218	17.5567
		64	5320	20.050	17.5463
	5.6 GHz Band	100	5500	20.399	17.5493
		116	5580	20.077	17.5699
		140	5700	20.364	17.5666

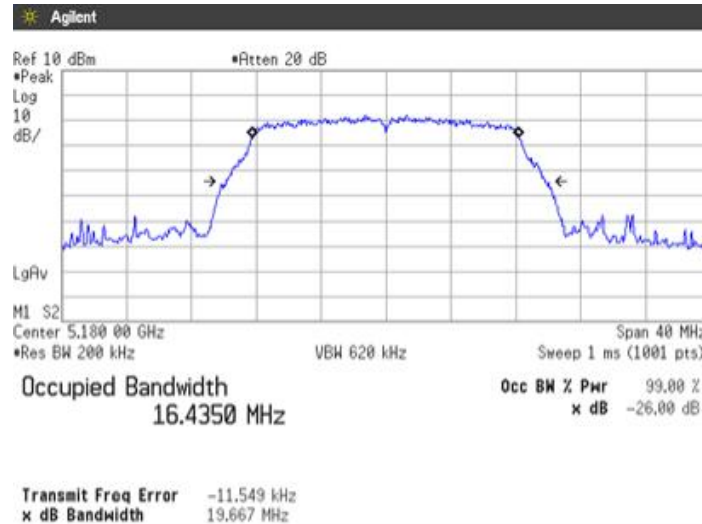
Mode	Band	Channel	Frequency (MHz)	26 dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11n (40 MHz)	5.2 GHz Band	38	5190	40.343	35.9653
		46	5230	40.332	36.0058
	5.3 GHz Band	54	5270	40.363	35.9732
		62	5310	40.644	35.9328
	5.6 GHz Band	102	5510	40.564	35.9893
		110	5550	40.758	35.9735
		134	5670	40.274	36.0233

Mode	Band	Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% Occupied bandwidth (MHz)
802.11ac (80 MHz)	5.2 GHz Band	42	5210	80.682	75.1195
	5.3 GHz Band	58	5290	80.849	75.1941
	5.6 GHz Band	106	5530	80.762	75.1556
		122	5610	80.820	75.1369

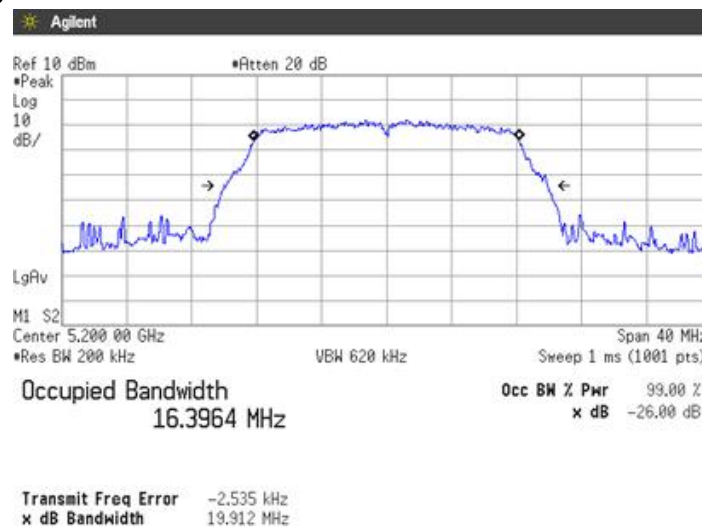
4.1.4 Trace data

[IEEE802.11a]
(5.2 GHz Band)

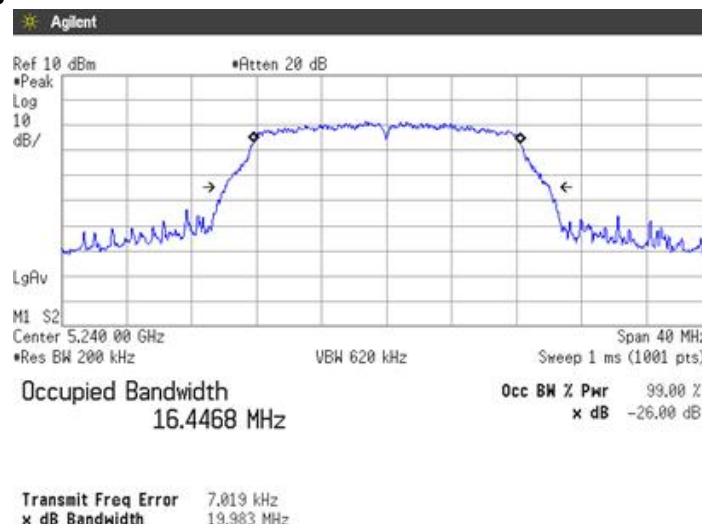
Channel: 36



Channel: 40

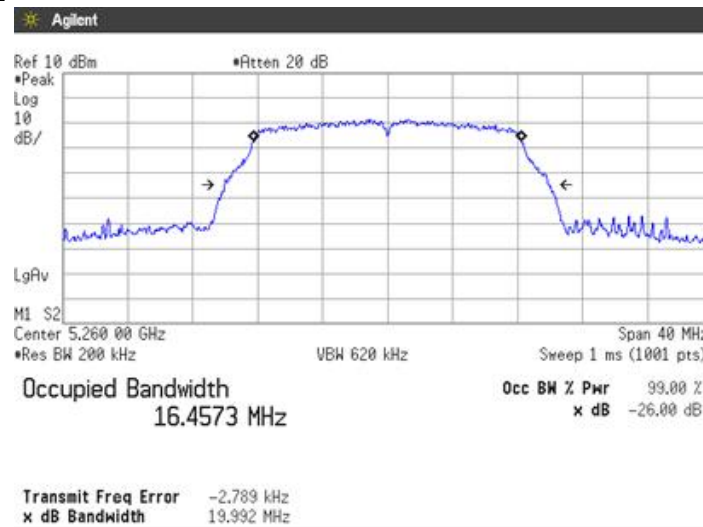


Channel: 48

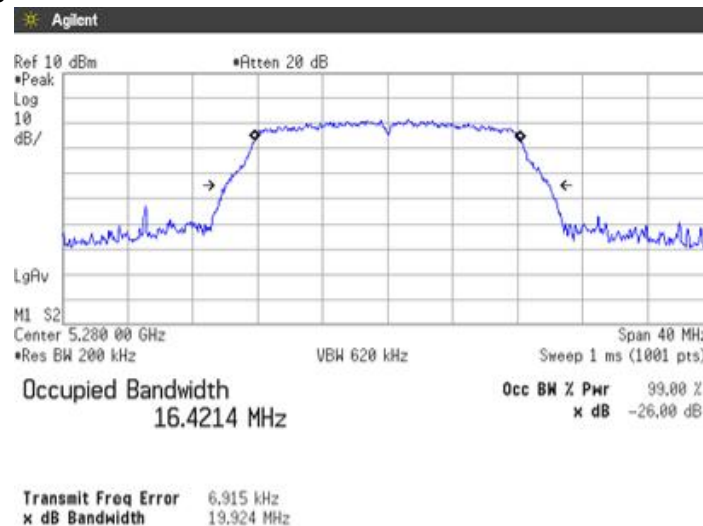


(5.3 GHz Band)

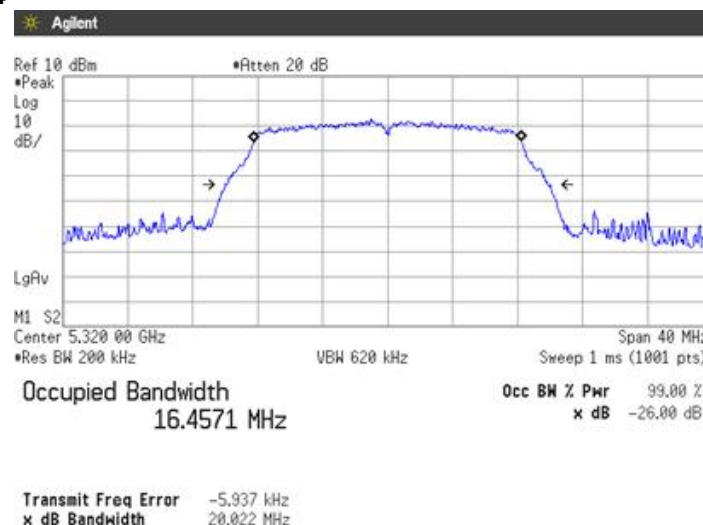
Channel: 52



Channel: 56

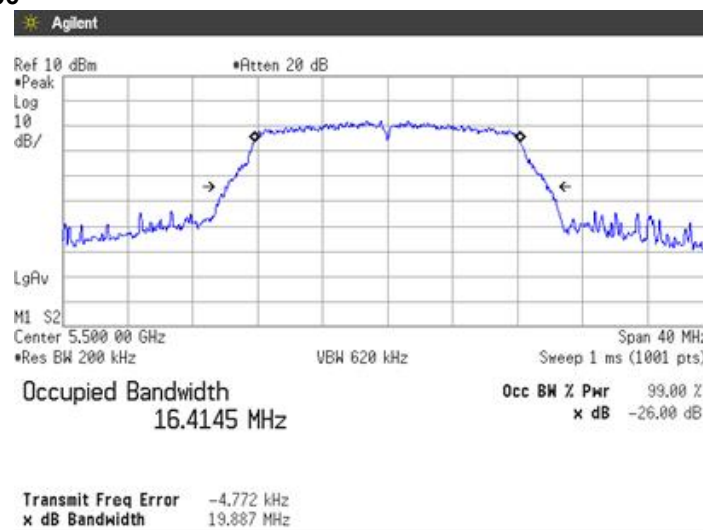


Channel: 64

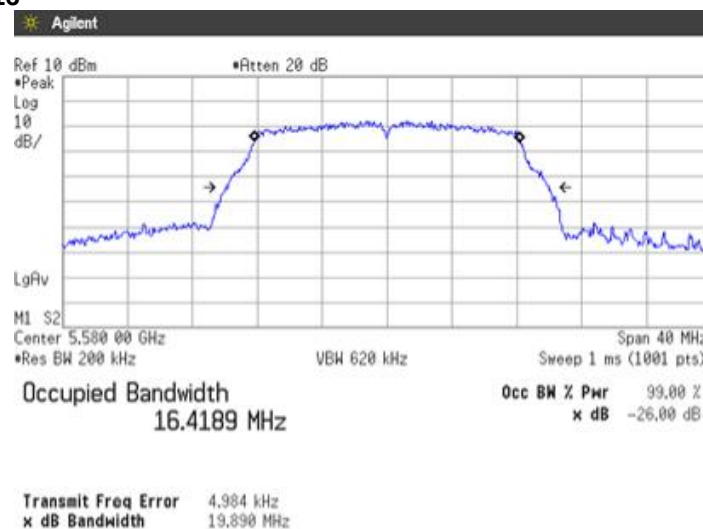


(5.6 GHz Band)

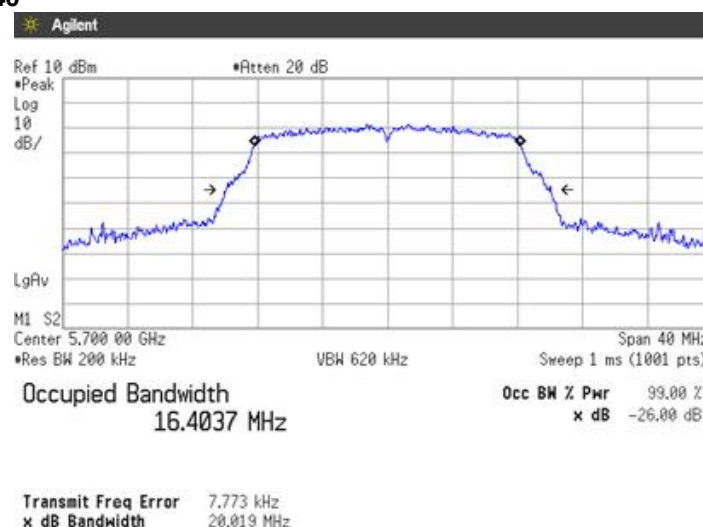
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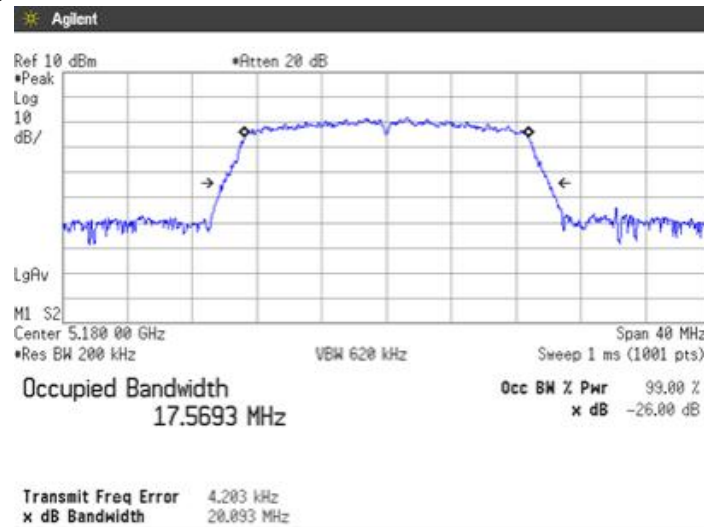
Channel: 116



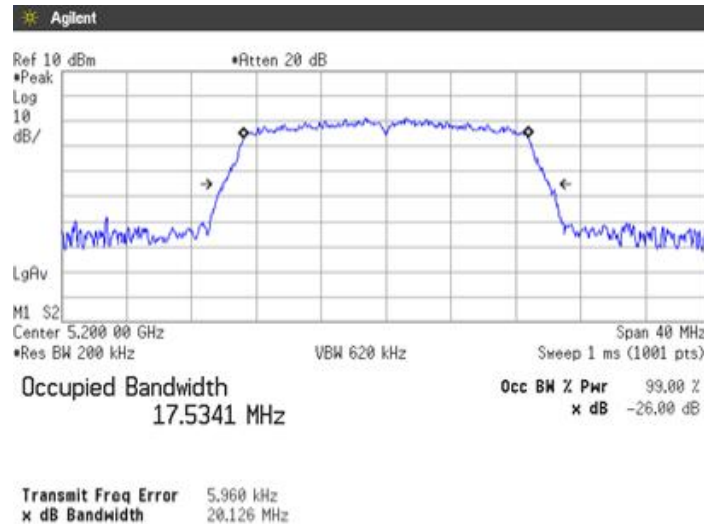
Channel: 140



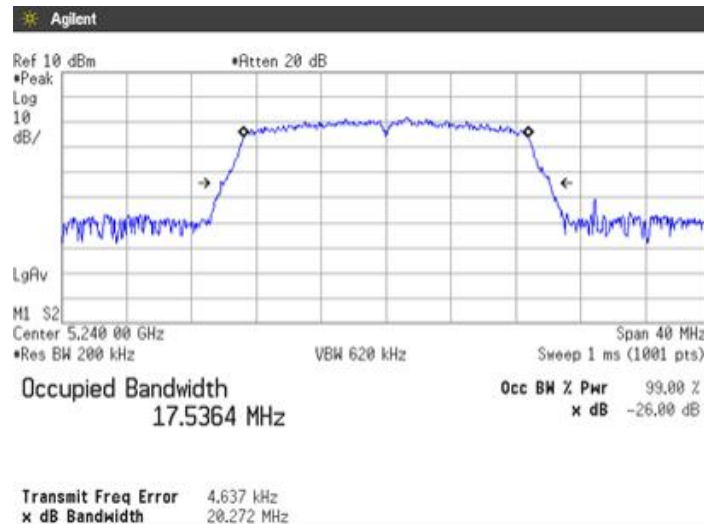
[IEEE802.11n (HT20)]
(5.2 GHz Band)
Channel: 36



Channel: 40

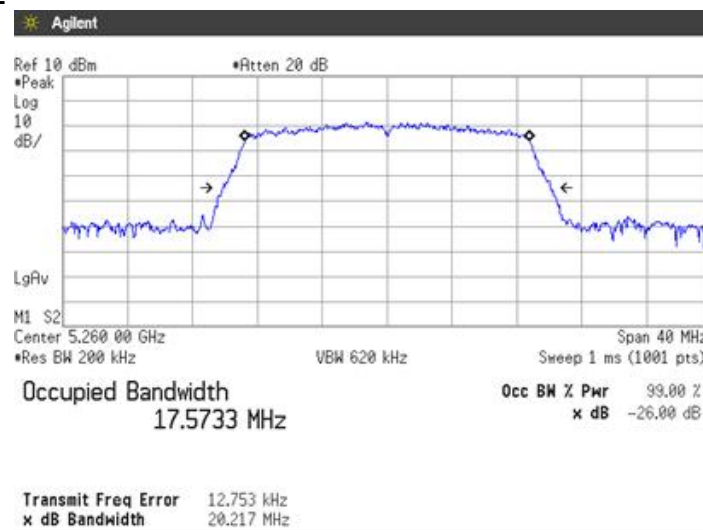


Channel: 48

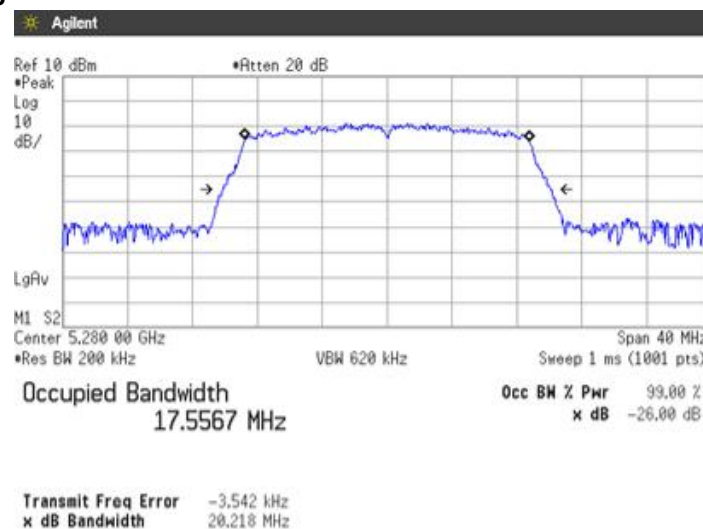


(5.3 GHz Band)

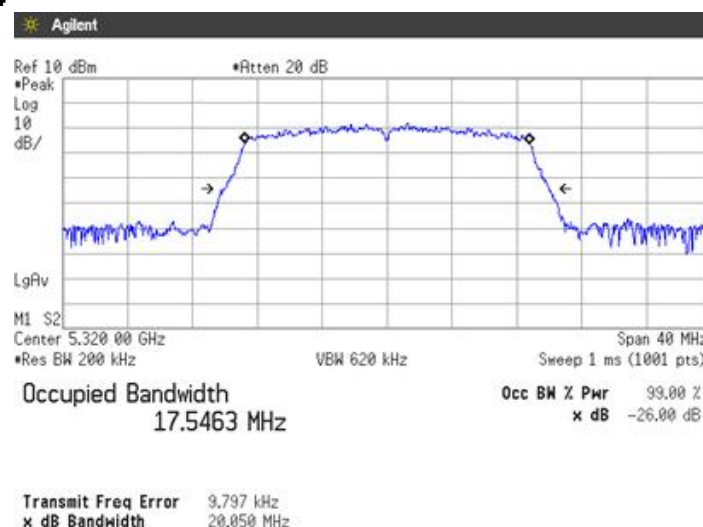
Channel: 52



Channel: 56

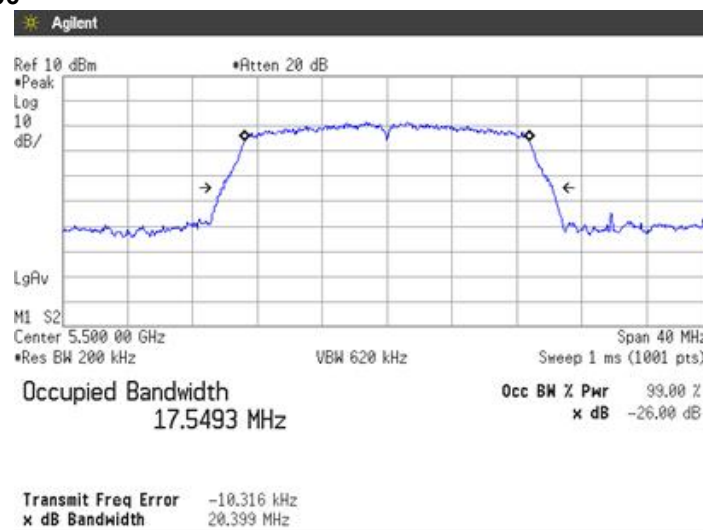


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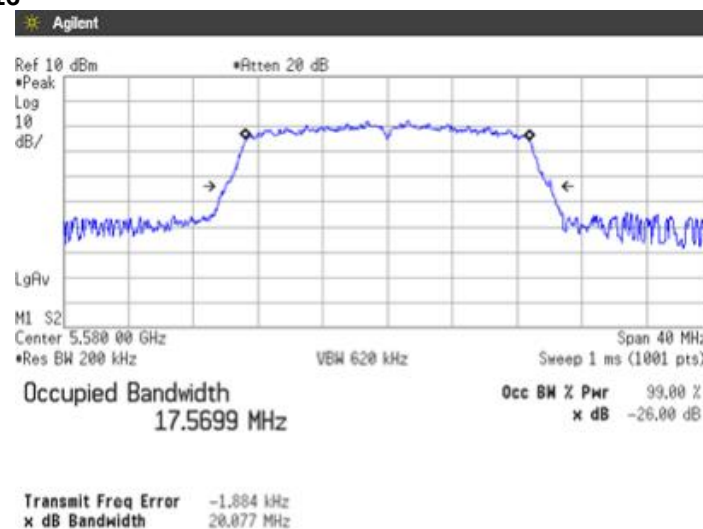


(5.6 GHz Band)

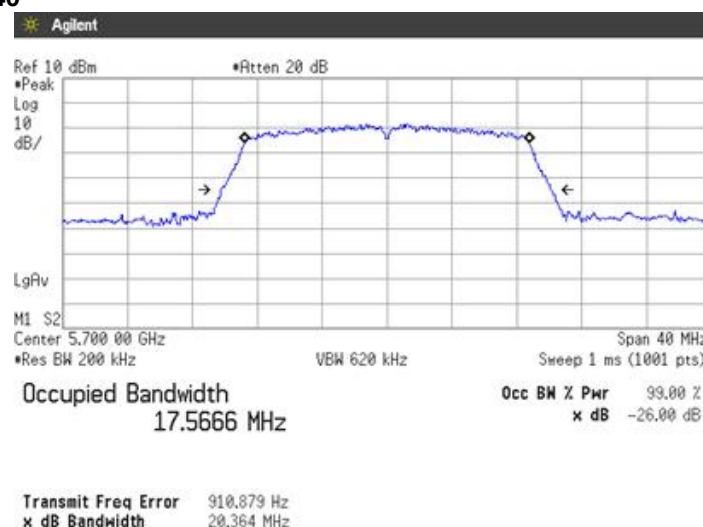
Channel: 100



Channel: 116

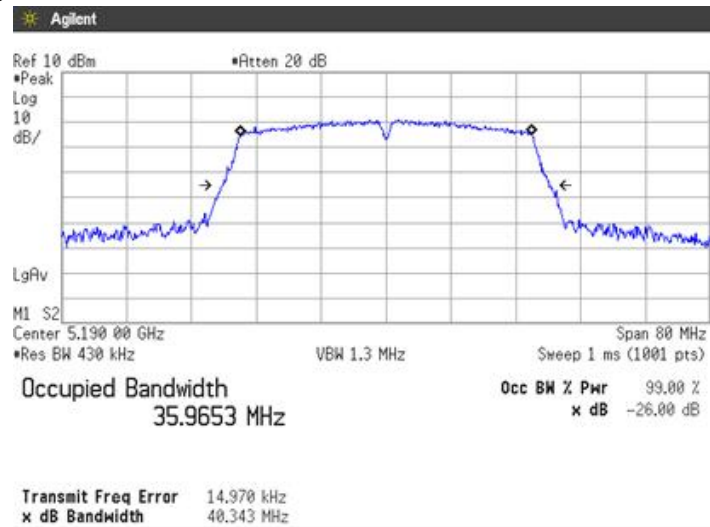


Channel: 140

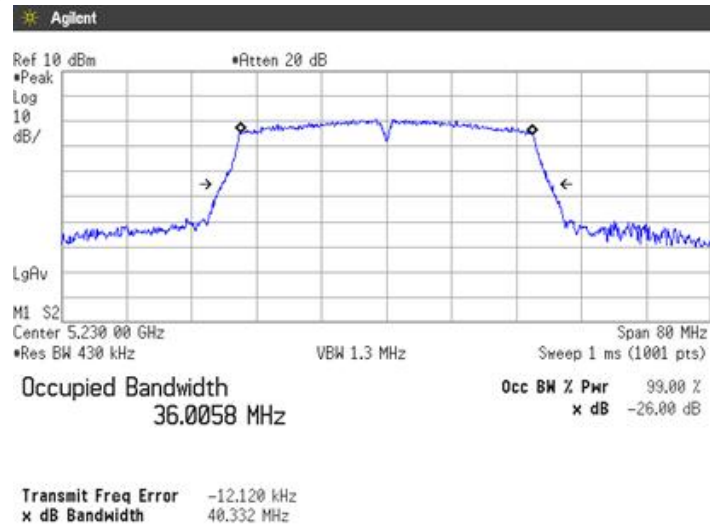


[IEEE802.11n (HT40)]
(5.2 GHz Band)

Channel: 38

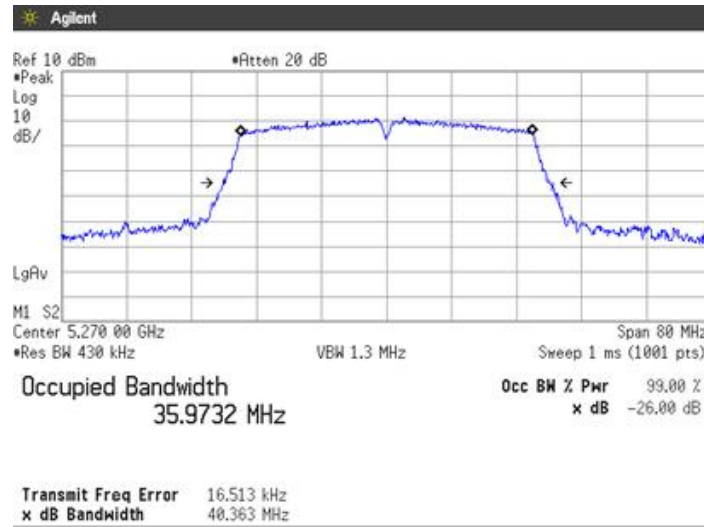


Channel: 46

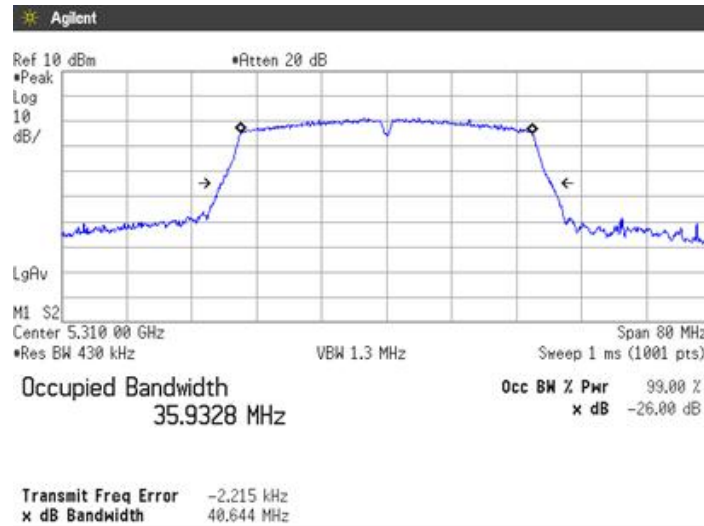


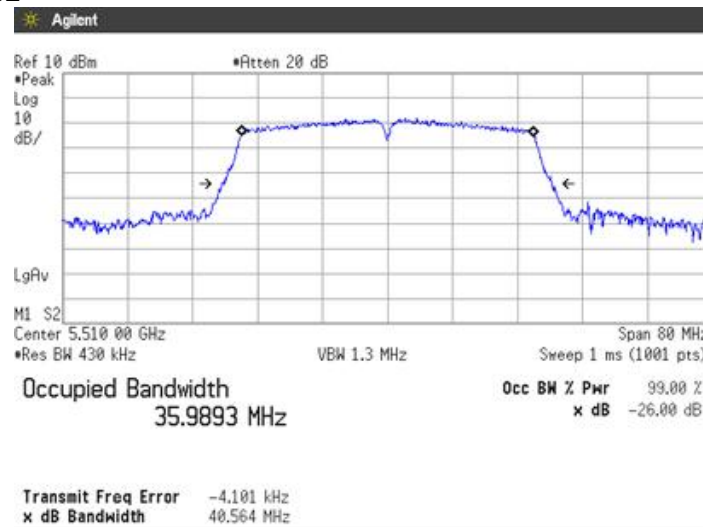
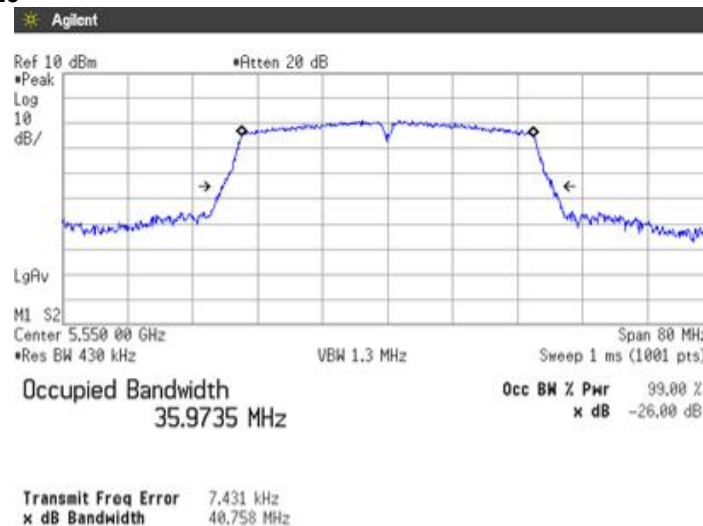
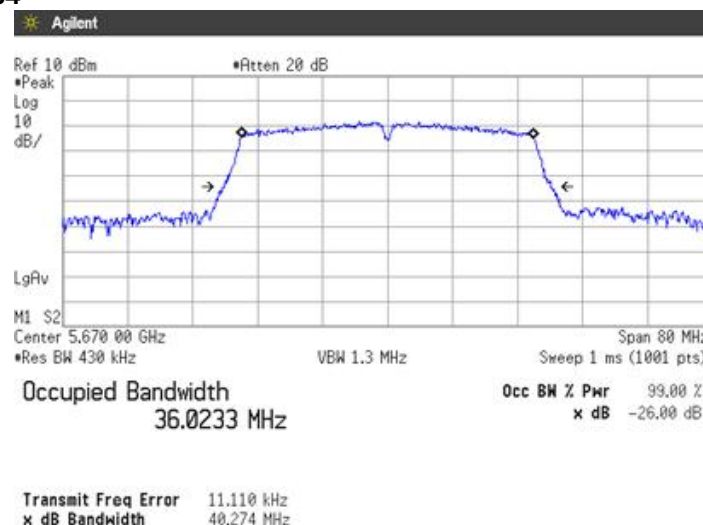
(5.3 GHz Band)

Channel: 54

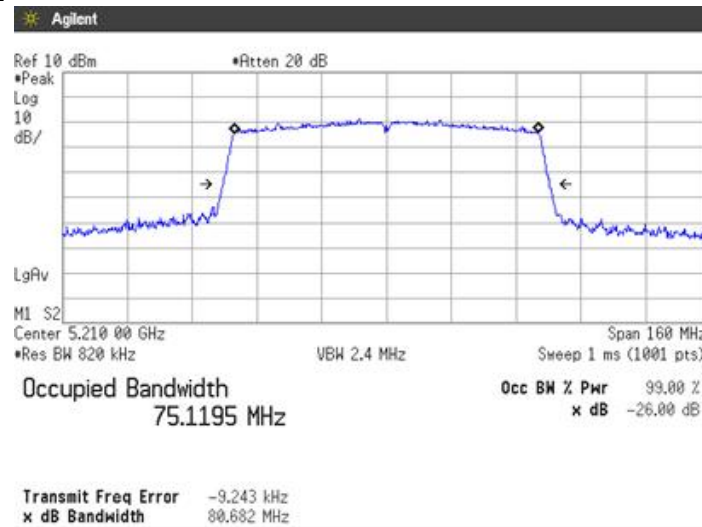


Channel: 62

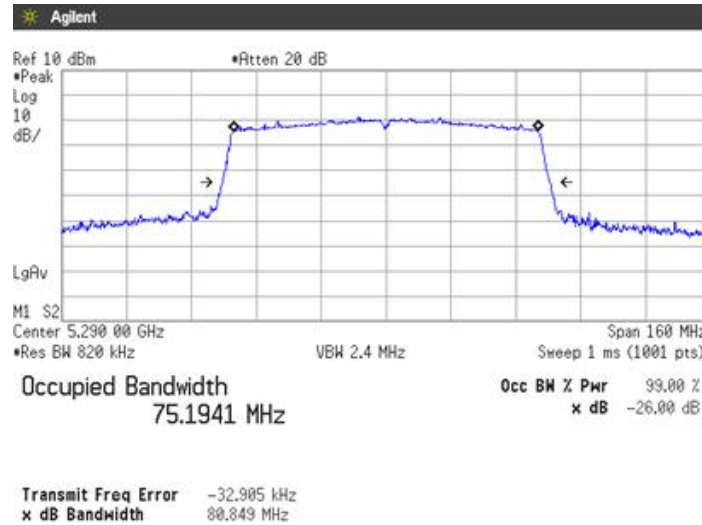


(5.6 GHz Band)**Channel: 102****Channel: 110****Channel: 134**

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

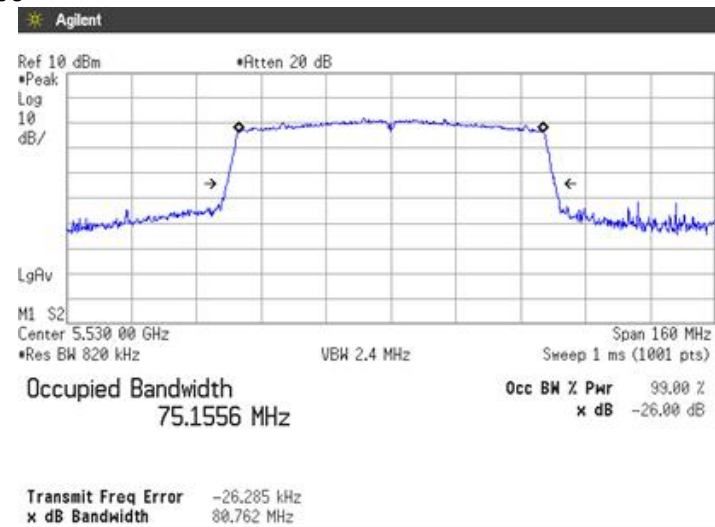


(5.3GHz Band)
Channel: 58

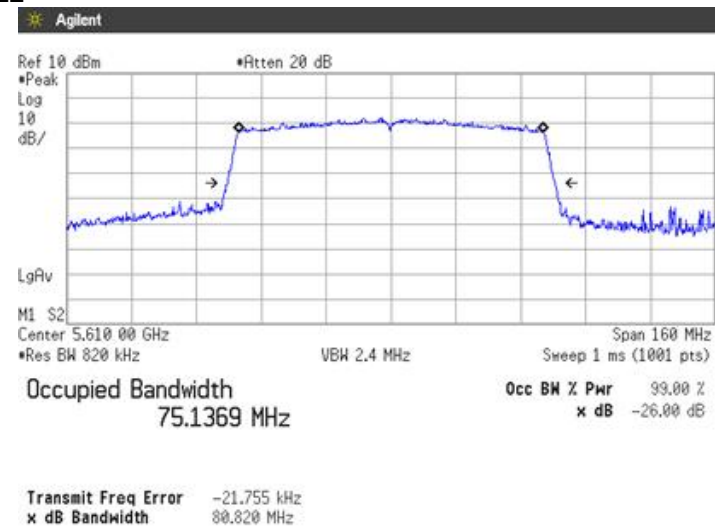


(5.6 GHz Band)

Channel: 106



Channel: 122



4.2 Maximum Conducted Output Power

4.2.1 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;

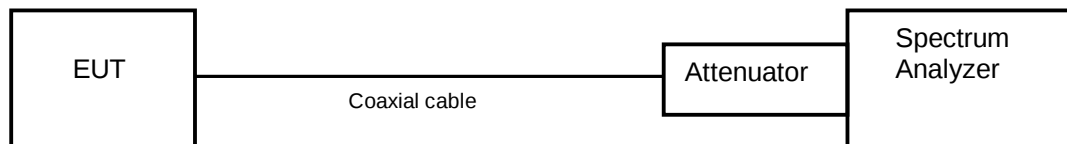
- RBW=1MHz, VBW=3MHz, Span=35MHz/70MHz/140MHz, Sweep=auto, Detector=RMS, Trace mode=Averaging

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



4.2.2 Limit

- (1) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6 dBi.
- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250mW or $11\text{dBm} + 10\log B$, where B is the 2 dB emission bandwidth in megahertz.
- (3) For the 5.725-5.85 GHz bands, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

<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	-0.2	23.97
	802.11n HT20				
	802.11n HT20				
	802.11ac HT80				

Band	Mode	Power Limit (mW)	Calculated Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
		Least 26dBc BW (MHz)			
5.3GHz Band	802.11a	250	23.97	-0.2	23.97
		19.924	23.99		
	802.11n HT20	250	23.97		23.97
		20.050	24.02		
	802.11n HT20	250	23.97		23.97
		40.363	27.06		
	802.11ac HT80	250	23.97		23.97
		80.849	30.08		

Band	Mode	Power Limit (mW)	Calculated Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
		Least 26dBc BW (MHz)			
5.6GHz Band	802.11a	250	23.97	2.0	23.97
		19.887	23.99		
	802.11n HT20	250	23.97		23.97
		20.077	24.03		
	802.11n HT20	250	23.97		23.97
		40.274	27.05		
	802.11ac HT80	250	23.97		23.97
		80.762	30.07		

4.2.3 Measurement result

Date : 23-October-2019
 Temperature : 20.6 [°C]
 Humidity : 60.8 [%]
 Test place : Shielded room No.4

Test engineer : Taiki Watanabe

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	12.13	1.392	1.436	0.969	0.135	12.265	16.847
	40	5200	12.11					12.245	16.769
	48	5240	12.23					12.365	17.239
	52	5260	12.16	1.392	1.436	0.969	0.135	12.295	16.963
	56	5280	12.22					12.355	17.199
	64	5320	11.73					11.865	15.364
	100	5500	11.93	1.392	1.436	0.969	0.135	12.065	16.088
	116	5580	12.76					12.895	19.477
	140	5700	12.41					12.545	17.969

Note1: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10\log(1/x)$

Note2: $\text{Test Result} = \text{Reading} + \text{DCF}$

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	12.10	1.288	1.332	0.967	0.146	12.246	16.772
	40	5200	12.11					12.256	16.811
	48	5240	12.06					12.206	16.618
	52	5260	12.03	1.288	1.332	0.967	0.146	12.176	16.504
	56	5280	11.45					11.596	14.441
	64	5320	11.58					11.726	14.880
	100	5500	12.36	1.286	1.328	0.968	0.140	12.500	17.781
	116	5580	11.91					12.050	16.031
	140	5700	12.35					12.490	17.740

Note: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10\log(1/x)$

Note2: $\text{Test Result} = \text{Reading} + \text{DCF}$

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	11.42	0.636	0.680	0.935	0.291	11.711	14.827
	46	5230	11.59					11.881	15.419
	54	5270	11.37	0.635	0.680	0.934	0.297	11.667	14.680
	62	5310	12.14					12.437	17.528
	102	5510	12.28	0.635	0.680	0.934	0.297	12.577	18.102
	110	5550	12.24					13.097	20.405
	134	5670	11.50					11.797	15.126

Note: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10 \log (1/x)$

Note2: $\text{Test Result} = \text{Reading} + \text{DCF}$

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	11.79	0.324	0.369	0.878	0.565	12.355	17.198
	58	5290	11.68	0.323	0.368	0.878	0.566	12.246	16.774
	106	5530	11.90	0.324	0.369	0.879	0.561	12.461	17.625
	122	5610	12.12	0.323	0.369	0.875	0.578	12.698	18.613

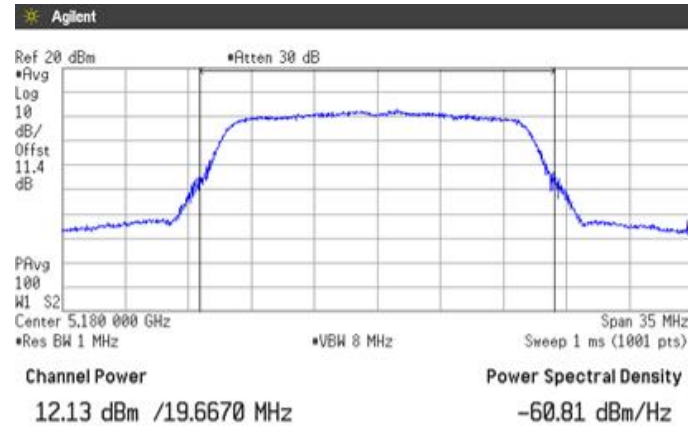
Note: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10 \log (1/x)$

Note2: $\text{Test Result} = \text{Reading} + \text{DCF}$

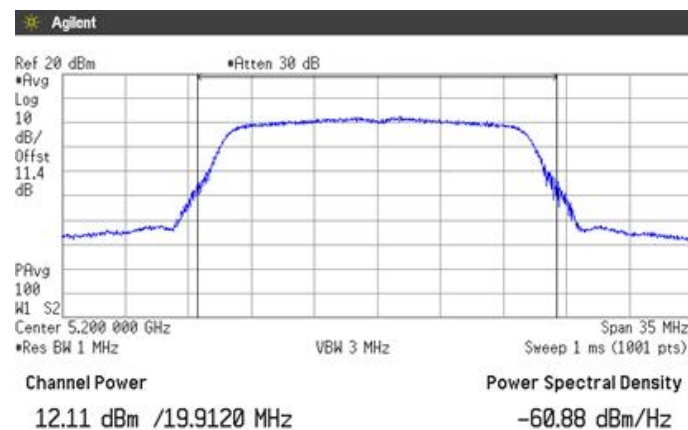
4.2.4 Trace data

[IEEE802.11a]
(5.2GHz Band)

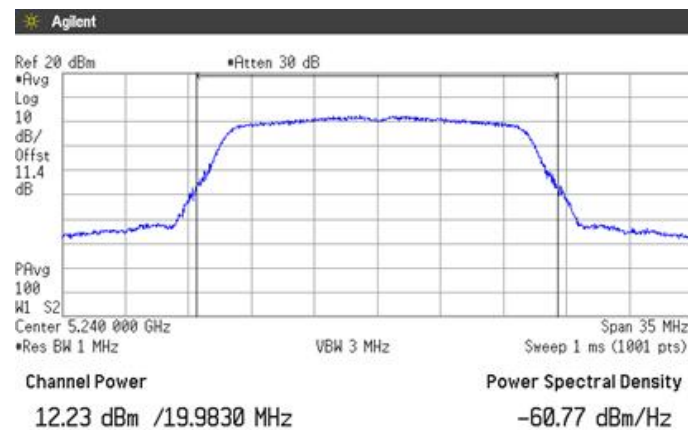
Channel: 36



Channel: 40

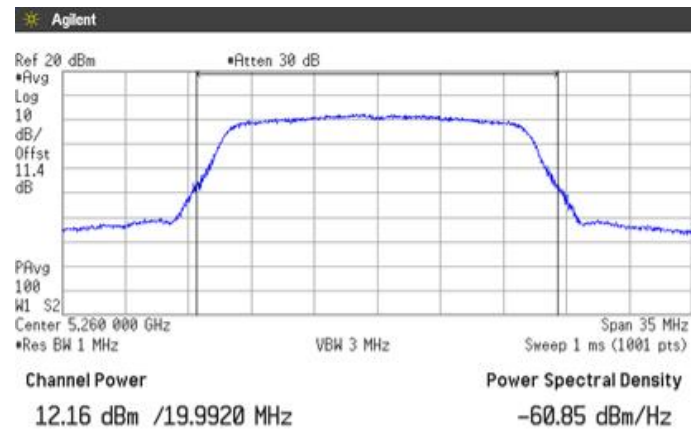


Channel: 48

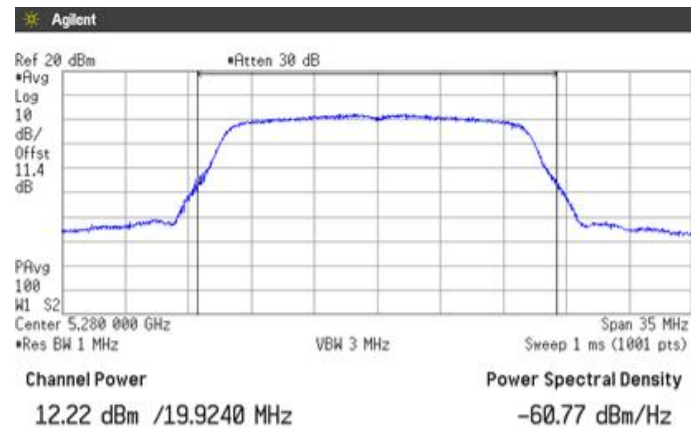


(5.3GHz Band)

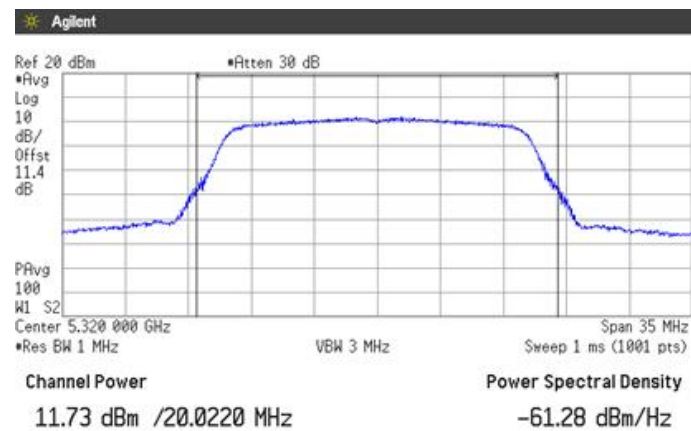
Channel: 52

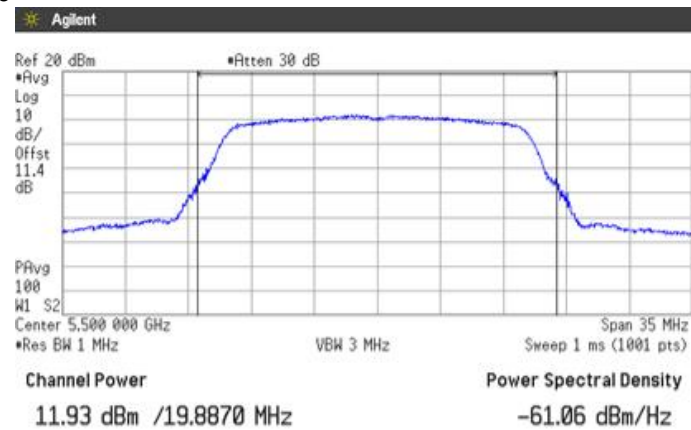
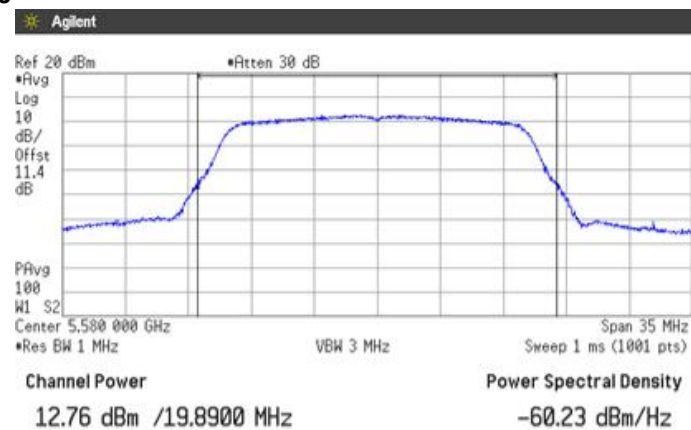
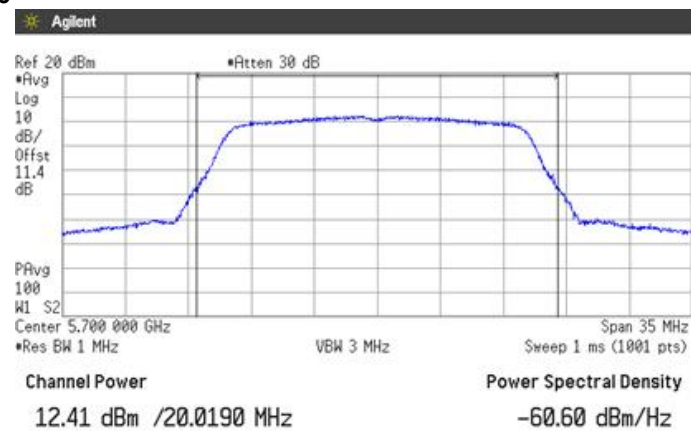


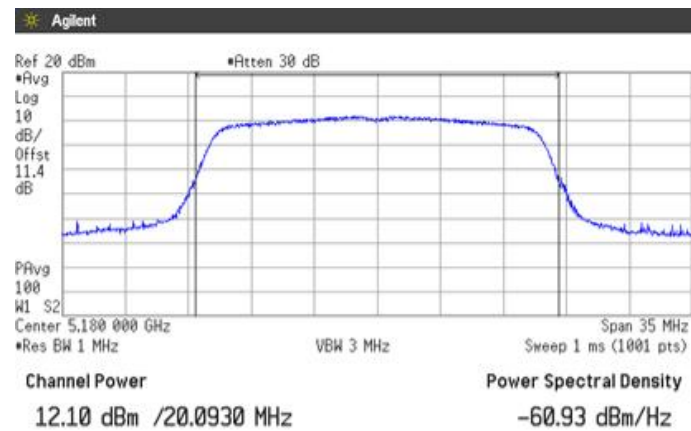
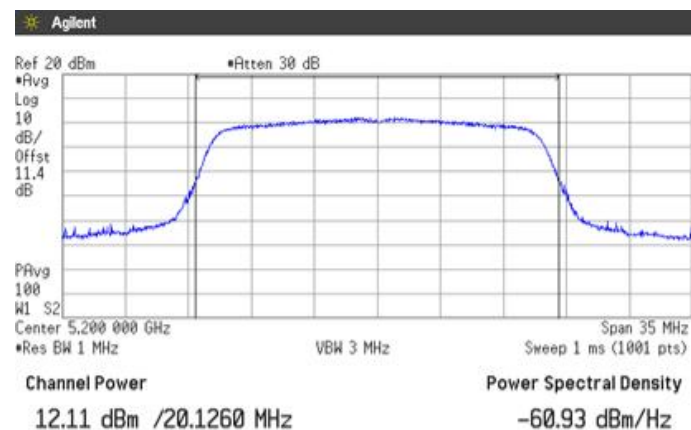
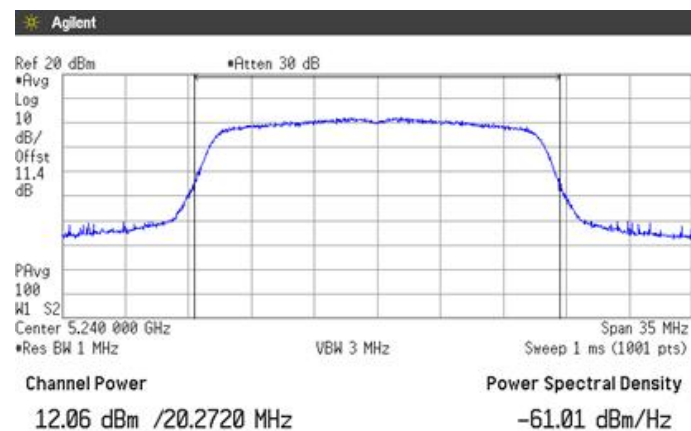
Channel: 56



Channel: 64

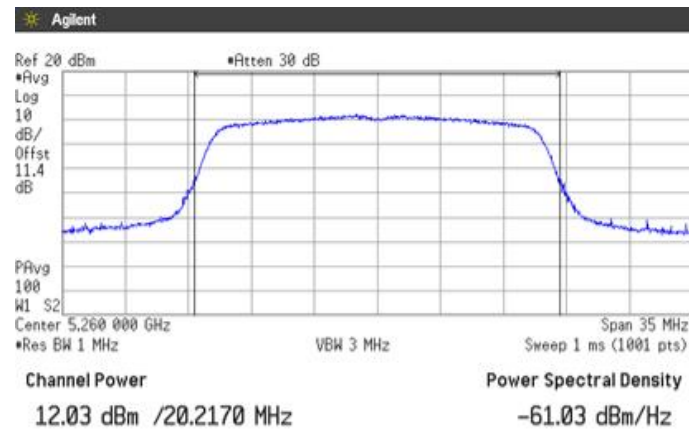


(5.6GHz Band)**Channel: 100****Channel: 116****Channel: 140**

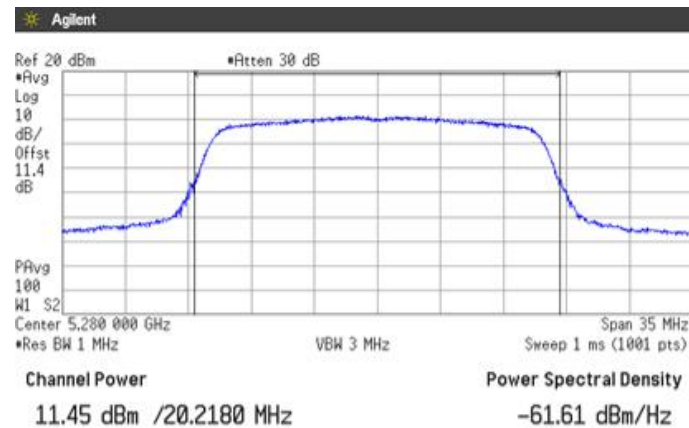
**[IEEE802.11n (HT20)]
(5.2GHz Band)****Channel: 36****Channel: 40****Channel: 48**

(5.3GHz Band)

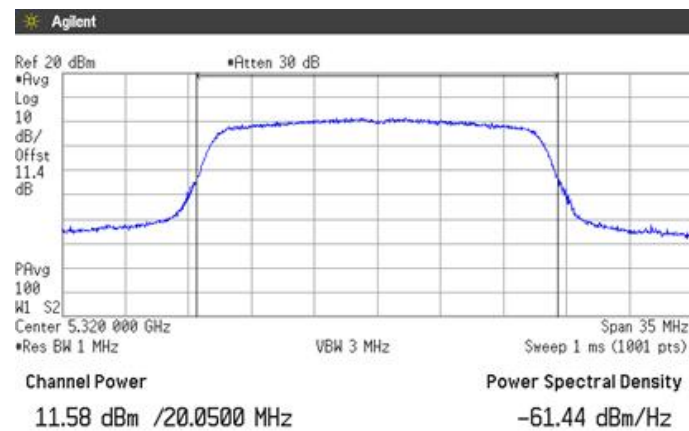
Channel: 52



Channel: 56

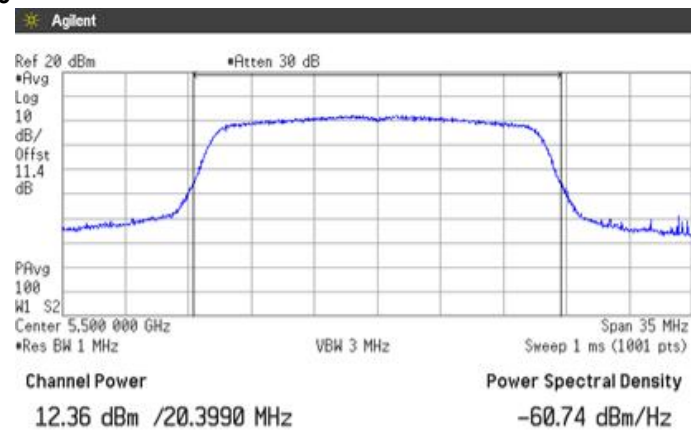


Channel: 64

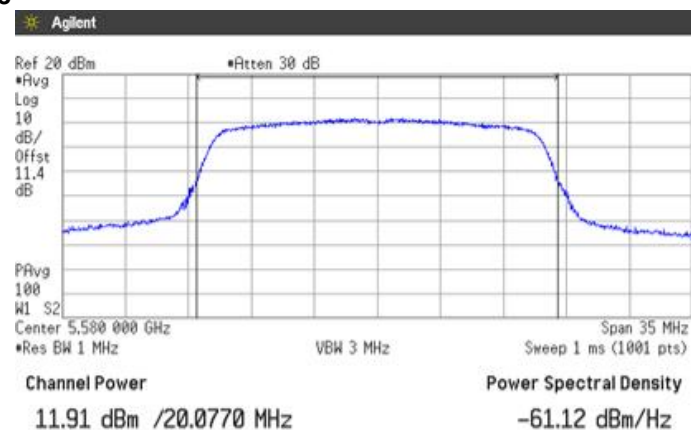


(5.6GHz Band)

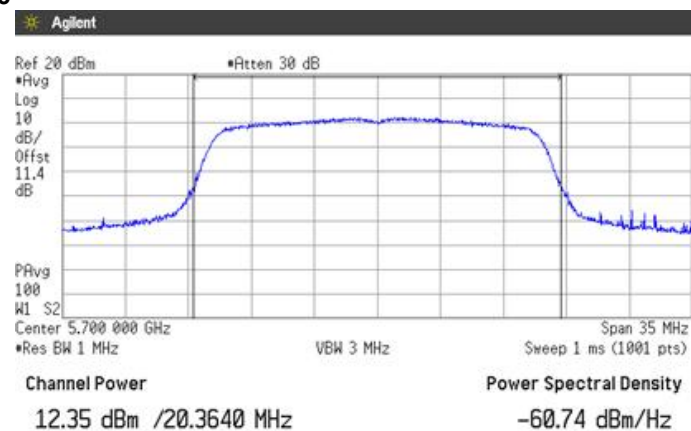
Channel: 100



Channel: 116

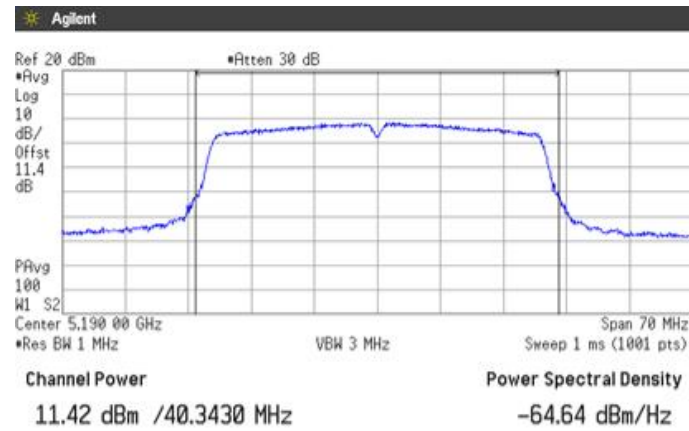


Channel: 140

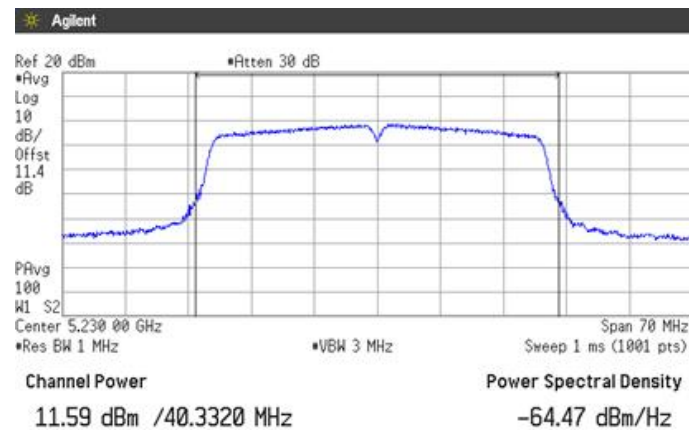


[IEEE802.11n (HT40)]
(5.2GHz Band)

Channel: 38

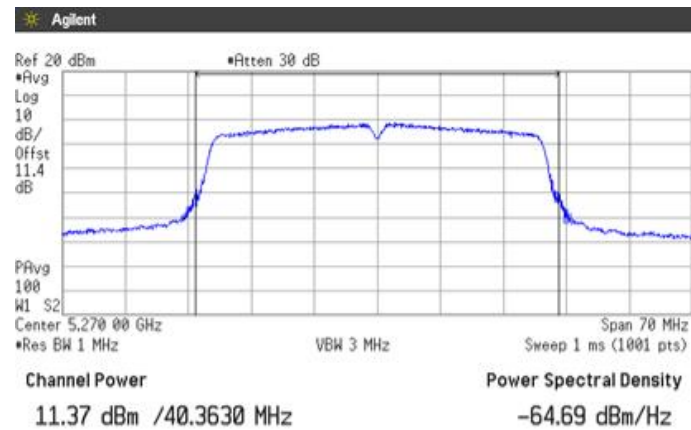


Channel: 46

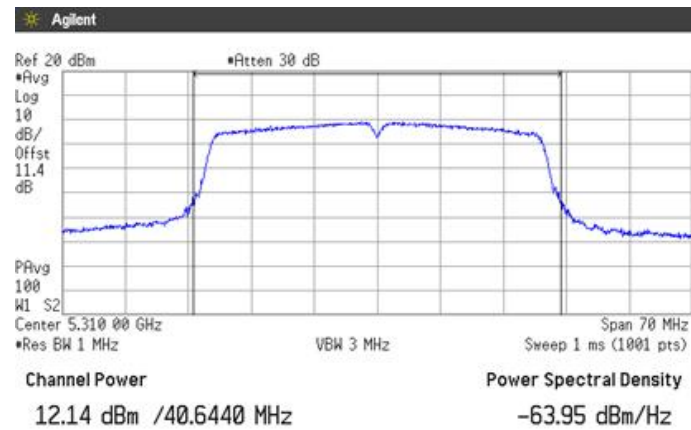


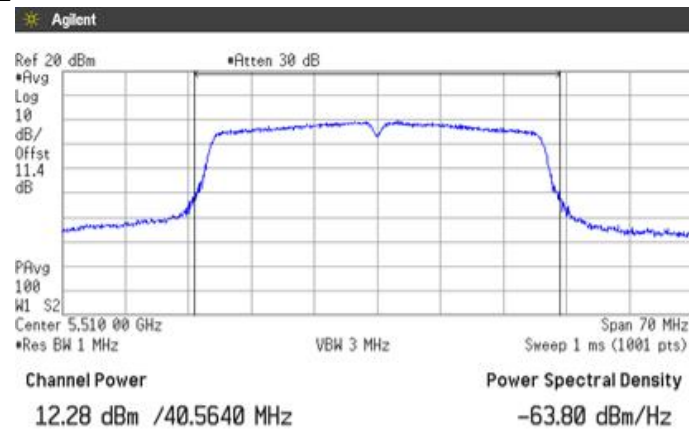
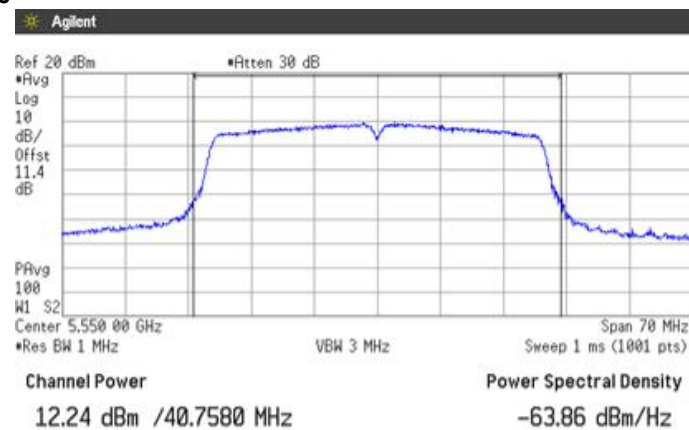
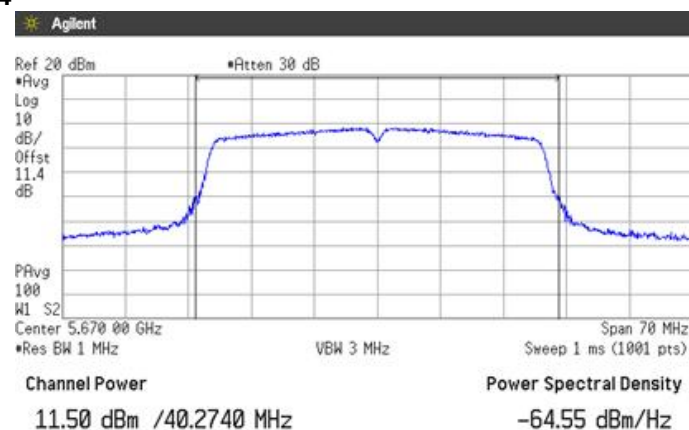
(5.3GHz Band)

Channel: 54

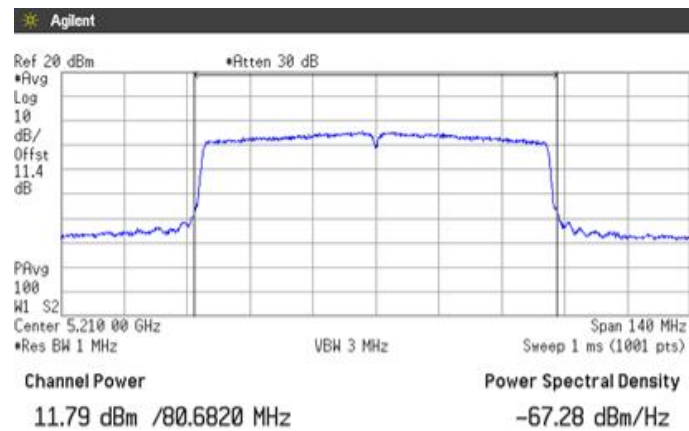


Channel: 62

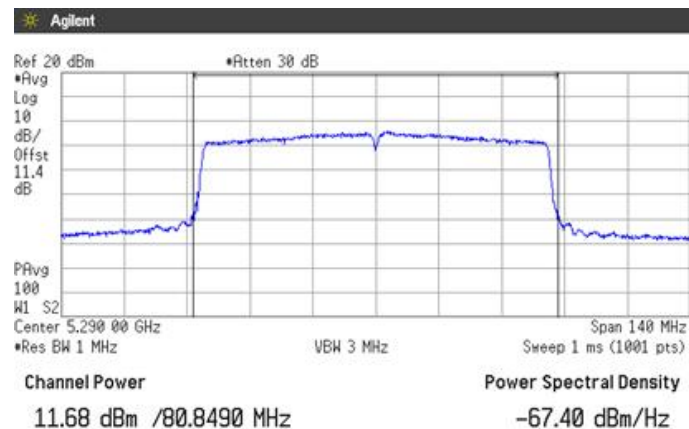


(5.6GHz Band)**Channel: 102****Channel: 110****Channel: 134**

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

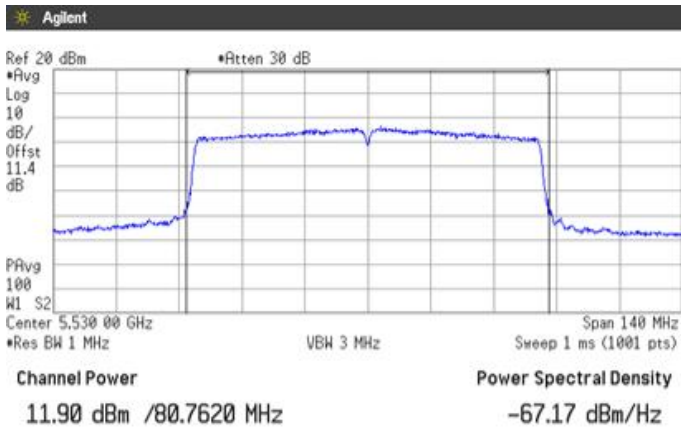


(5.3GHz Band)
Channel: 58

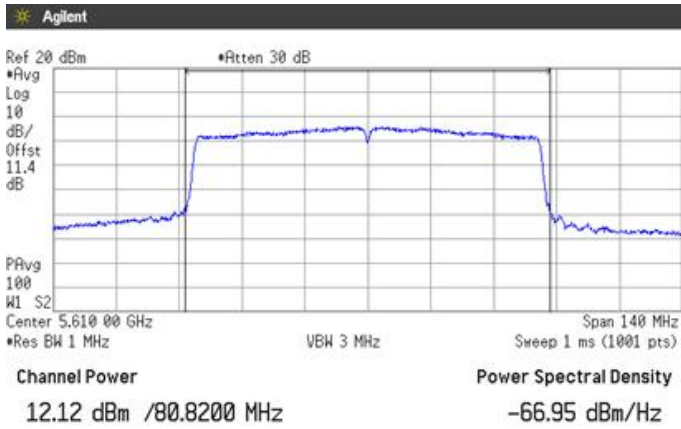


(5.6 GHz Band)

Channel: 106



Channel: 122



4.3 Peak Power Spectral Density

4.3.1 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=1 MHz, VBW=3 MHz, Span=25 MHz/50 MHz/100 MHz, Sweep=Auto, Detector=RMS, Trace mode=Averaging

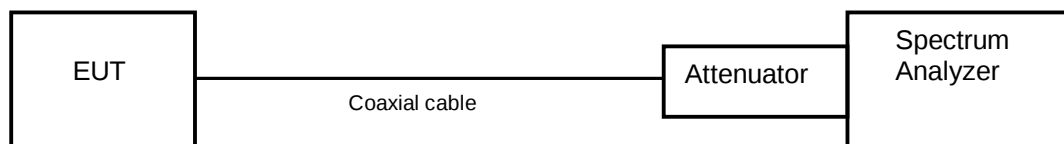
The EUT was set to operate with following conditions.

- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band

The test mode of EUT is as follows.

- Tx mode

- Test configuration



4.3.2 Limit

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

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

(3) For the 5.725-5.85 GHz bands, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi 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 6 dBi.

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
5.2 GHz Band	-0.2	10.8 dBm/MHz
5.3 GHz Band	-0.2	10.8 dBm/MHz
5.6 GHz Band	+2.0	13.0 dBm/MHz

4.3.3 Measurement result

Date : 23-October-2019

Temperature : 20.6 [°C]

Humidity : 60.8 [%]

Test place : Shielded room No.4

Test engineer :

Taiki Watanabe

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	2.107	1.392	1.436	0.969	0.135	2.242
	40	5200	2.003					2.138
	48	5240	2.113					2.248
	52	5260	2.049	1.392	1.436	0.969	0.135	2.184
	56	5280	1.969					2.104
	64	5320	2.220					2.355
	100	5500	2.514	1.392	1.436	0.969	0.135	2.649
	116	5580	1.965					2.100
	140	5700	2.103					2.238

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

Note 2: Test Result = Reading + DCF

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	2.225	1.288	1.332	0.967	0.146	2.371
	40	5200	1.435					1.581
	48	5240	2.003					2.149
	52	5260	2.056	1.288	1.332	0.967	0.146	2.202
	56	5280	1.915					2.061
	64	5320	2.443					2.589
	100	5500	2.319	1.286	1.328	0.968	0.140	2.459
	116	5580	2.377					2.517
	140	5700	2.219					2.359

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

Note 2: Test Result = Reading + DCF

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	-0.887	0.636	0.680	0.935	0.291	-0.596
	46	5230	-1.296					-1.005
	54	5270	-1.552	0.635	0.680	0.934	0.297	-1.255
	62	5310	-1.284					-0.987
	102	5510	-0.632	0.635	0.680	0.934	0.297	-0.335
	110	5550	-0.775					-0.478
	134	5670	-1.016					-0.719

Note: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10 \log (1/x)$

Note 2: Test Result = Reading + DCF

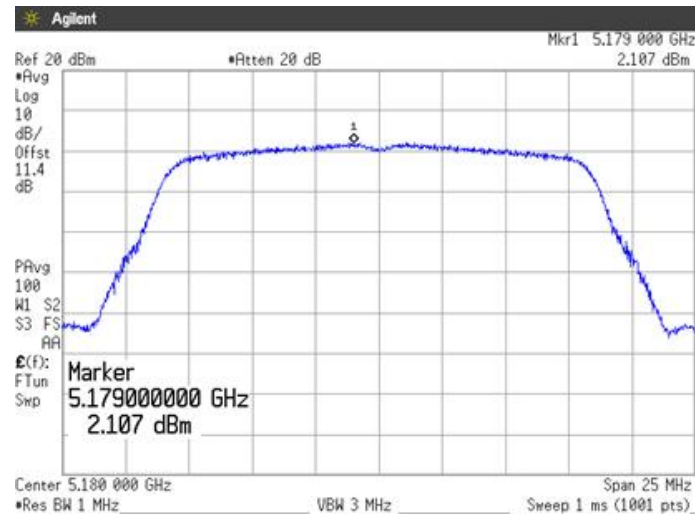
Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ac (80MHz)	42	5210	-3.976	0.324	0.369	0.878	0.565	-3.411
	58	5290	-4.197	0.323	0.368	0.878	0.566	-3.631
	106	5530	-4.242	0.324	0.369	0.879	0.561	-3.681
	122	5610	-4.114	0.323	0.369	0.875	0.578	-3.536

Note: $X = \text{On time} / (\text{On} + \text{Off time})$, $\text{DCF} = 10 \log (1/x)$

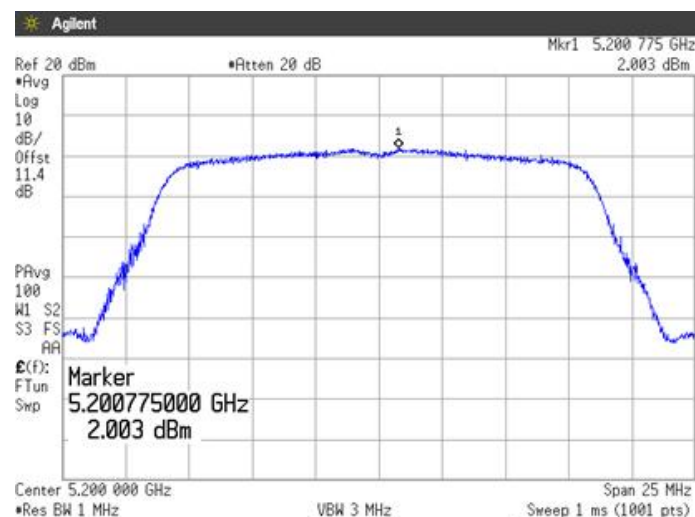
Note 2: Test Result = Reading + DCF

4.3.4 Trace data

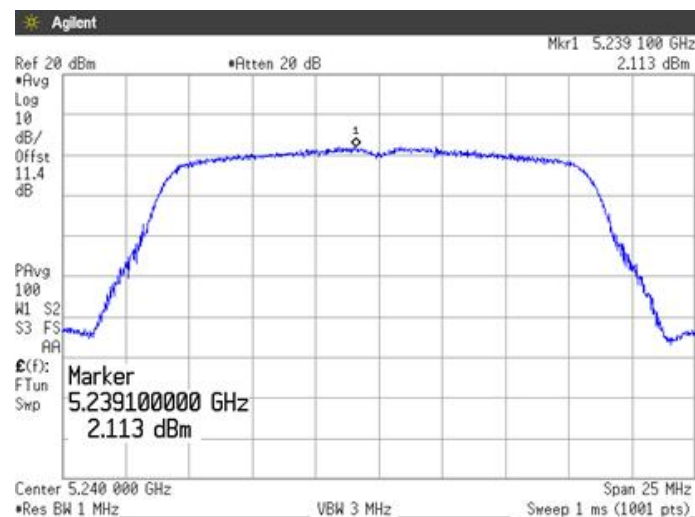
[IEEE802.11a]
(5.2 GHz Band)
Channel: 36



Channel: 40

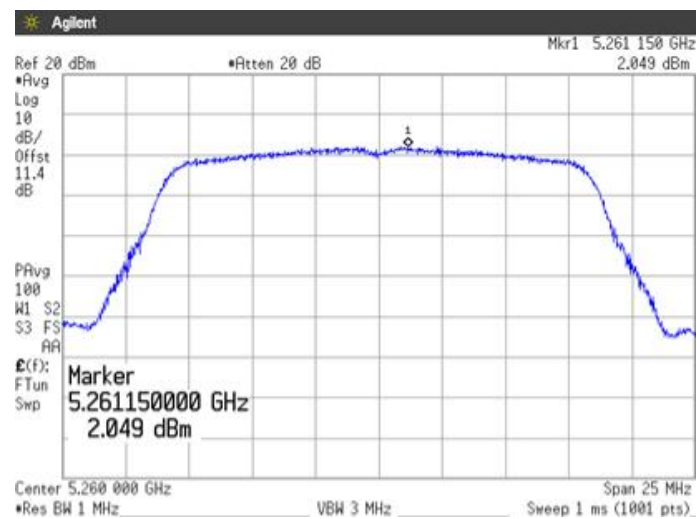


Channel: 48

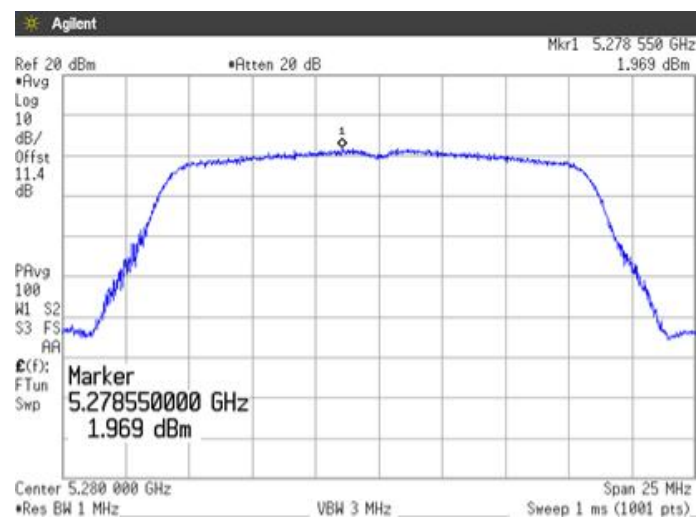


(5.3 GHz Band)

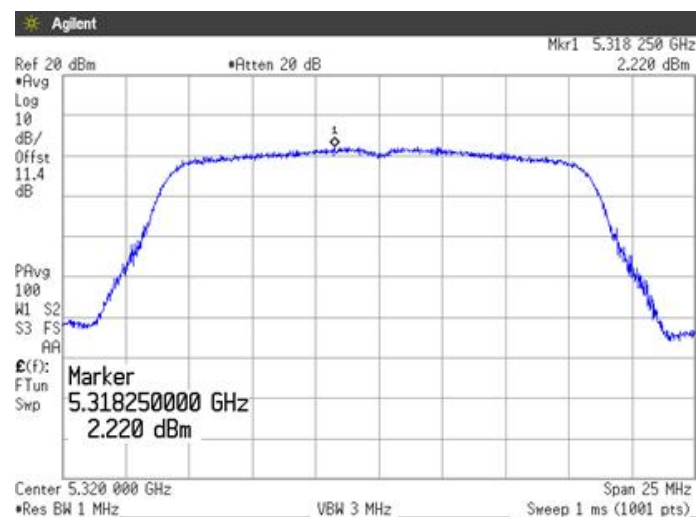
Channel: 52

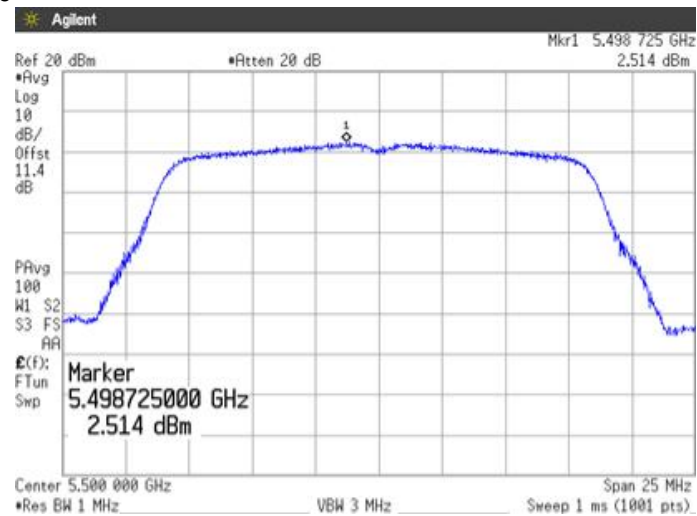
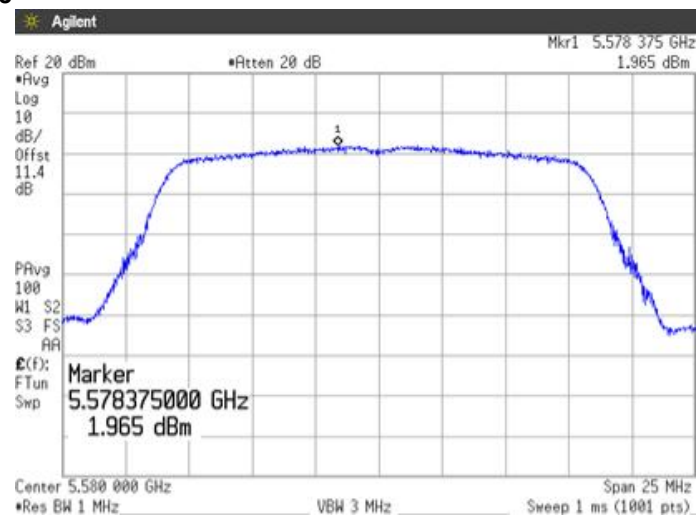
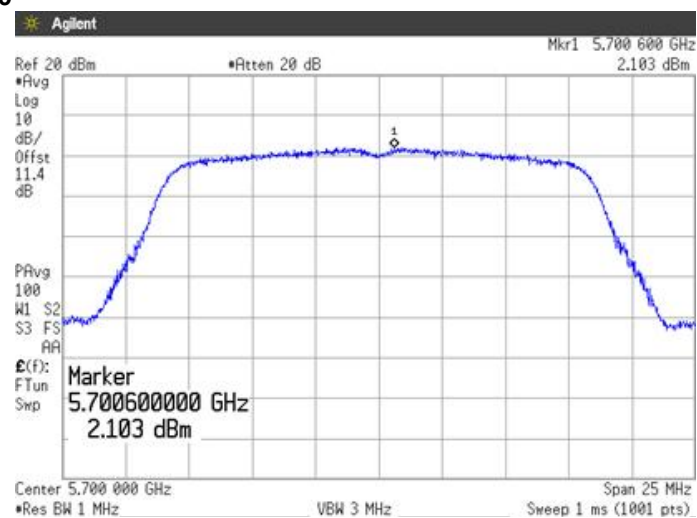


Channel: 56



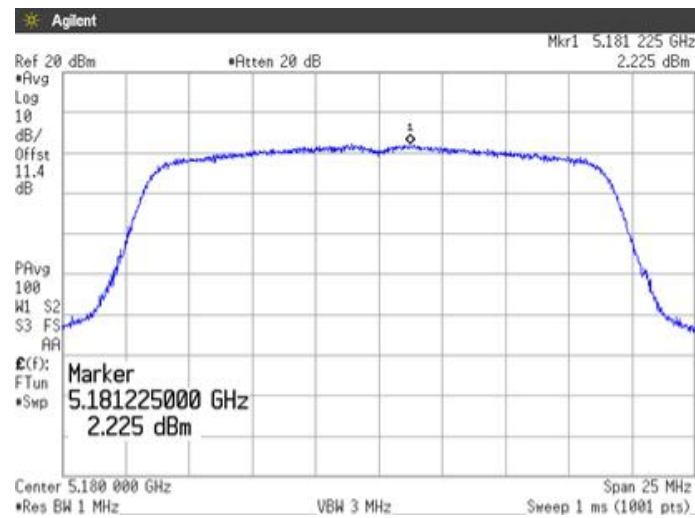
Channel: 64



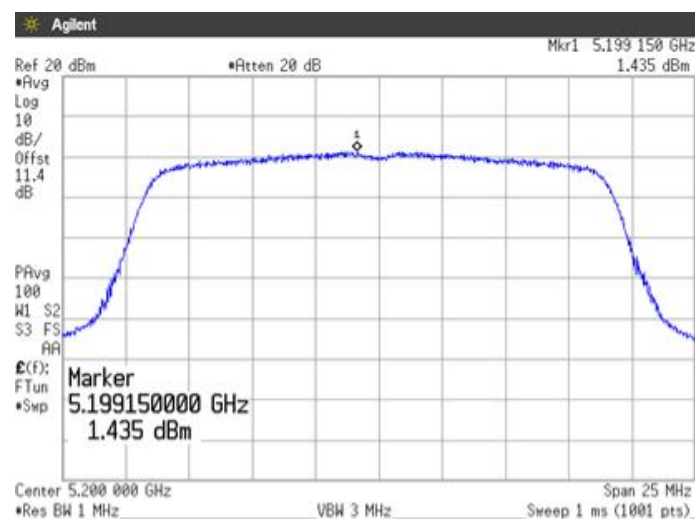
(5.6 GHz Band)**Channel: 100****Channel: 116****Channel: 140**

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

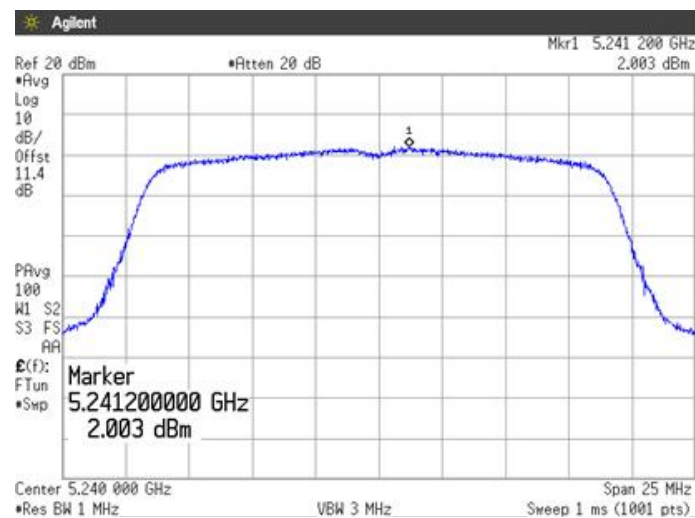
Channel: 36



Channel: 40

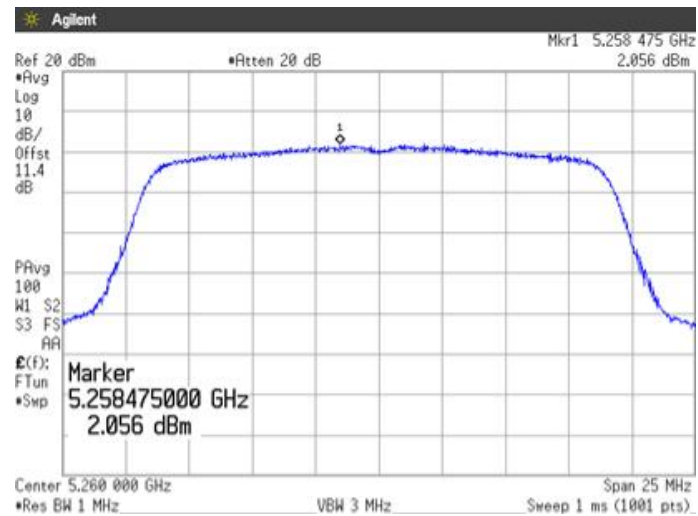


Channel: 48

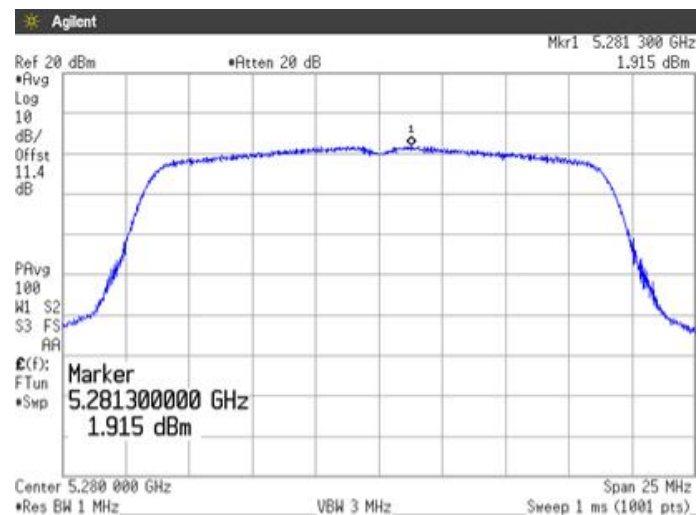


(5.3 GHz Band)

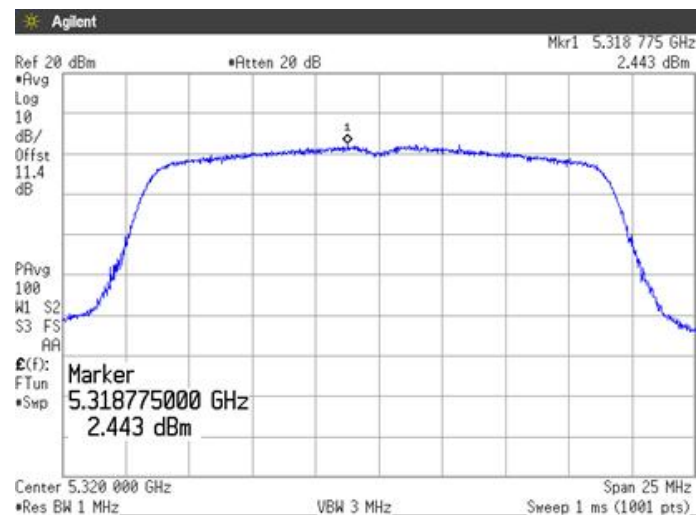
Channel: 52

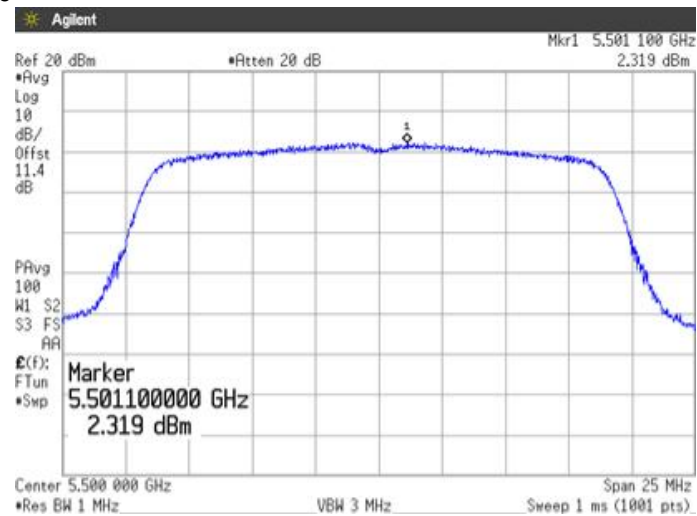
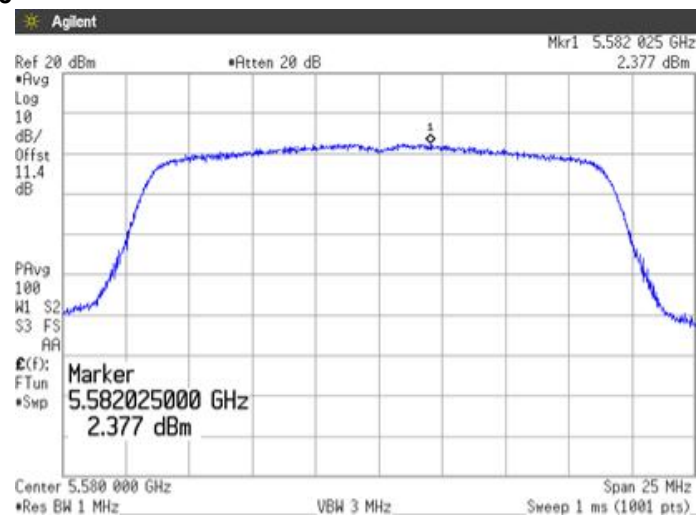
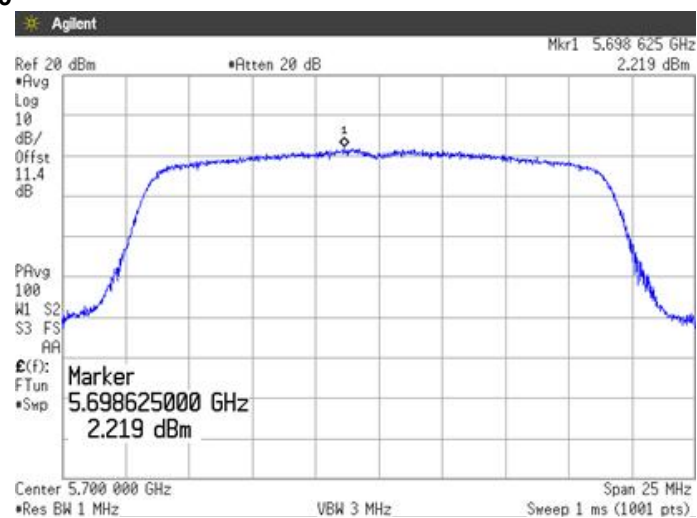


Channel: 56

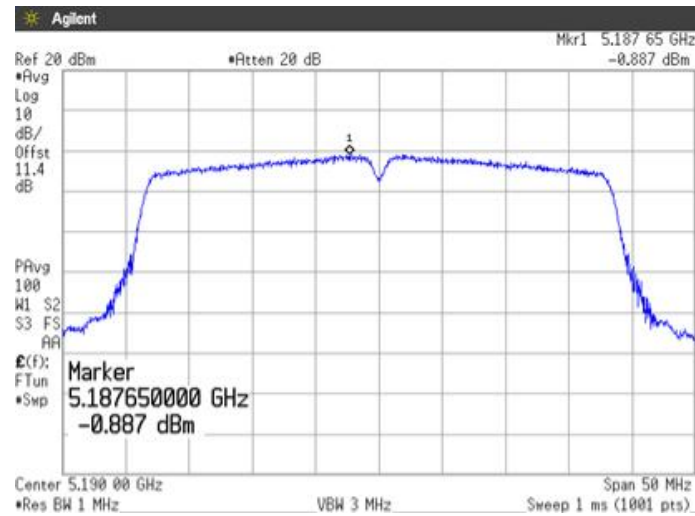


Channel: 64

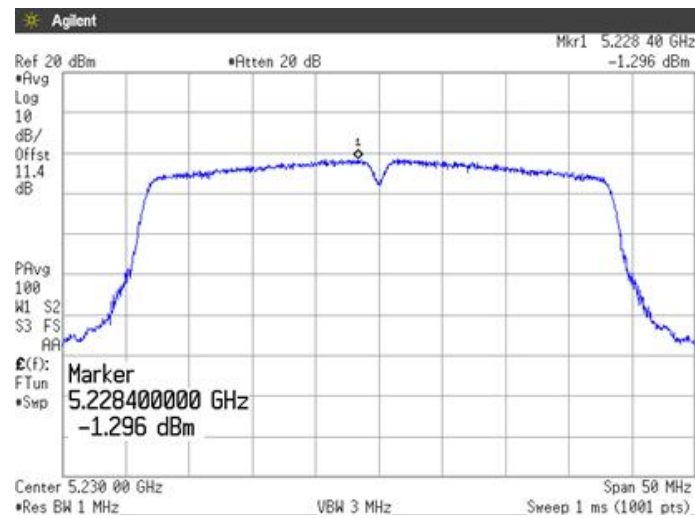


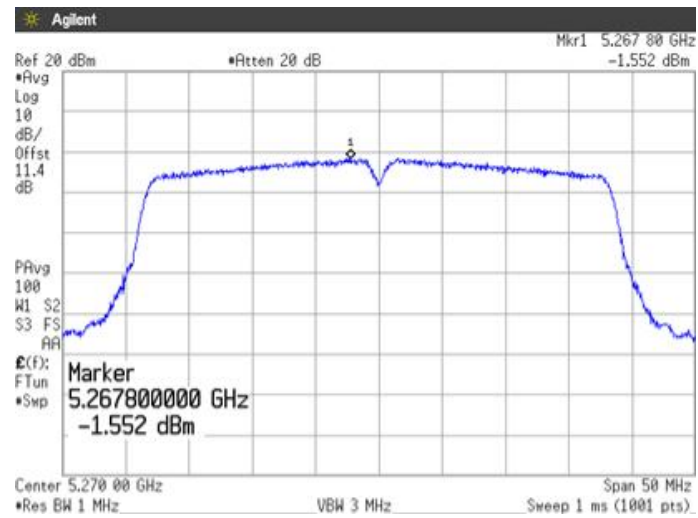
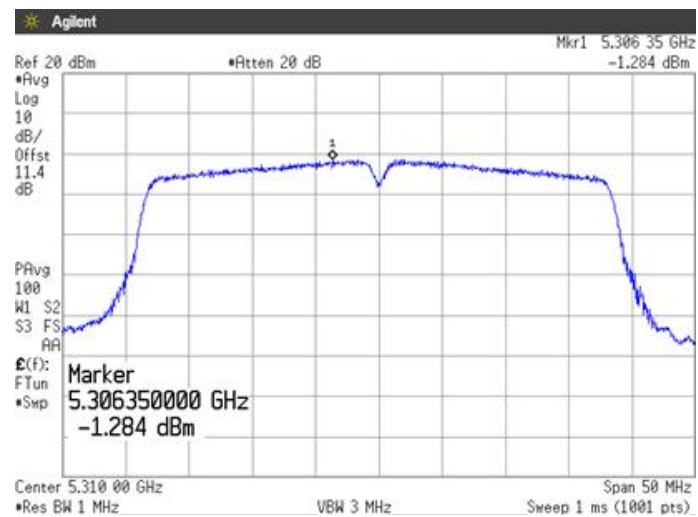
(5.6 GHz Band)**Channel: 100****Channel: 116****Channel: 140**

[IEEE802.11n (HT40)]
(5.2 GHz Band)
Channel: 38



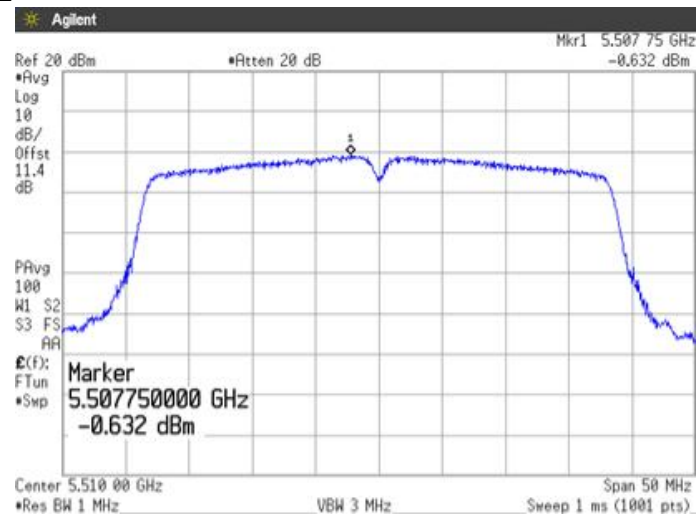
Channel: 46



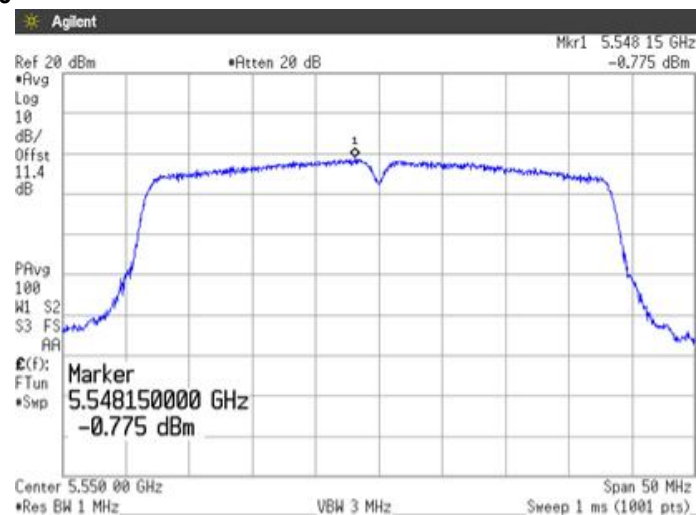
(5.3 GHz Band)**Channel: 54****Channel: 62**

(5.6 GHz Band)

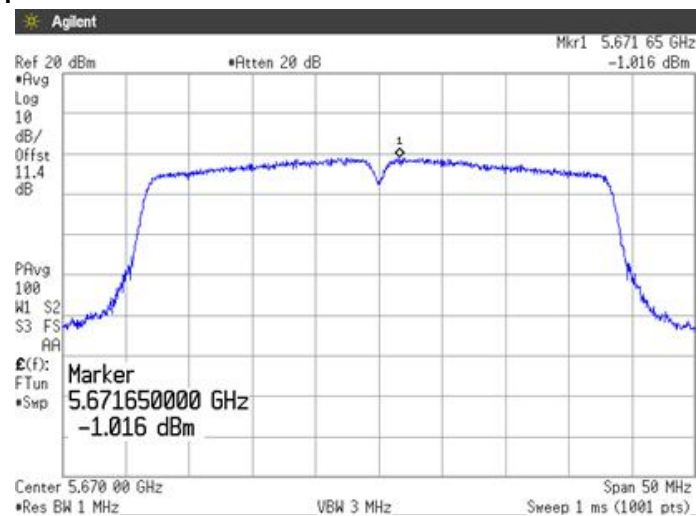
Channel: 102



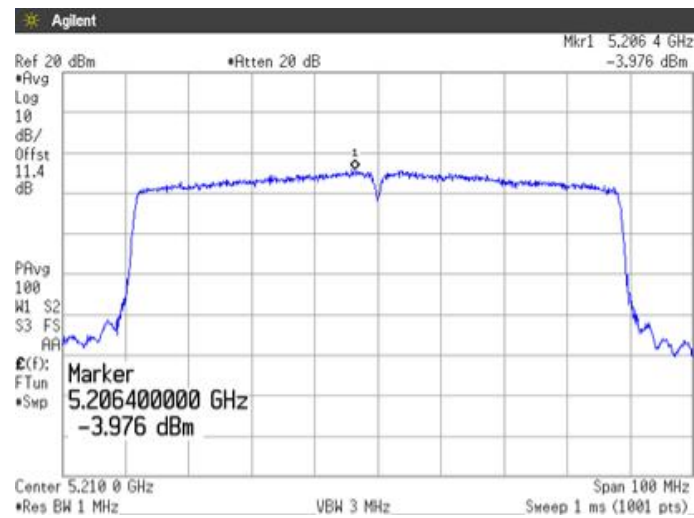
Channel: 110



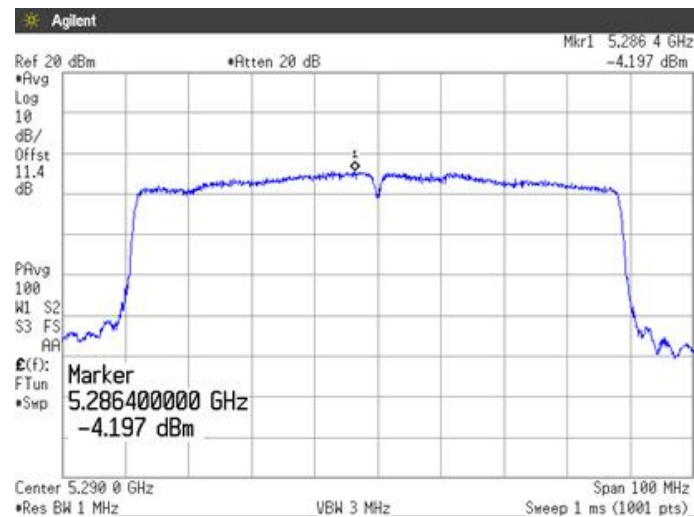
Channel: 134

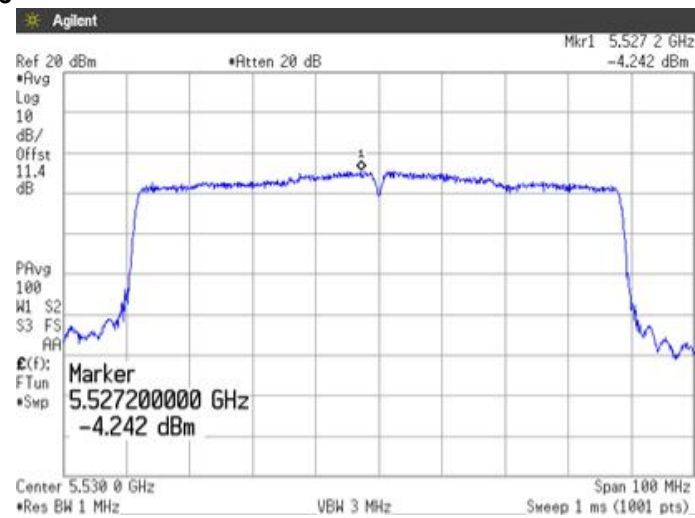
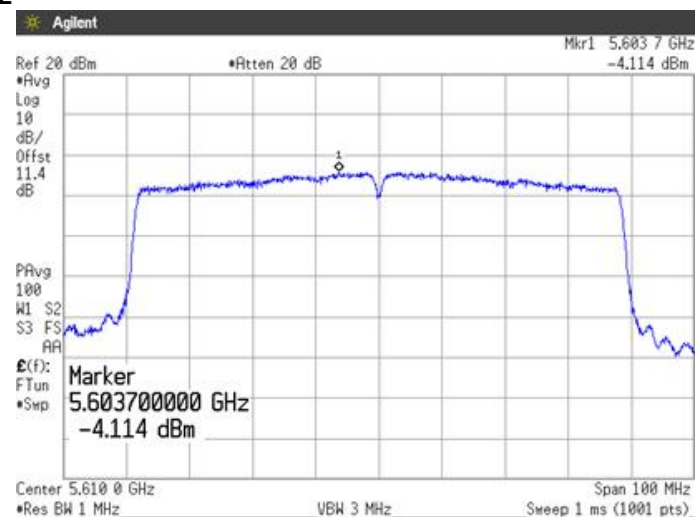


[IEEE802.11ac (HT80)]
(5.2 GHz Band)
Channel: 42



(5.3 GHz Band)
Channel: 58



(5.6 GHz Band)**Channel: 106****Channel: 122**

4.4 Radiated Emissions (Restricted Bands of Operation)

4.4.1 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	: 9 kHz to 40 GHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: Styrofoam table / (W) 1.0 × (D) 1.0 ×(H) 0.8 m (below 1 GHz) Styrofoam table / (W) 0.6 × (D) 0.6 ×(H) 1.5 m (above 1 GHz)
Antenna distance	: 3m
Test receiver setting	Below 1 GHz
- Detector	: Quasi-peak
- Bandwidth	: 120 kHz
Spectrum analyzer setting	Above 1 GHz
- Peak	: RBW=1 MHz, VBW=3 MHz, Span=0 Hz, Sweep=auto, Detector=Peak Trace mode=Max hold
- Average	: RBW=1 MHz, VBW=3 MHz, Span=0 Hz, 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 Broad-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 1 GHz) and 1.5m (above 1 GHz) 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.

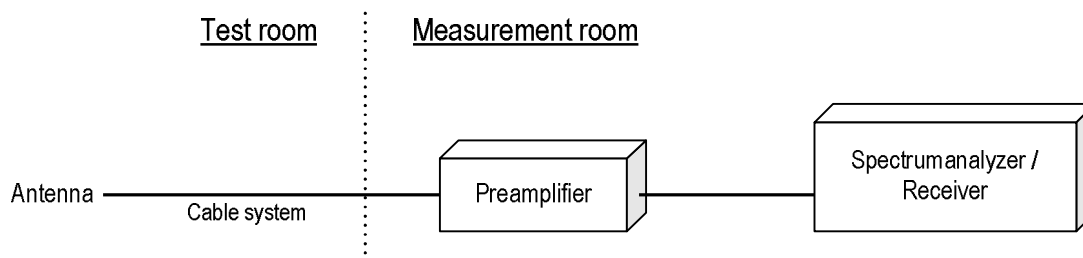
The EUT was set to operate with following conditions.

- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz 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	1.392	1.436	96.94	0.135
	W53	1.392	1.436	96.94	0.135
	W56	1.392	1.436	96.94	0.135
802.11n (20MHz)	W52	1.288	1.332	96.70	0.146
	W53	1.288	1.332	96.70	0.146
	W56	1.286	1.328	96.84	0.140
802.11n (40MHz)	W52	0.636	0.680	93.53	0.291
	W53	0.635	0.680	93.38	0.297
	W56	0.635	0.680	93.38	0.297
802.11ac (80MHz)	W52	0.324	0.369	87.80	0.565
	W53	0.323	0.368	87.77	0.566
	W56	0.324	0.369	87.88	0.561

Note: DCF = $10\log(1/x)$ **4.4.2 Calculation method**

[150 kHz to 25 GHz]

Emission level = Reading + (Ant. factor + Cable system loss - Amp. Gain)

Margin = Limit - Emission level

Example:

Detector: Peak

Limit @ 5147.0 MHz: 74.0 dBuV/m (Peak Limit)

S.A Reading = 40.9 dBuV Cable system loss = 16.4 dB

Result = $40.9 + 16.4 = 57.3$ dBuV/mMargin = $74.0 - 57.3 = 16.7$ dB

4.4.3 Limit

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725GHz band: all emissions outside of the 5.47 5-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/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 1000 MHz, 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.

4.4.4 Test data

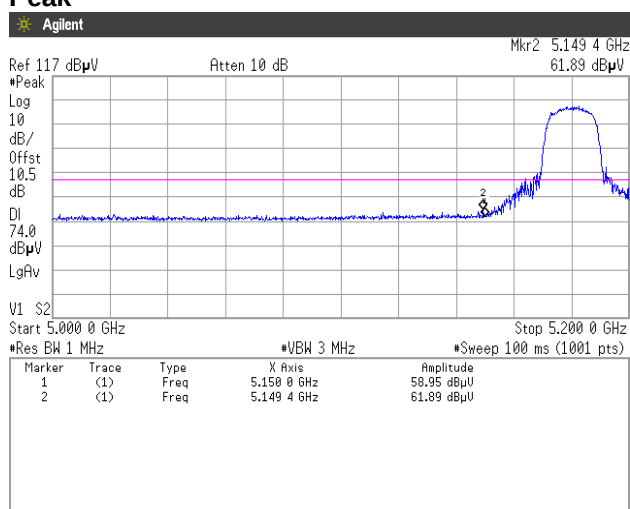
Date : 28-October-2019
 Temperature : 20.2 [°C]
 Humidity : 41.9 [%]
 Test place : 3m Semi-anechoic chamber

Test engineer : Tadahiro Seino

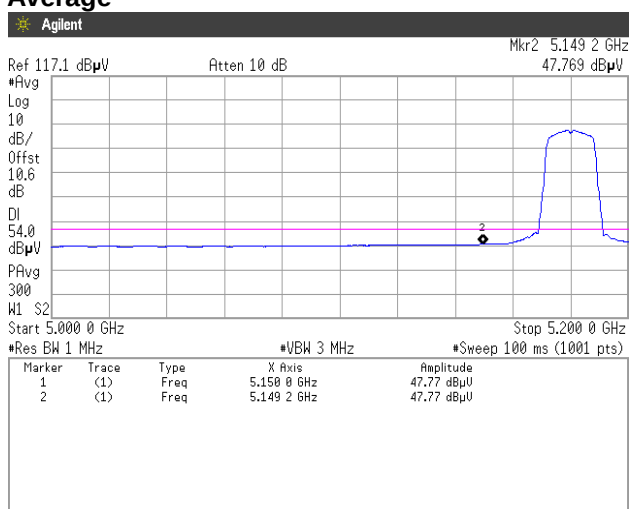
4.4.4.1 Restricted Bandedge

[IEEE802.11a]

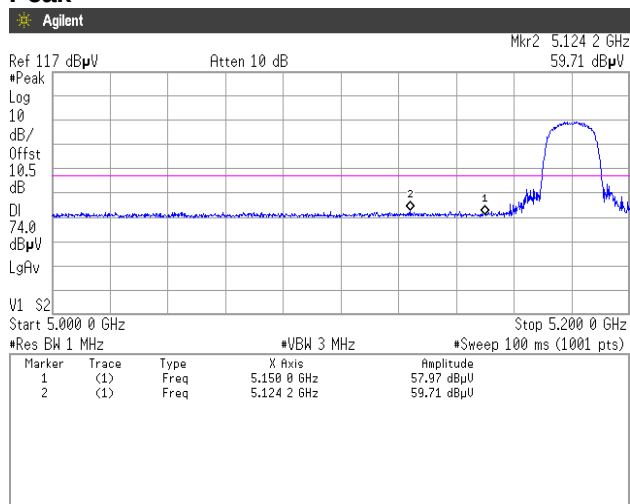
5.2 GHz Band, Channel Low Horizontal Peak



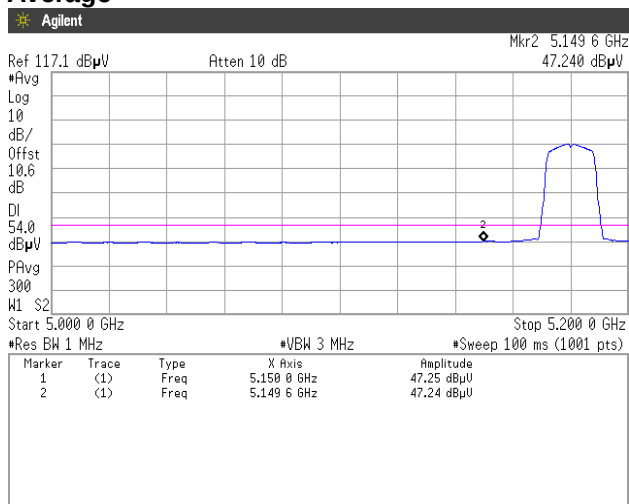
Average



Vertical Peak



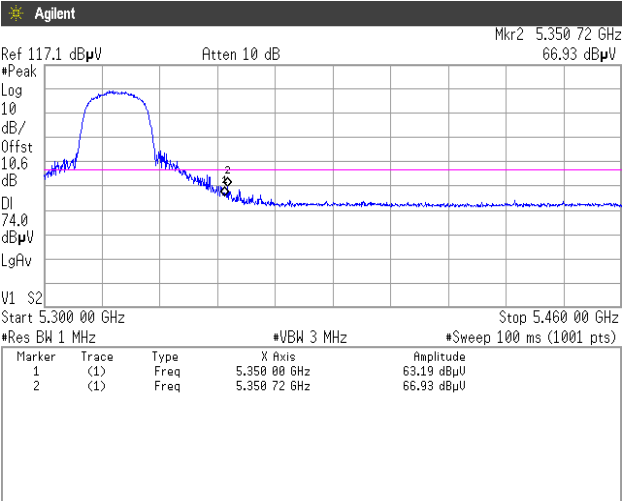
Average



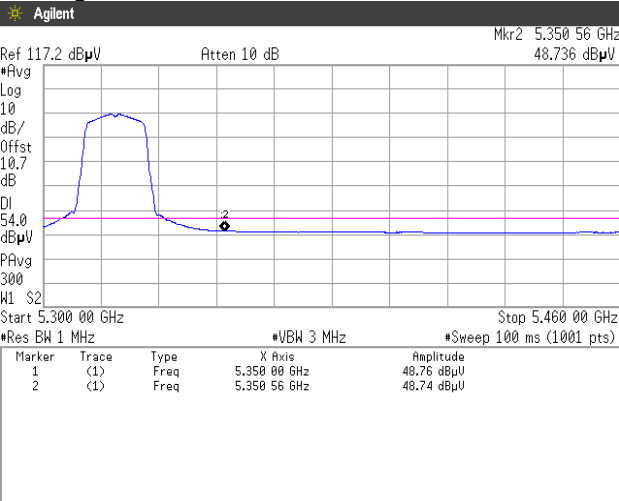
[IEEE802.11a]

5.3 GHz Band, Channel High
Horizontal

Peak

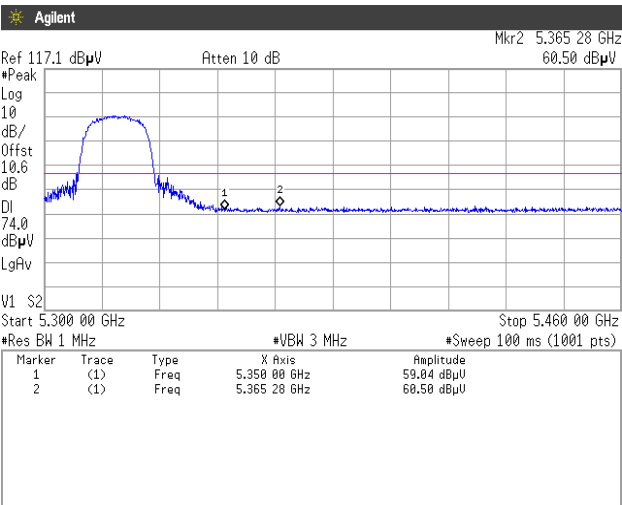


Average

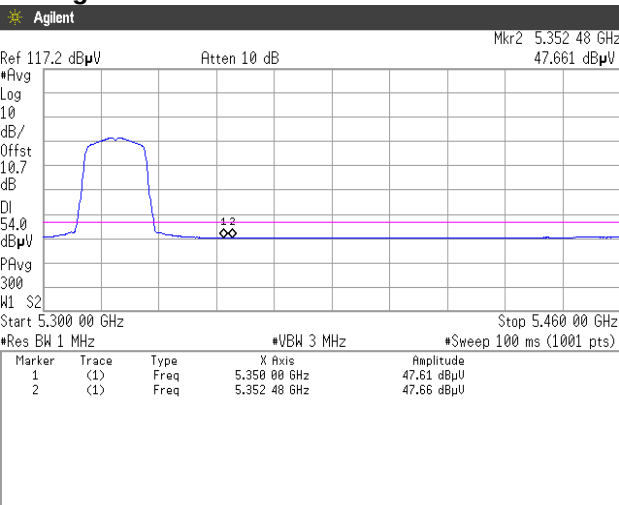


Vertical

Peak



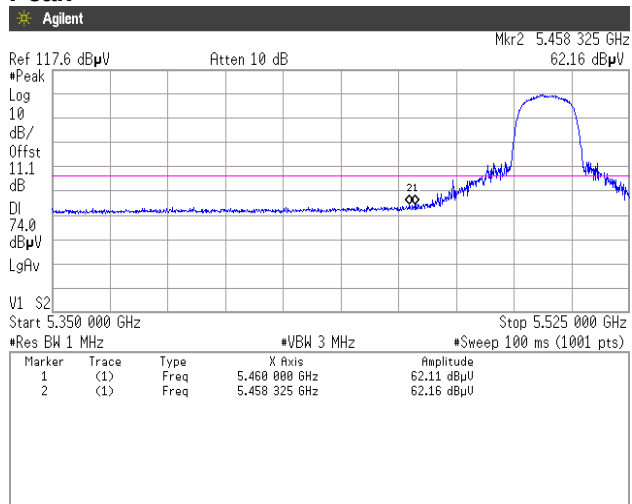
Average



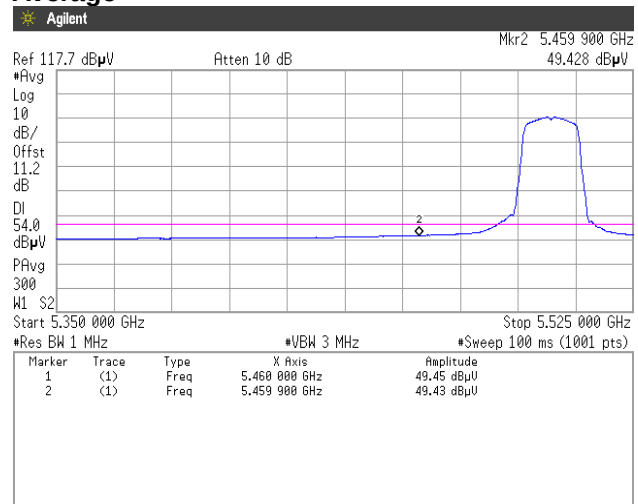
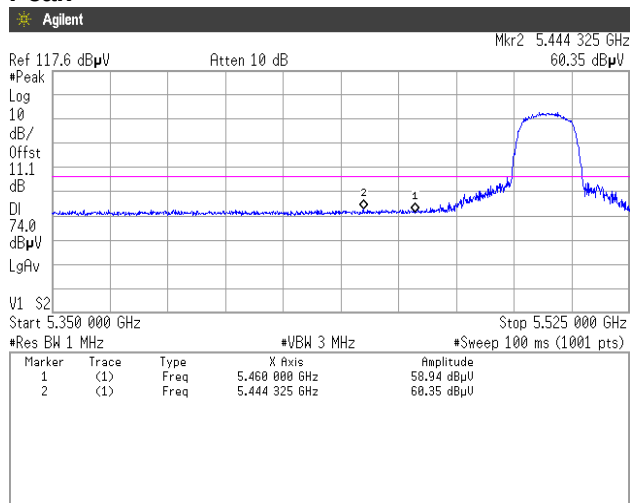
[IEEE802.11a]

5.6 GHz Band, Channel Low
Horizontal

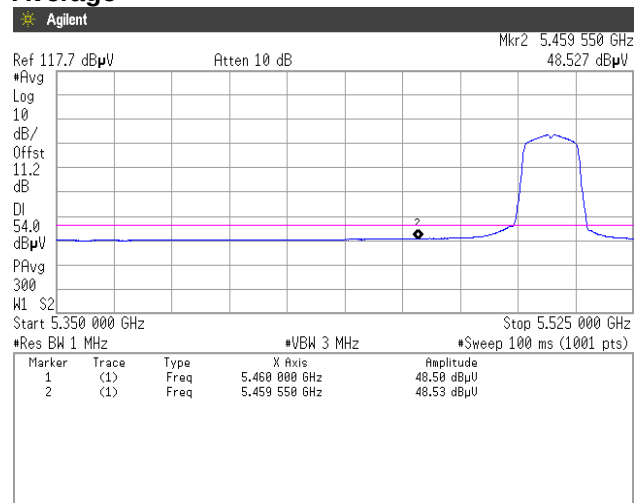
Peak



Average

Vertical
Peak

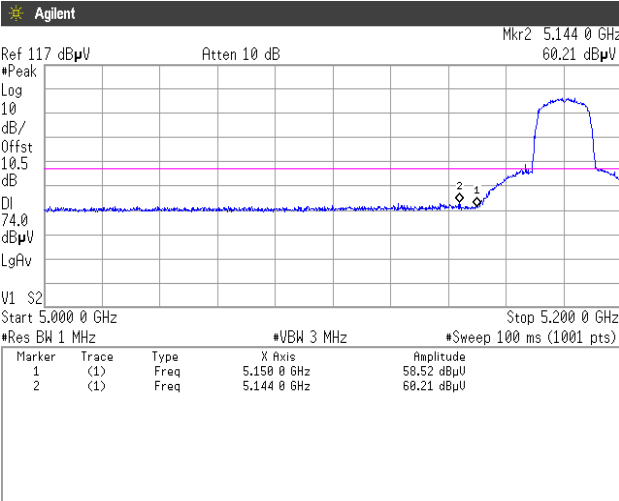
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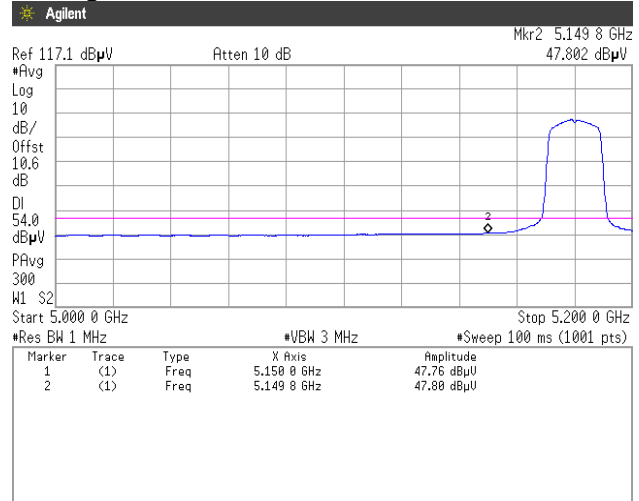
[IEEE802.11n (HT20)]

5.2 GHz Band, Channel Low
Horizontal

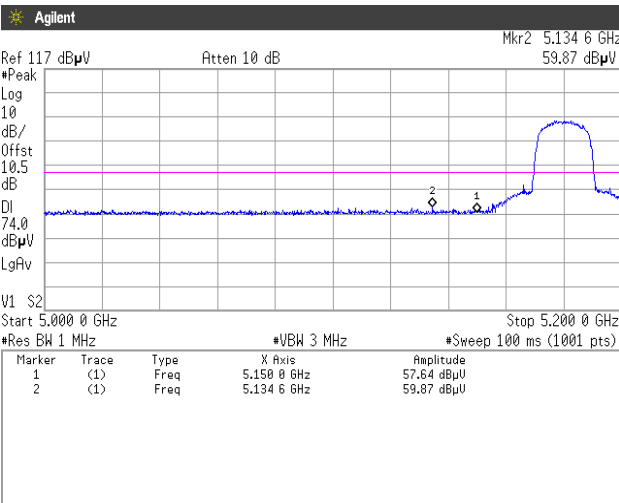
Peak



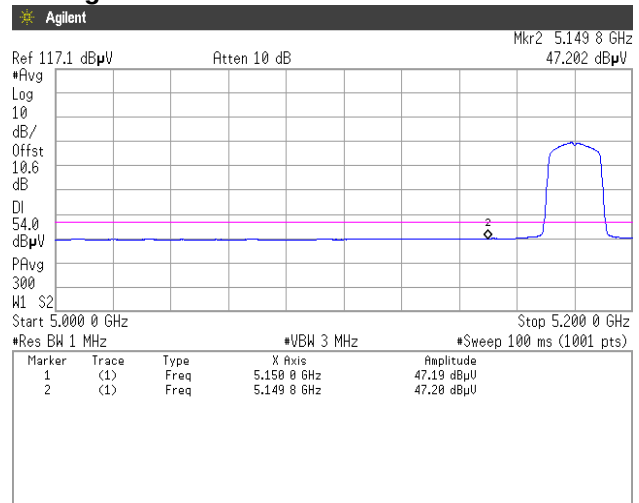
Average



Vertical
Peak



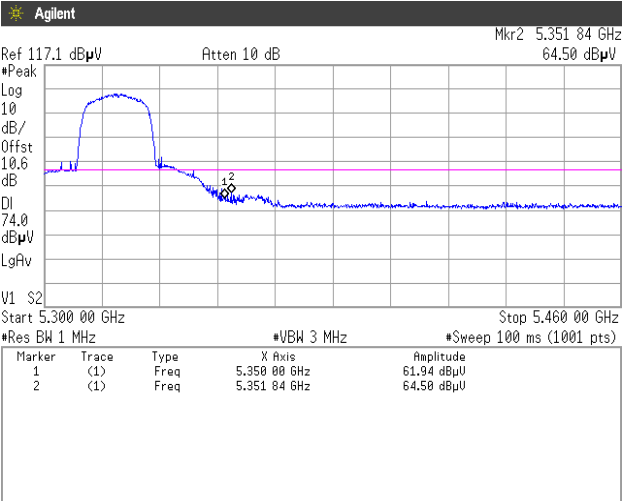
Average



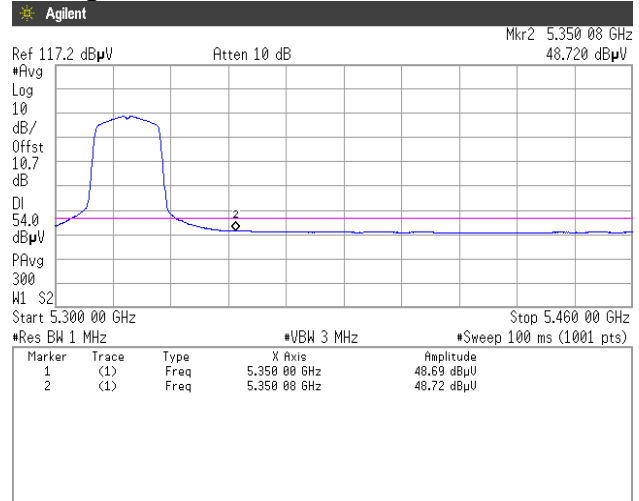
[IEEE802.11n (HT20)]

5.3 GHz Band, Channel High
Horizontal

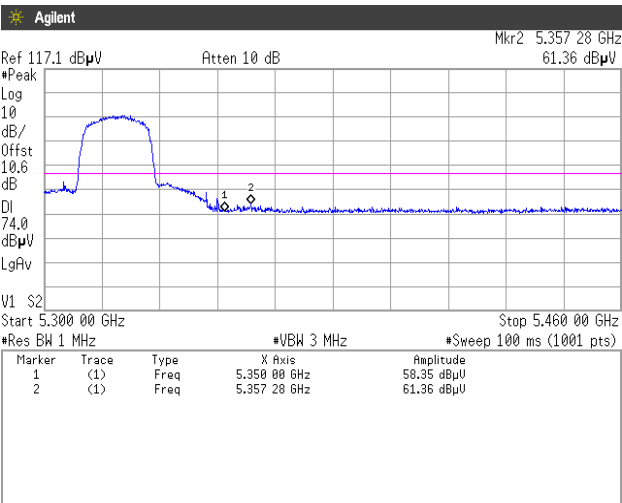
Peak



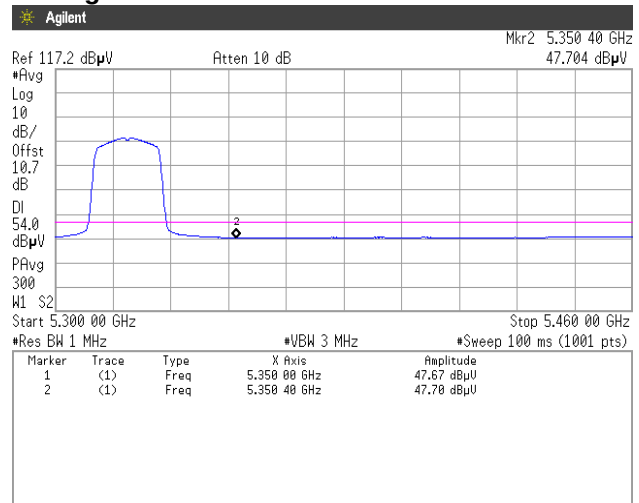
Average



Vertical
Peak



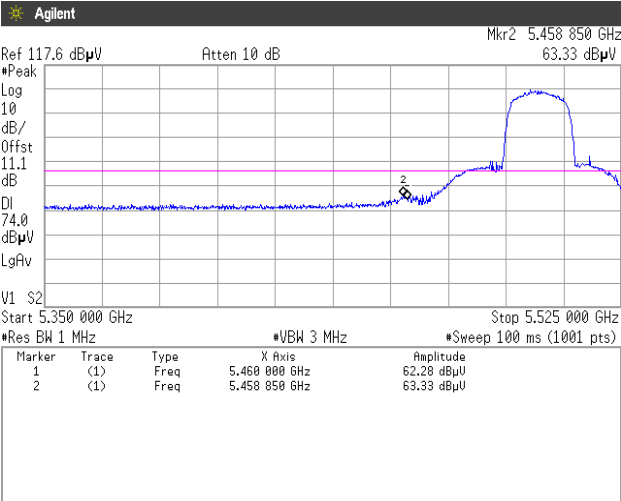
Average



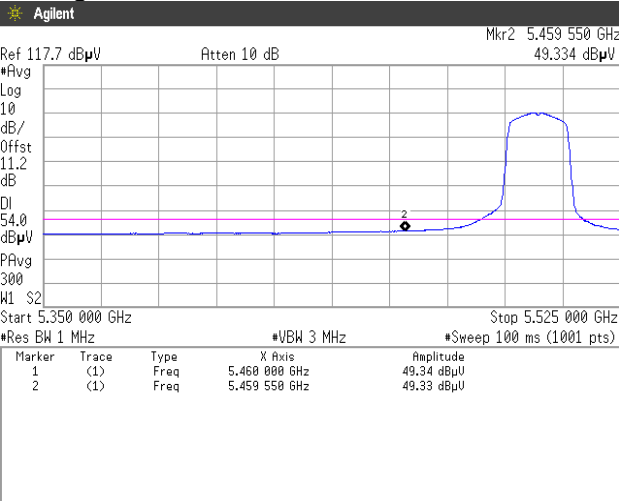
[IEEE802.11n (HT20)]

5.6 GHz Band, Channel Low
Horizontal

Peak

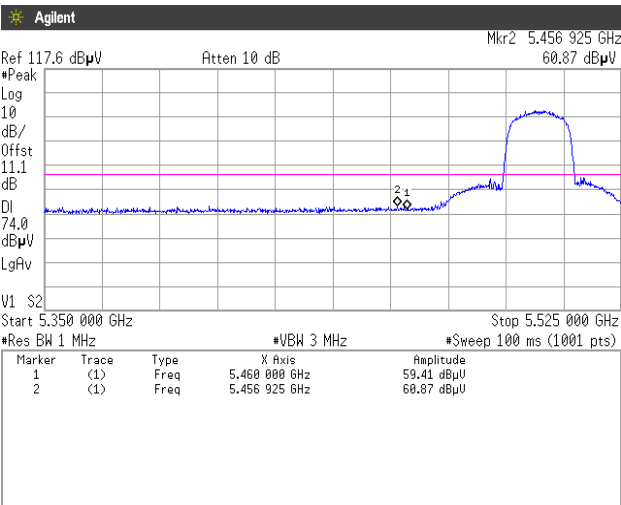


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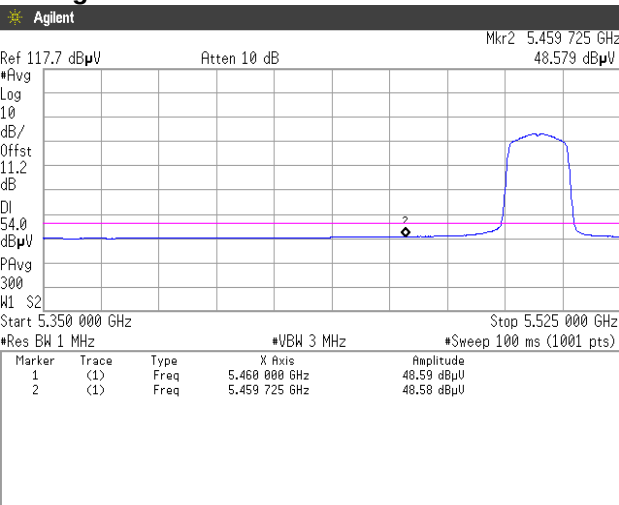


Vertical

Peak



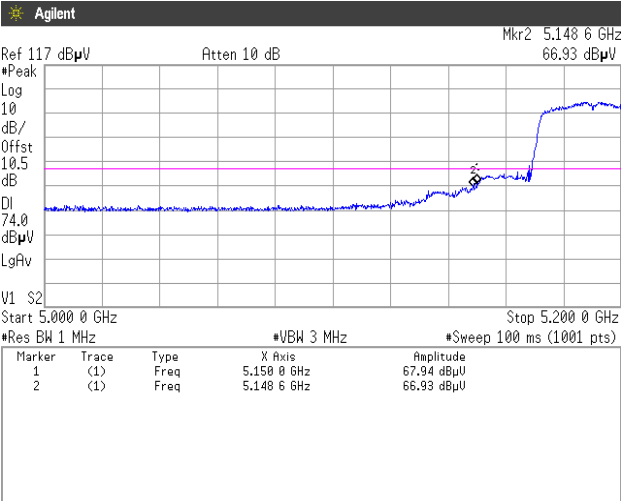
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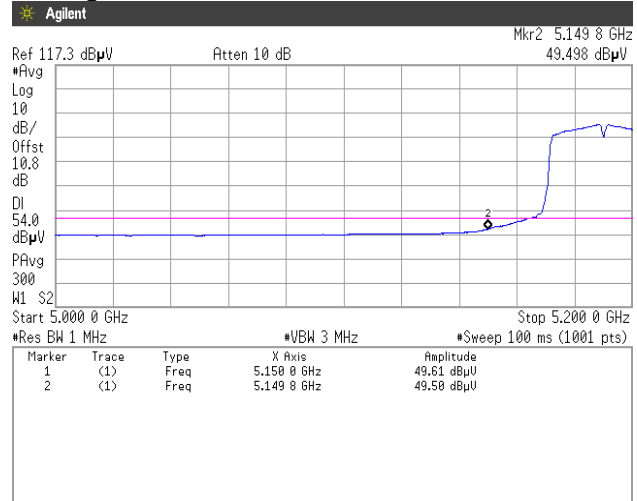
[IEEE802.11n (HT40)]

5.2 GHz Band, Channel Low
Horizontal

Peak

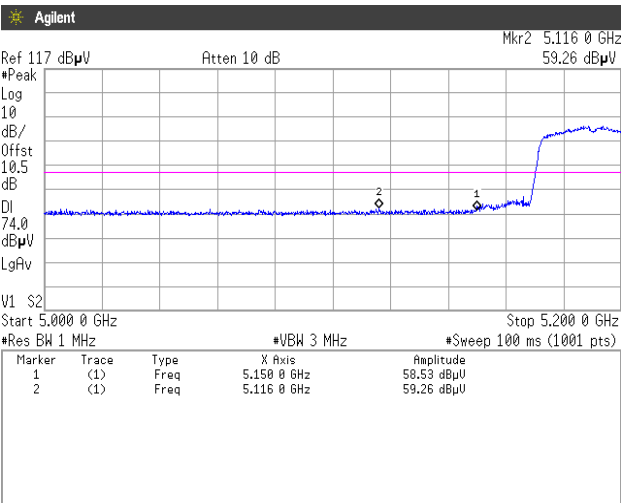


Average

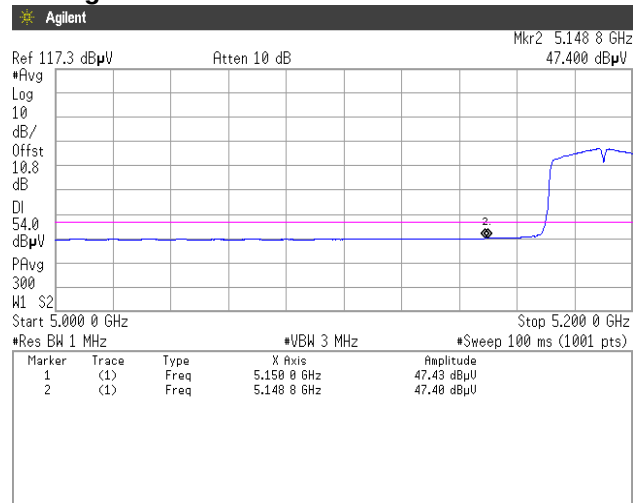


Vertical

Peak



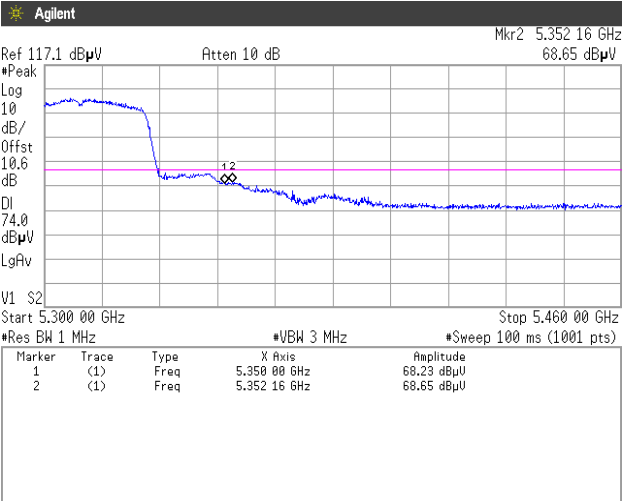
Average



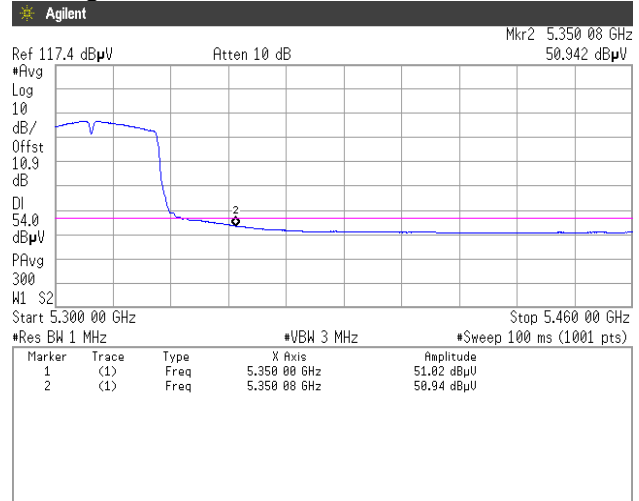
[IEEE802.11n (HT40)]

5.3 GHz Band, Channel High
Horizontal

Peak

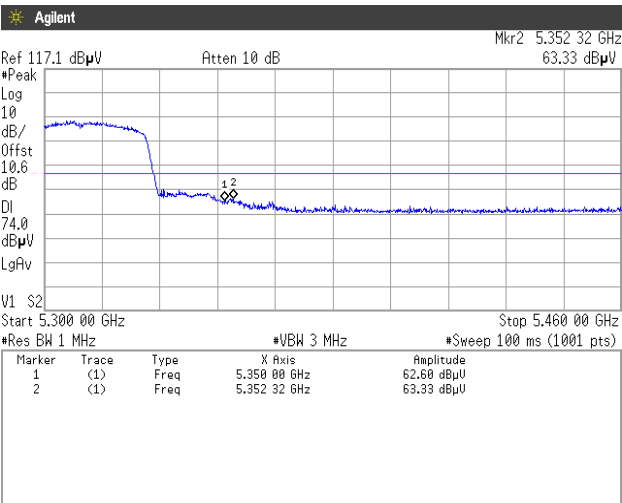


Average

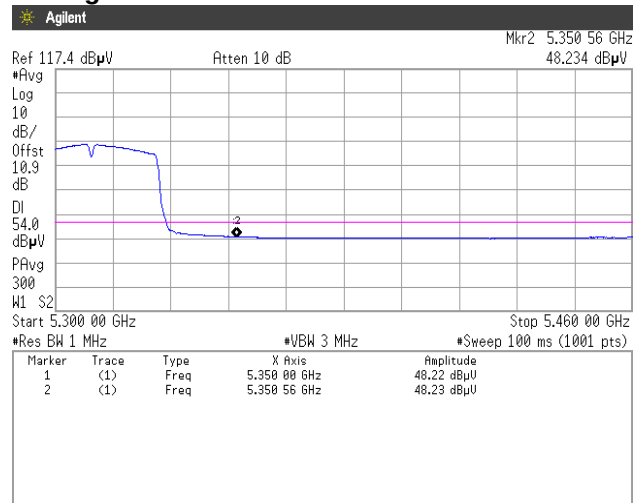


Vertical

Peak



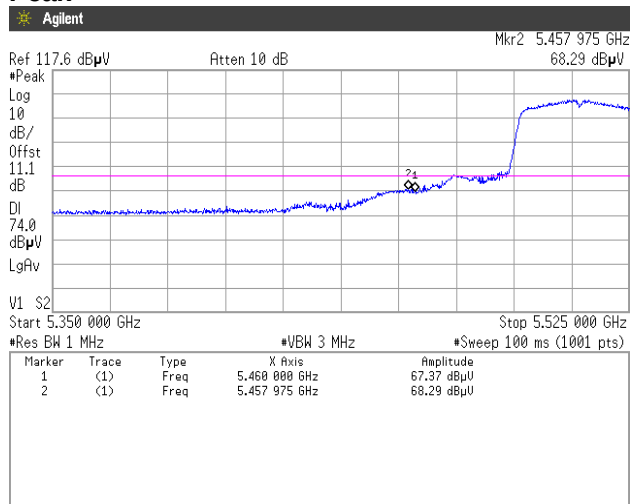
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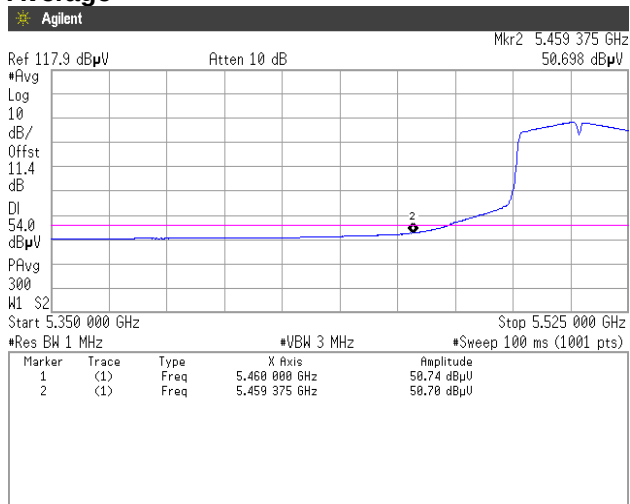
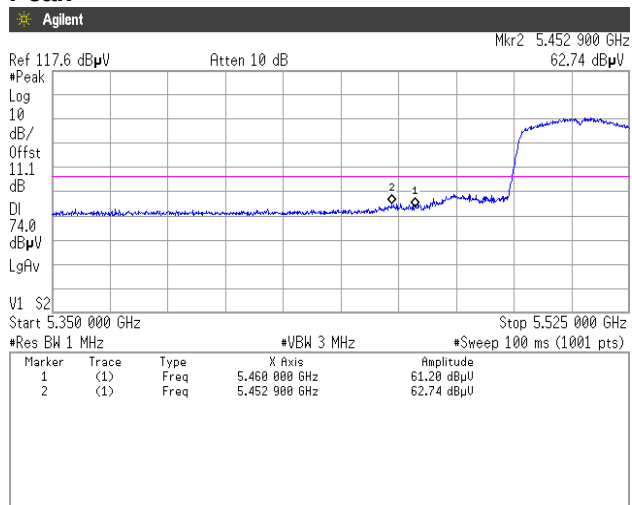
[IEEE802.11n (HT40)]

5.6 GHz Band, Channel Low
Horizontal

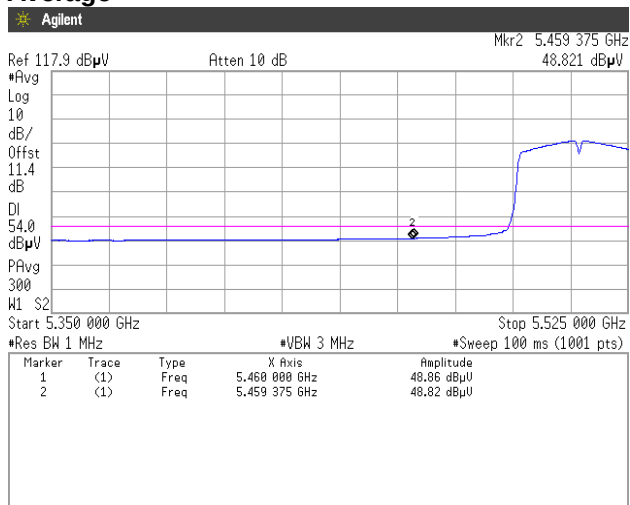
Peak



Average

Vertical
Peak

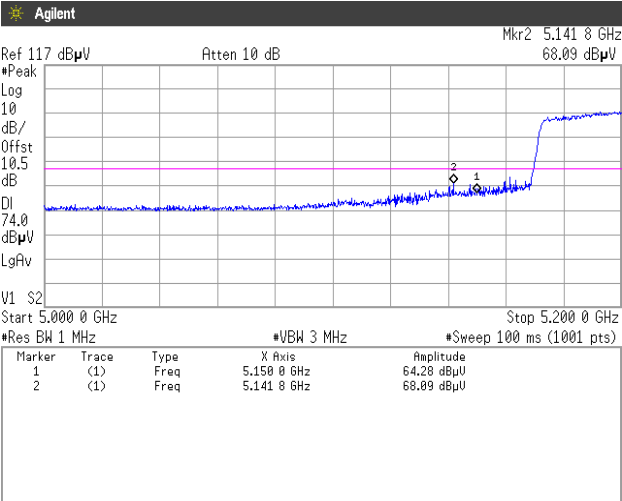
Average



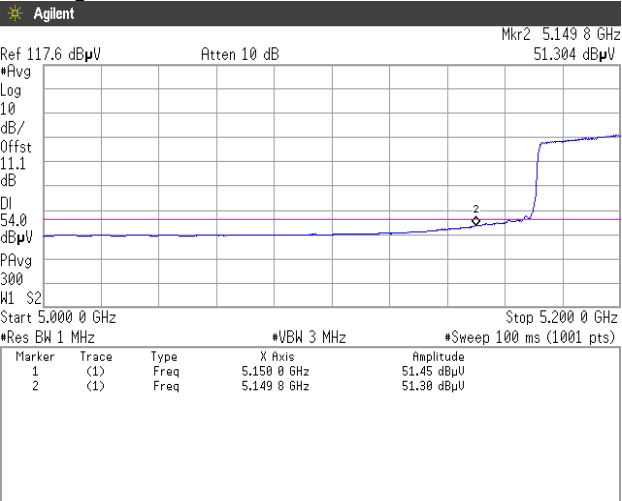
[IEEE802.11ac (HT80)]

5.2 GHz Band, Channel Low
Horizontal

Peak

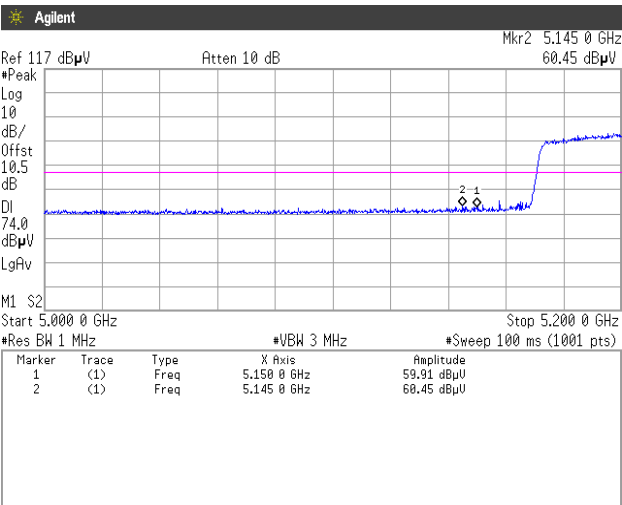


Average

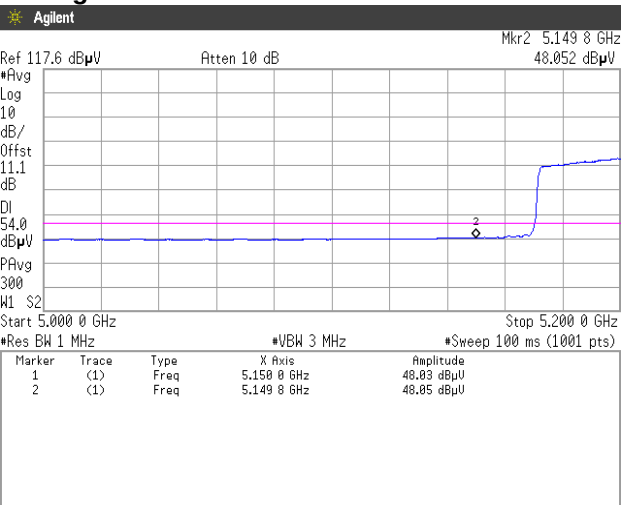


Vertical

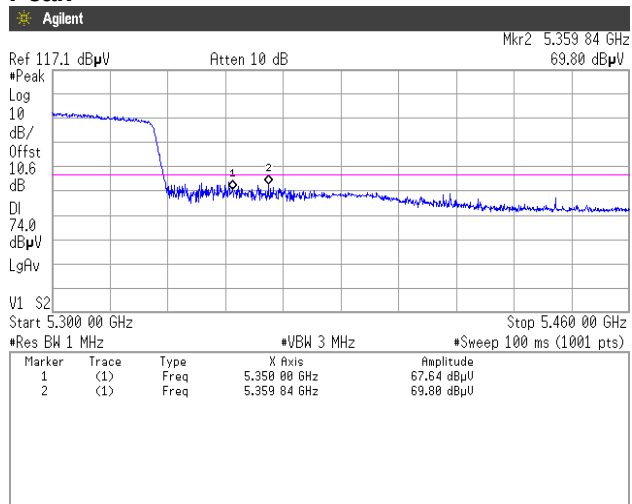
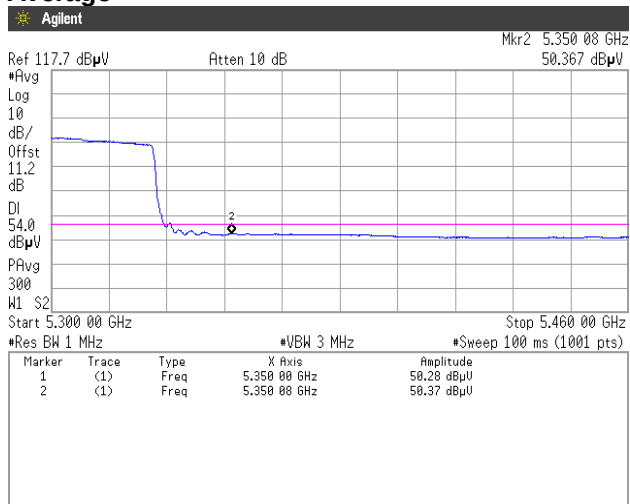
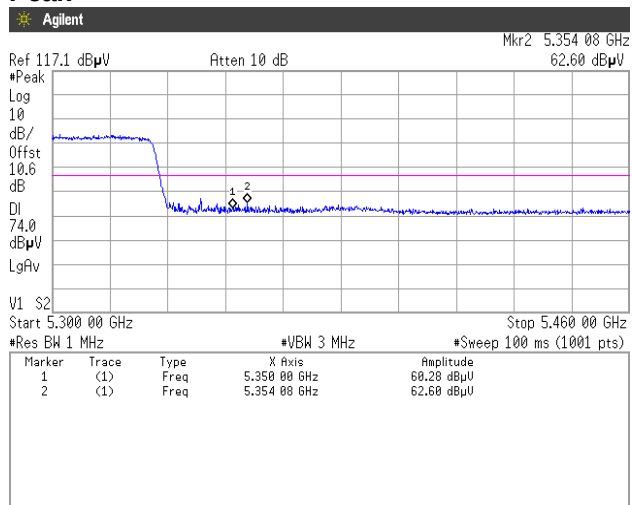
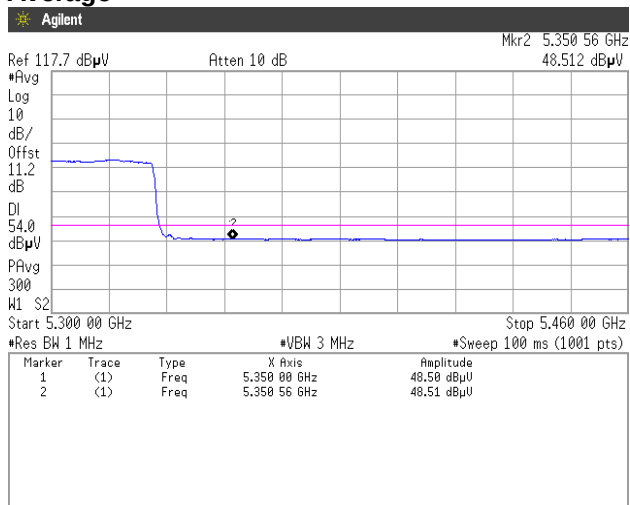
Peak



Average



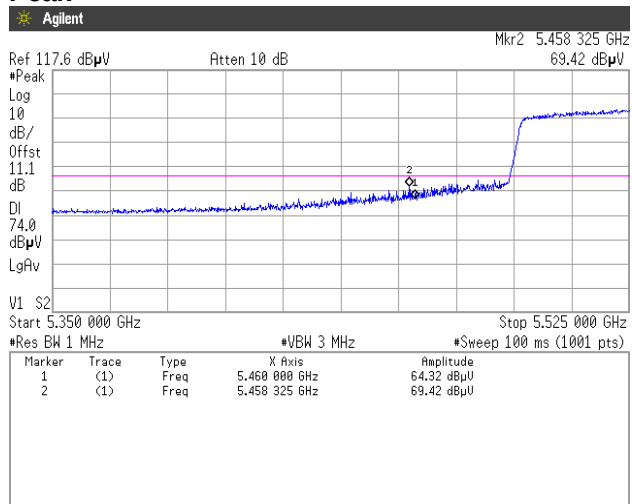
[IEEE802.11ac (HT80)]

**5.3 GHz Band, Channel High
Horizontal****Peak****Average****Vertical
Peak****Average**

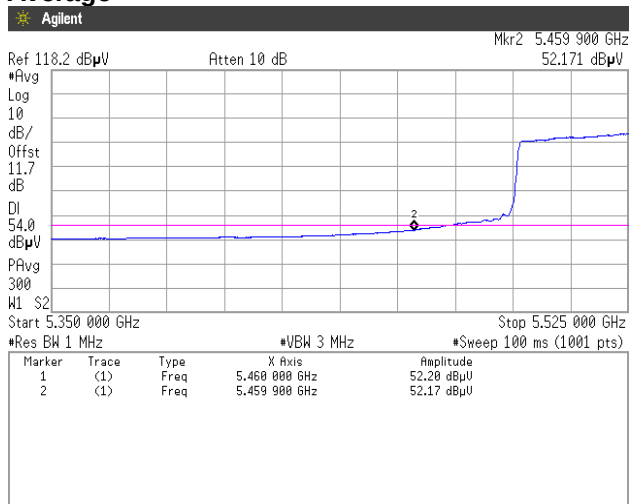
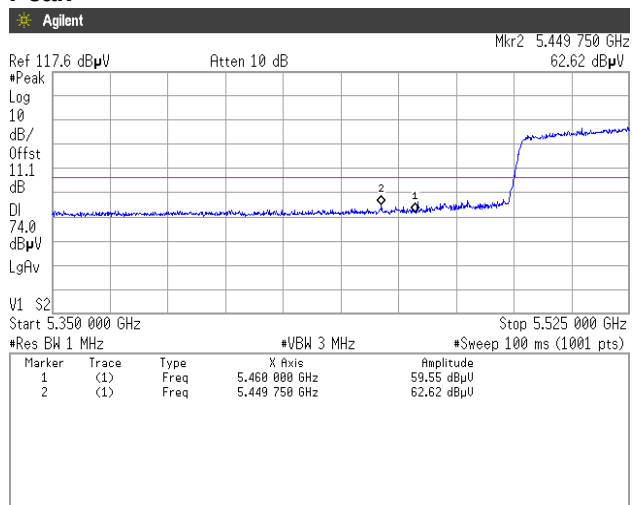
[IEEE802.11ac (HT80)]

5.6 GHz Band, Channel Low
Horizontal

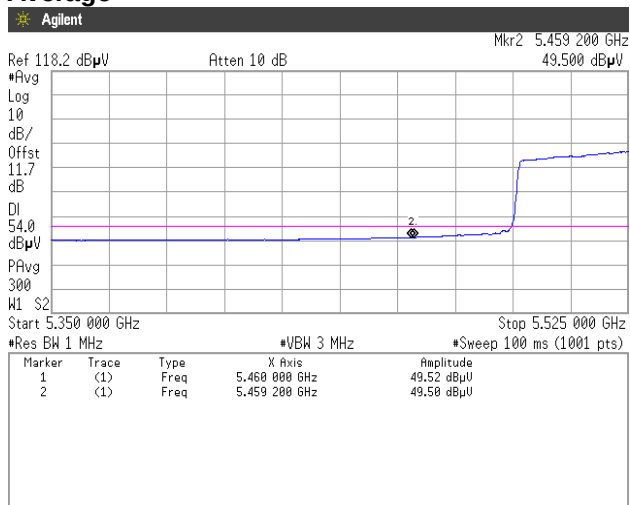
Peak



Average

Vertical
Peak

Average



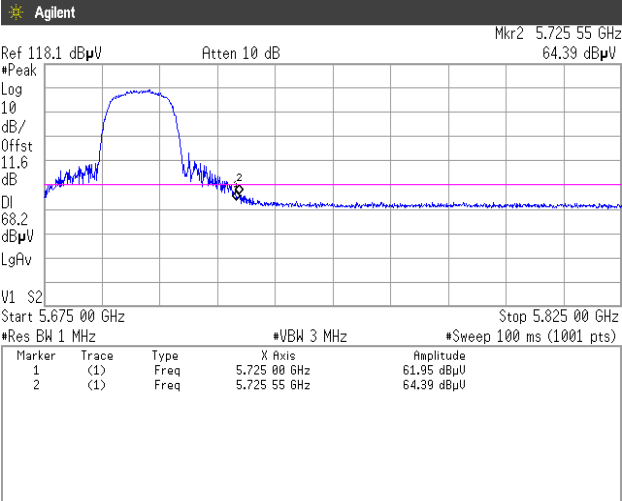
4.4.4.2 Non-Restricted Bandedge

[IEEE802.11a]

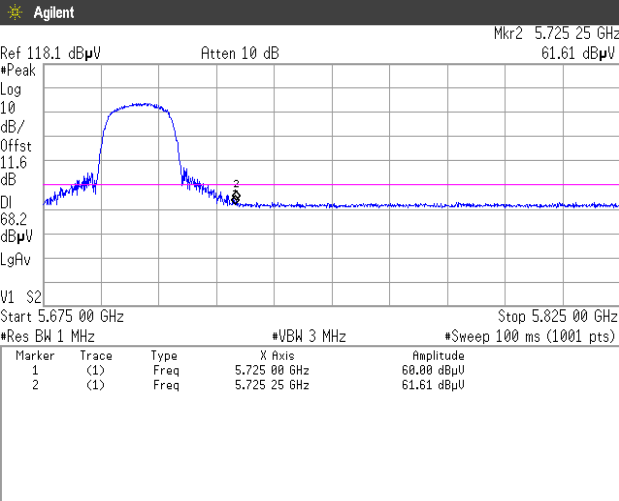
5.6 GHz Band, Channel High

Peak

Horizontal



Vertical

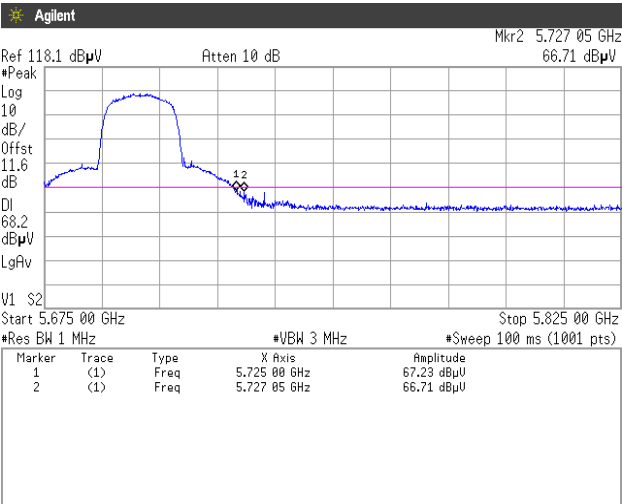


[IEEE802.11n (HT20)]

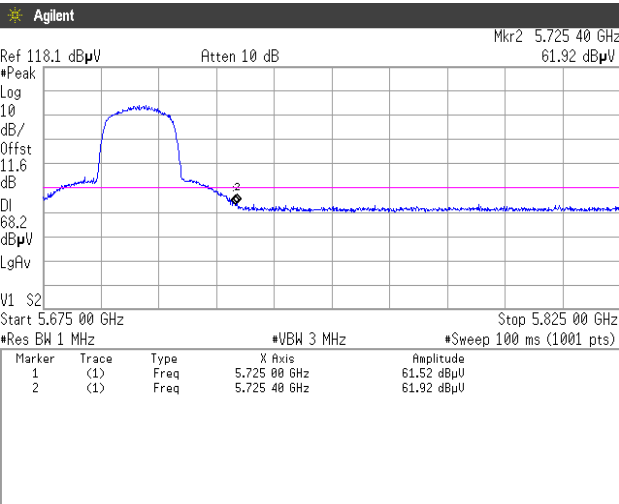
5.6GHz Band, Channel High

Peak

Horizontal



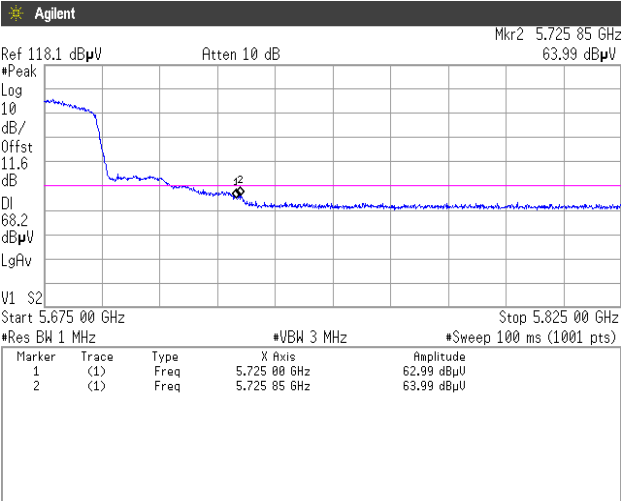
Vertical



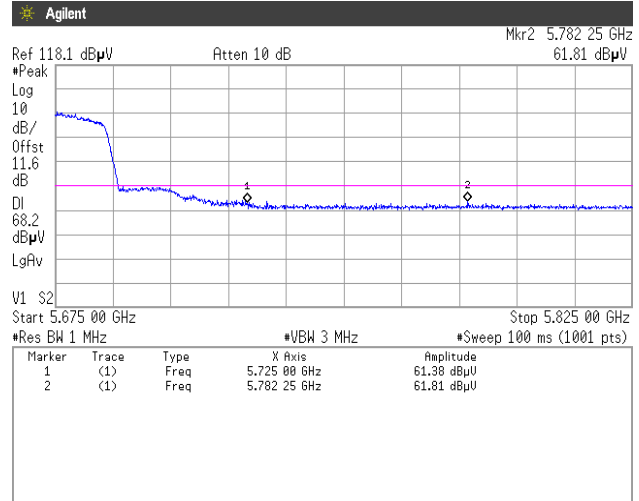
[IEEE802.11n (HT40)]

5.6GHz Band, Channel High
Peak

Horizontal



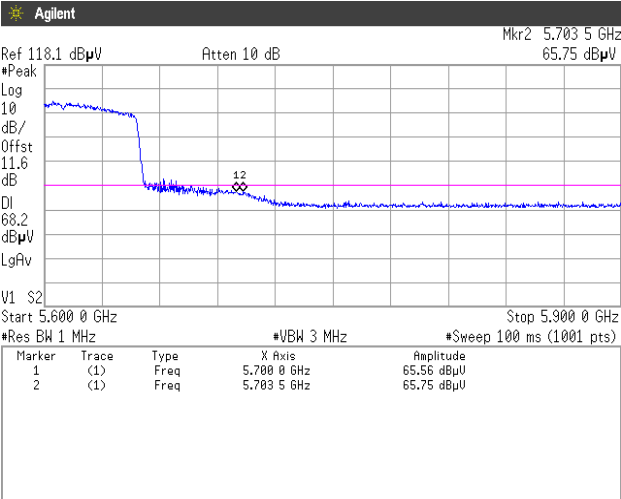
Vertical



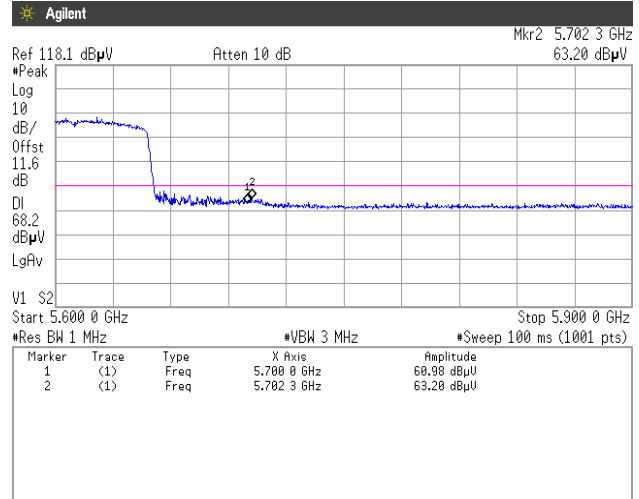
[IEEE802.11ac (HT80)]

5.6GHz Band, Channel High
Peak

Horizontal



Vertical



4.4.4.3 Radiated Emissions

Date	: 22-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 22.4 [°C]			
Humidity	: 41.2 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 23-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 22.9 [°C]			
Humidity	: 33.8 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 24-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 22.9 [°C]			
Humidity	: 33.8 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 25-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 21.4 [°C]			
Humidity	: 42.3 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 28-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 21.3 [°C]			
Humidity	: 42.3 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 29-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 22.4 [°C]			
Humidity	: 30.8 [%]			
Test place	: 3m Semi-anechoic chamber			
Date	: 30-October-2019	Test engineer	:	<u>Tadahiro Seino</u>
Temperature	: 22.4 [°C]			
Humidity	: 30.8 [%]			
Test place	: 3m Semi-anechoic chamber			

**[IEEE802.11a]
(5.2 GHz 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	45.3	10.8		56.1	68.2	12.1
	40	5200	10400.00	H	PK	44.6	10.8		55.4	68.2	12.8
	48	5240	10480.00	H	PK	45.3	11.0		56.3	68.2	11.9

(5.3 GHz 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	46.1	11.1		57.2	68.2	11.0
	56	5280	10560.00	H	PK	45.4	11.2		56.6	68.2	11.6
	64	5320	10640.00	H	PK	44.8	11.3		56.1	74.0	17.9
	64	5320	10640.00	H	AV	34.0	11.3	0.135	45.3	54.0	8.7

(5.6 GHz 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	5476.99	H	PK	55.0	10.9		65.9	68.2	2.3
			5468.50	V	PK	49.7	11.0		60.7	68.2	7.5
			11000.00	H	PK	45.8	11.9		57.7	74.0	16.3
			11000.00	H	AV	35.0	11.9	0.135	47.0	54.0	7.0
	116	5580	11160.00	H	PK	46.6	12.0		58.6	74.0	15.4
			11160.00	H	AV	34.4	12.0	0.135	46.5	54.0	7.5
	140	5700	11400.00	H	PK	45.1	12.2		57.3	74.0	16.7
			11400.00	H	AV	33.9	12.2	0.135	46.2	54.0	7.8

Note:

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

**[IEEE802.11n (HT20)]
(5.2 GHz 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	46.8	10.8		57.6	68.2	10.6
	40	5200	10400.00	H	PK	45.4	10.8		56.2	68.2	12.0
	48	5240	10480.00	H	PK	46.2	11.0		57.2	68.2	11.0

(5.3 GHz 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	46.4	11.1		57.5	68.2	10.7
	56	5280	10560.00	H	PK	46.3	11.2		57.5	68.2	10.7
	64	5320	10640.00	H	PK	45.1	11.3		56.4	74.0	17.6
			10640.00	H	AV	33.8	11.3	0.146	45.2	54.0	8.8

(5.6 GHz 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	5468.90	H	PK	53.5	11.0		64.5	68.2	3.7
			5464.70	V	PK	48.9	11.0		59.9	68.2	8.3
			11000.00	H	PK	45.8	11.9		57.7	74.0	16.3
			11000.00	H	AV	33.6	11.9	0.14	45.6	54.0	8.4
	116	5580	11160.00	H	PK	45.4	12.0		57.4	74.0	16.6
			11160.00	H	AV	34.3	12.0	0.14	46.4	54.0	7.6
	140	5700	11400.00	H	PK	44.9	12.2		57.1	74.0	16.9
			11400.00	H	AV	33.9	12.2	0.14	46.2	54.0	7.8

Note:

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

[IEEE802.11n (HT40)]**(5.2 GHz 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	45.2	10.8		56.0	68.2	12.2
	46	5230	10460.00	H	PK	45.0	11.0		56.0	68.2	12.2

(5.3 GHz 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	44.9	11.1		56.0	68.2	12.2
	62	5310	10620.00	H	PK	45.1	11.3		56.4	74.0	17.6
			10620.00	H	AV	35.0	11.3	0.297	46.6	54.0	7.4

(5.6 GHz 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	5467.70	H	PK	55.0	11.0		66.0	68.2	2.2
			5469.80	V	PK	51.8	11.0		62.8	68.2	5.4
			11020.00	H	PK	44.8	11.9		56.7	74.0	17.3
			11020.00	H	AV	34.2	11.9	0.297	46.4	54.0	7.6
	110	5550	11100.00	H	PK	45.3	12.0		57.3	74.0	16.7
			11100.00	H	AV	35.4	12.0	0.297	47.7	54.0	6.3
			11340.00	H	PK	44.8	12.2		57.0	74.0	17.0
	134	5670	11340.00	H	AV	35.3	12.2	0.297	47.8	54.0	6.2

Note:

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

[IEEE802.11ac (HT80)]**(5.2 GHz 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	44.9	10.9		55.8	68.2	12.4

(5.3 GHz 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	45.0	11.2		56.2	68.2	12.0

(5.6 GHz 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	5466.60	H	PK	54.2	11.0		65.2	68.2	3.0
			5468.90	V	PK	51.1	11.0		62.1	68.2	6.1
			11060.00	H	PK	45.8	11.9		57.7	74.0	16.3
			11060.00	H	AV	33.7	11.9	0.561	46.2	54.0	7.8
	122	5610	11220.00	H	PK	45.3	12.1		57.4	74.0	16.6
			11220.00	H	AV	34.7	12.1	0.578	47.4	54.0	6.6

Note:

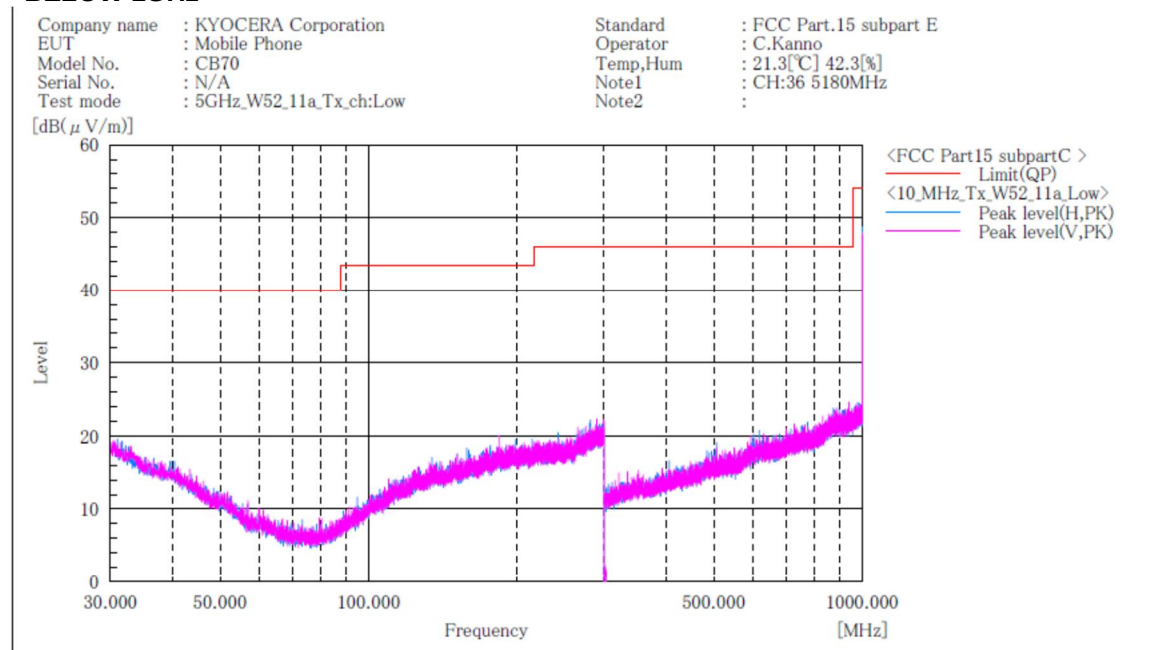
1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30 MHz to 1000 MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

4.4.4.4 Measurement chart

Transmission mode

[11a]

W52 / Channel Low
BELOW 1GHz

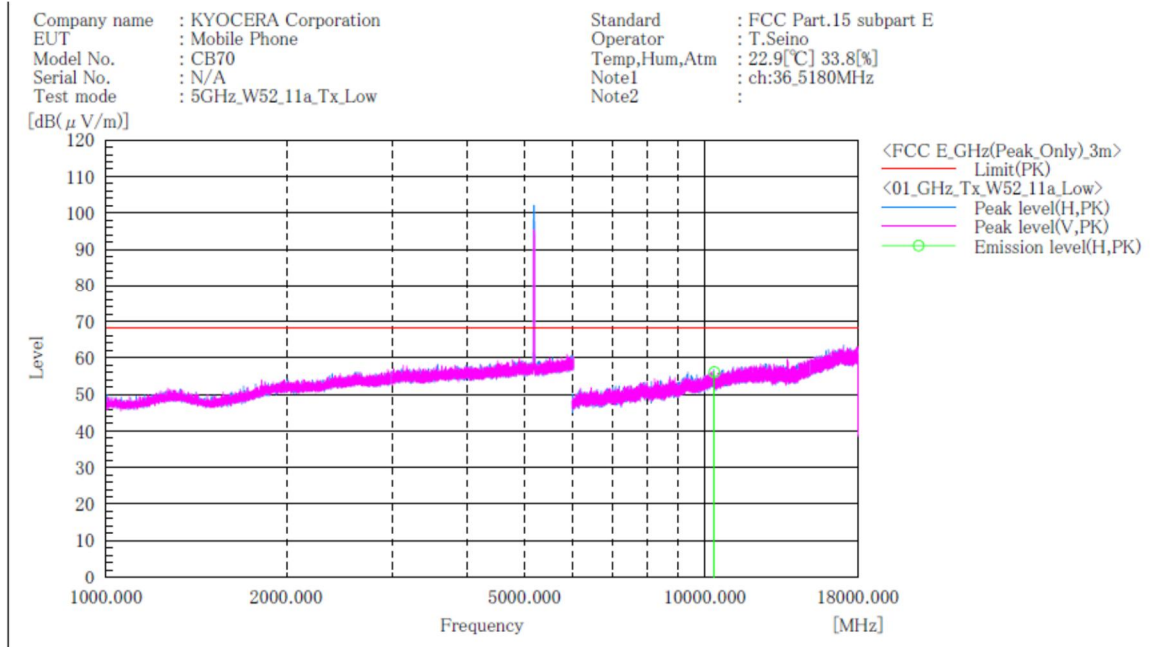


Final Result

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

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****Final Result**

No.	Frequency	(P)	Reading	c. f	Result	Limit	Margin	Height	Angle
	[MHz]		PK [dB(μV)]	[dB(1/m)]	PK [dB(μV/m)]	PK [dB(μV/m)]	PK [dB]	[cm]	[°]
1	10360.000	H	45.3	10.8	56.1	68.2	12.1	100.0	83.0

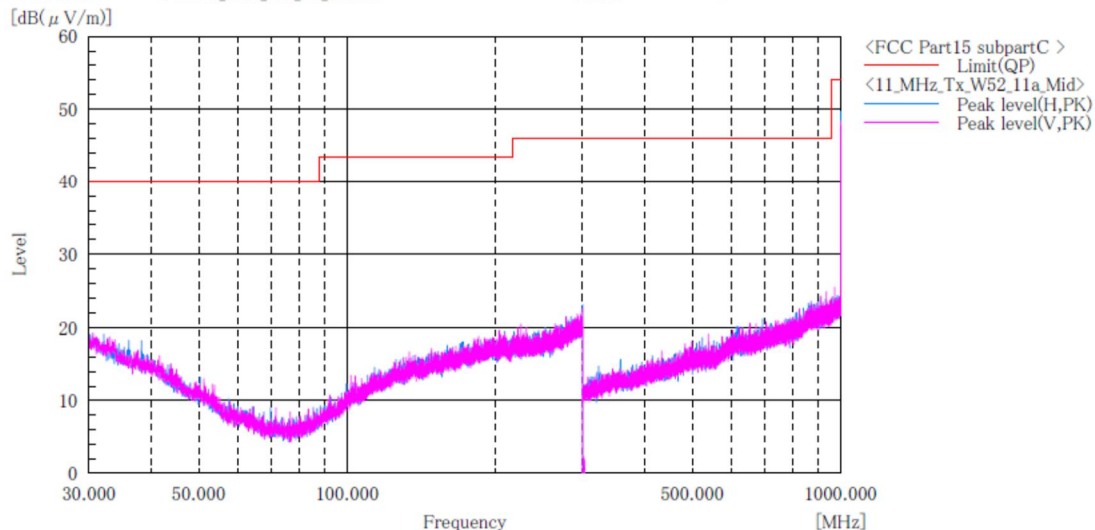
Note:

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**

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : CB70
 Serial No. : N/A
 Test mode : 5GHz_W52_11a_Tx_ch:Mid

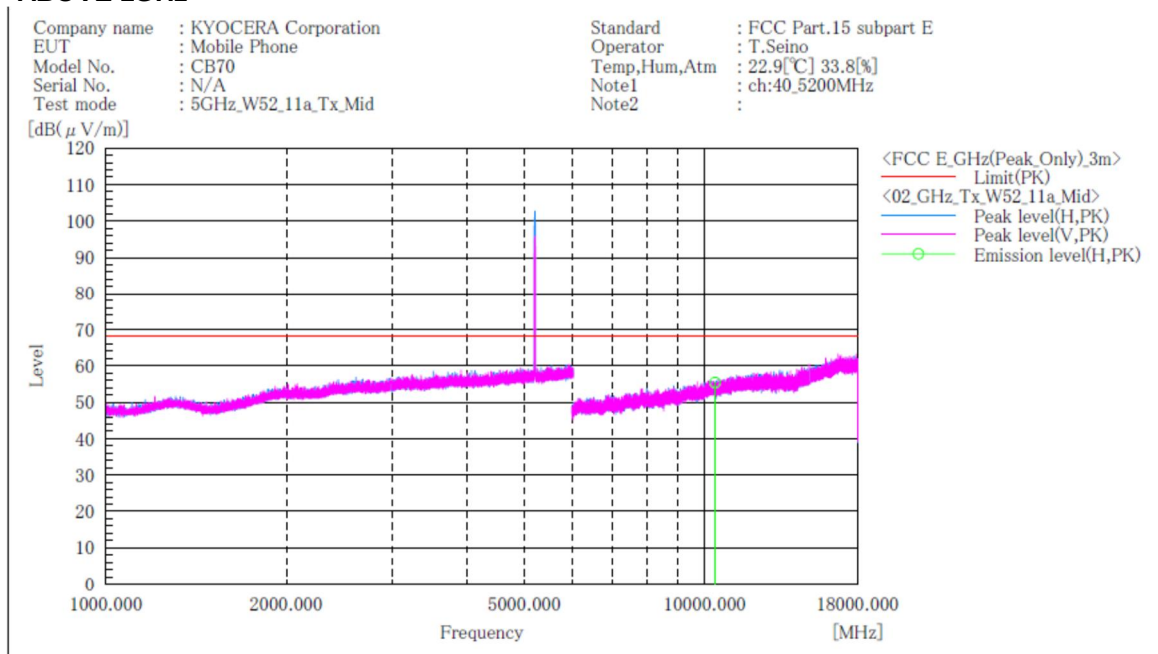
Standard : FCC Part.15 subpart E
 Operator : C.Kanno
 Temp,Hum : 21.3[°C] 42.3[%]
 Note1 : CH:40 5200MHz
 Note2 :

**Final Result**

No.	Frequency (P) [MHz]	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****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	10400.000	H	44.6	10.8	55.4	68.2	12.8	100.0	90.0

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.



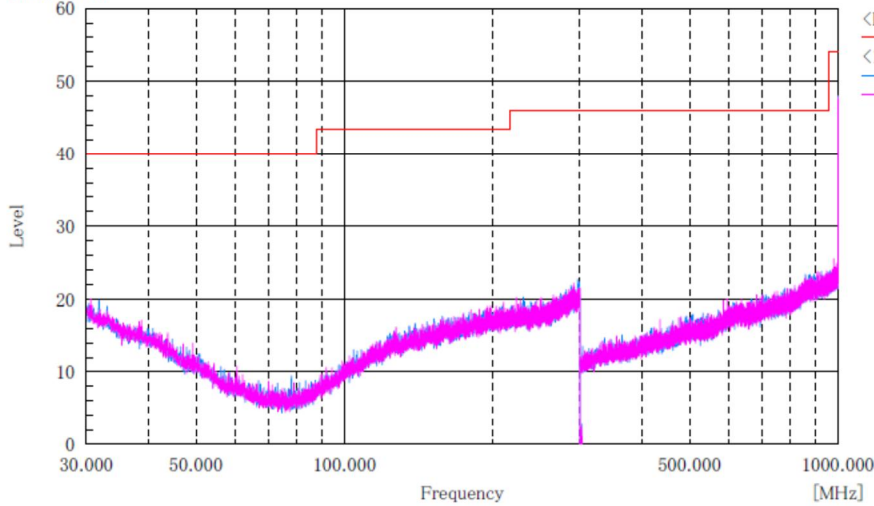
Japan

[11a]
W52 / Channel High
BELOW 1GHz

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : CB70
Serial No. : N/A
Test mode : 5GHz_W52_11a_Tx_ch:High

Standard : FCC Part.15 subpart E
Operator : C.Kanno
Temp,Hum : 21.3[°C] 42.3[%]
Note1 : CH:48 5240MHz
Note2 :

[dB(μV/m)]



<FCC Part15 subpartC >
Limit(QP)
<12_MHz_Tx_W52_11a_High>
Peak level(H,PK)
Peak level(V,PK)

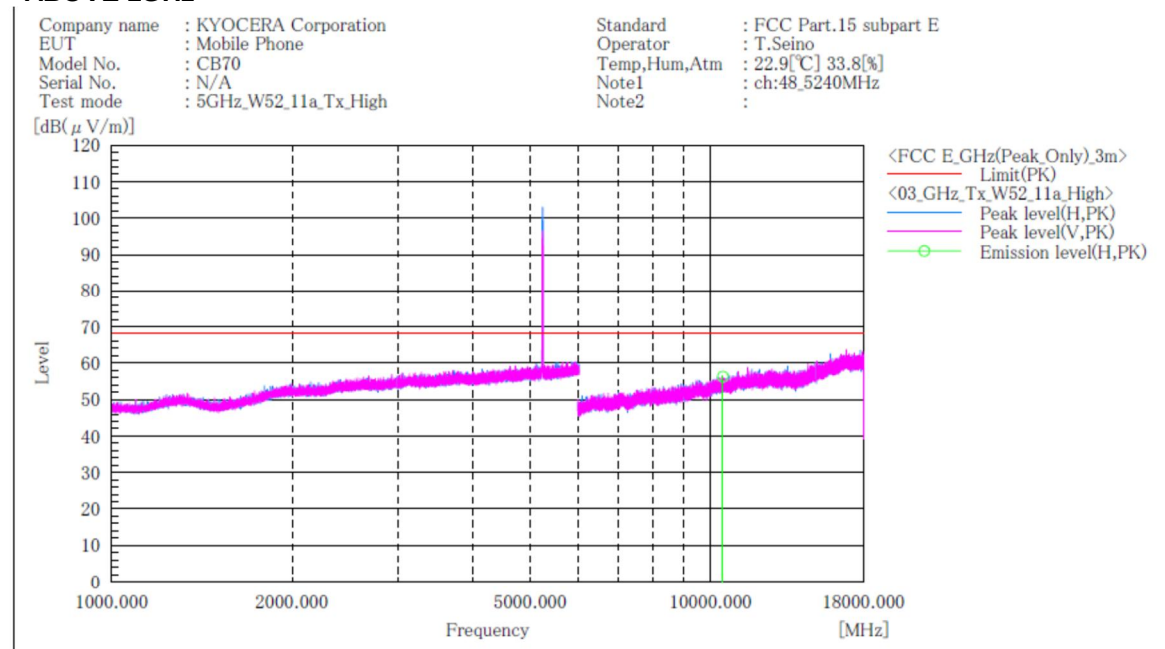
Final Result

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

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**

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	45.3	11.0	56.3	68.2	11.9	100.0	83.0

Note:

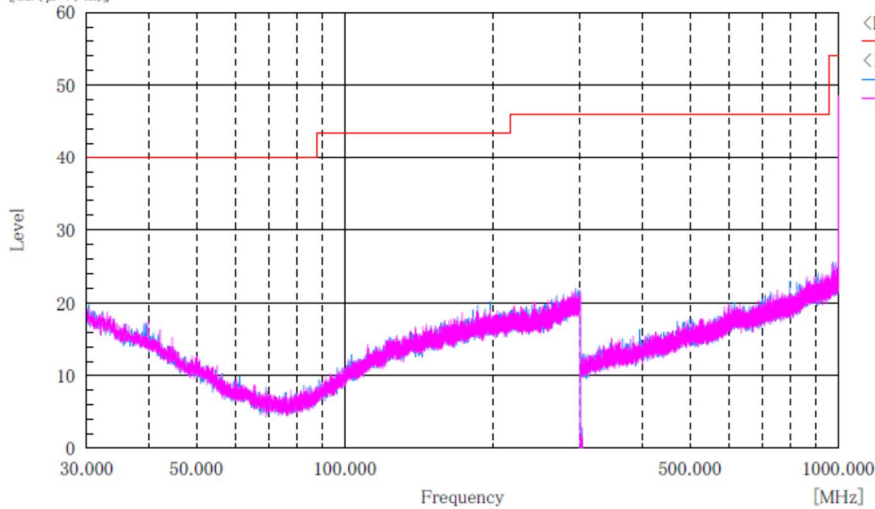
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11a]
W53 / Channel Low
BELOW 1GHz

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : CB70
Serial No. : N/A
Test mode : 5GHz_W53_11a_Tx_ch:Low

Standard : FCC Part.15 subpart E
Operator : C.Kanno
Temp,Hum : 21.3[°C] 42.3[%]
Note1 : CH:52 5260MHz
Note2 :

[dB(μV/m)]



<FCC Part15 subpartC >
Limit(QP)
<13_MHz_Tx_W53_11a_Low>
Peak level(H,PK)
Peak level(V,PK)

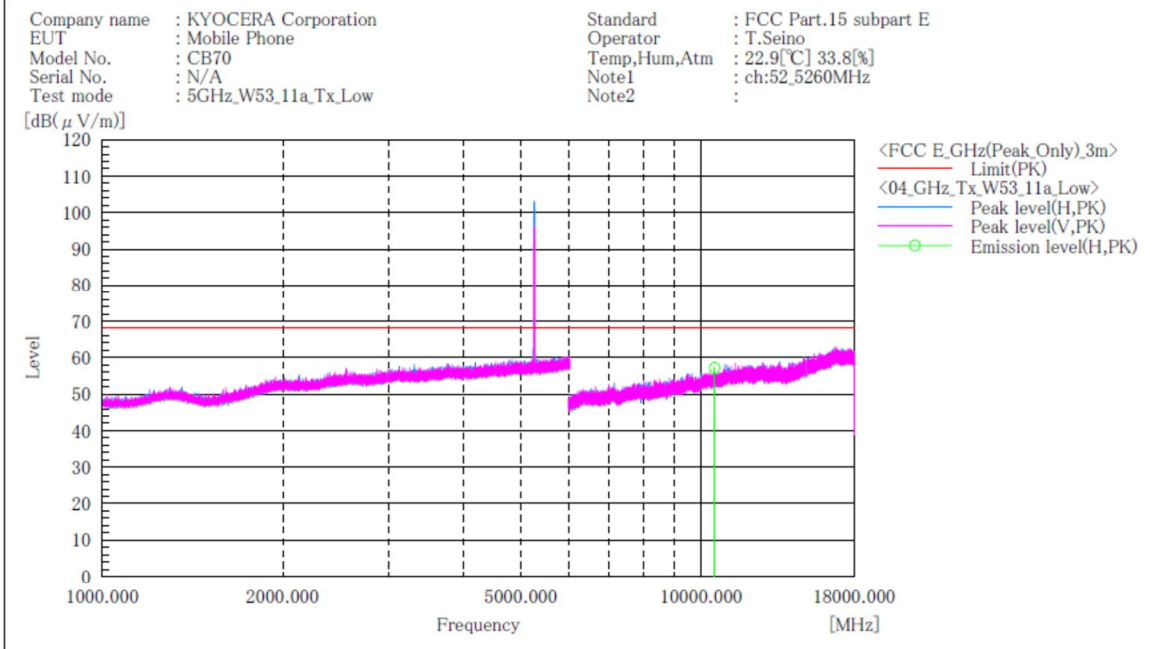
Final Result

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

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



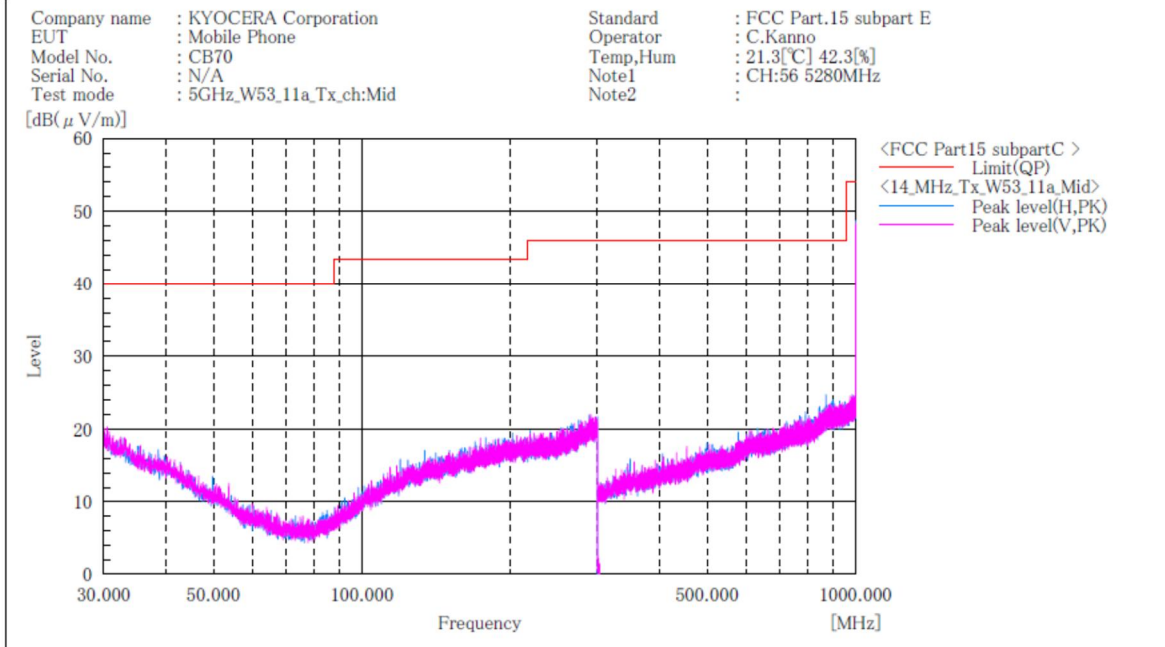
Final Result

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 46.1	11.1	57.2	68.2	11.0	100.0	81.0

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

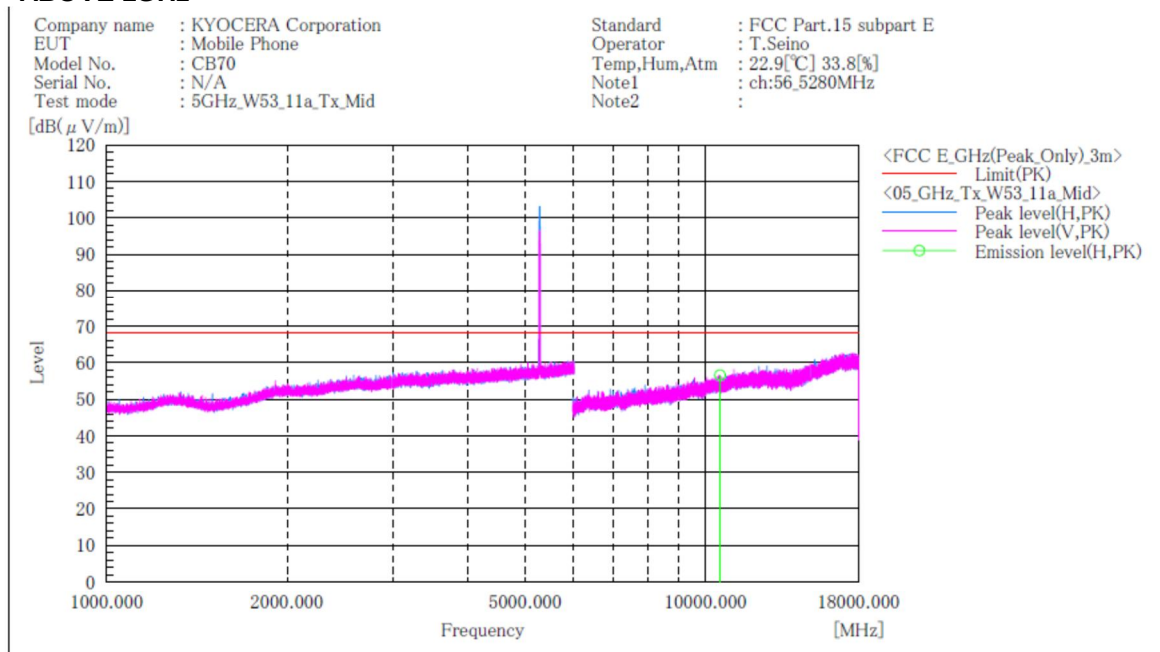


Final Result

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

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****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	10560.000	H	45.4	11.2	56.6	68.2	11.6	100.0	87.0

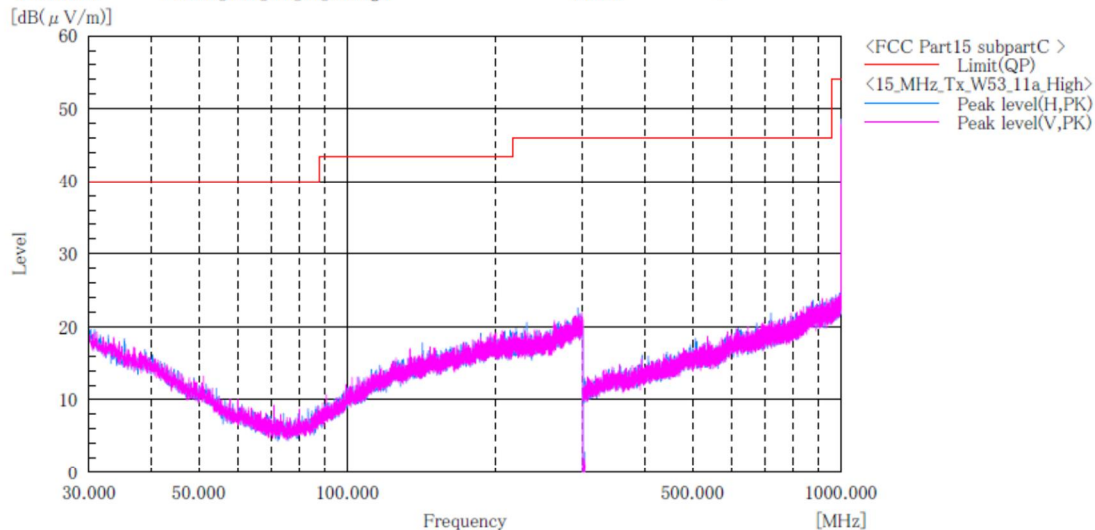
Note:

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

[11a]**W53 / Channel High
BELOW 1GHz**

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : CB70
 Serial No. : N/A
 Test mode : 5GHz_W53_11a_Tx_ch:High

Standard : FCC Part.15 subpart E
 Operator : C.Kanno
 Temp,Hum : 21.3[°C] 42.3[%]
 Note1 : CH:64 5320MHz
 Note2 :

**Final Result**

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

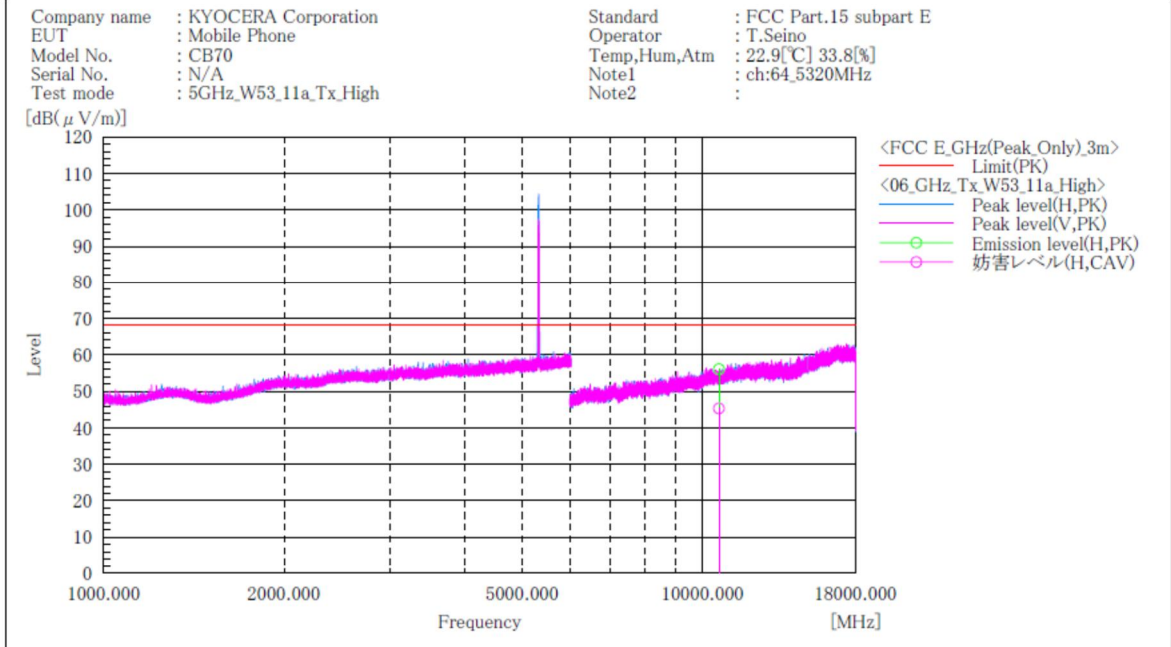
Note:

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.



Japan

[11a]
W53 / Channel High
ABOVE 1GHz

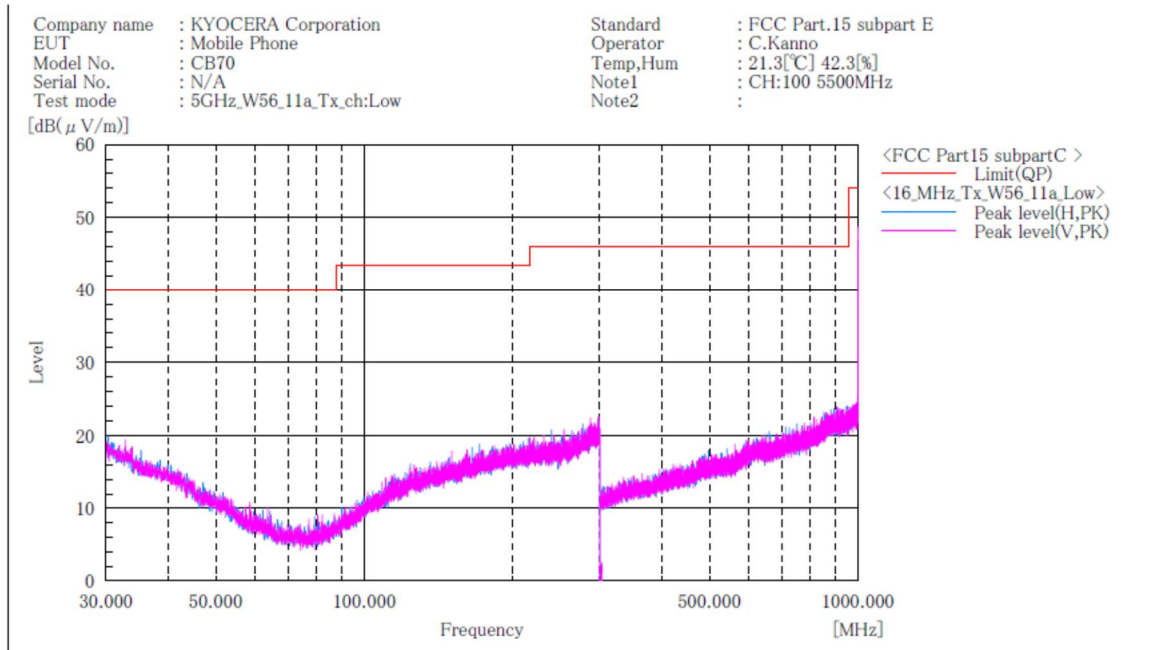


Final Result

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	10640.000	H	44.8	34.0	11.3	56.1	45.3	74.0	17.9	8.7	113.0	80.0

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.

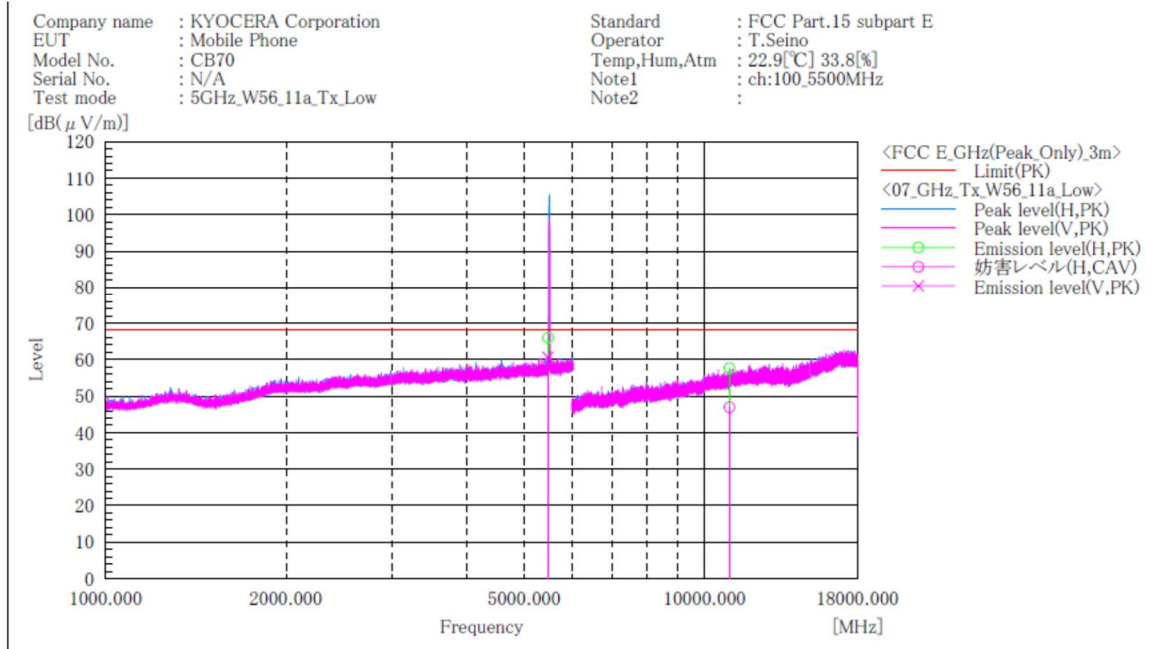
[11a]**W56 / Channel Low
BELOW 1GHz****Final Result**

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

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]

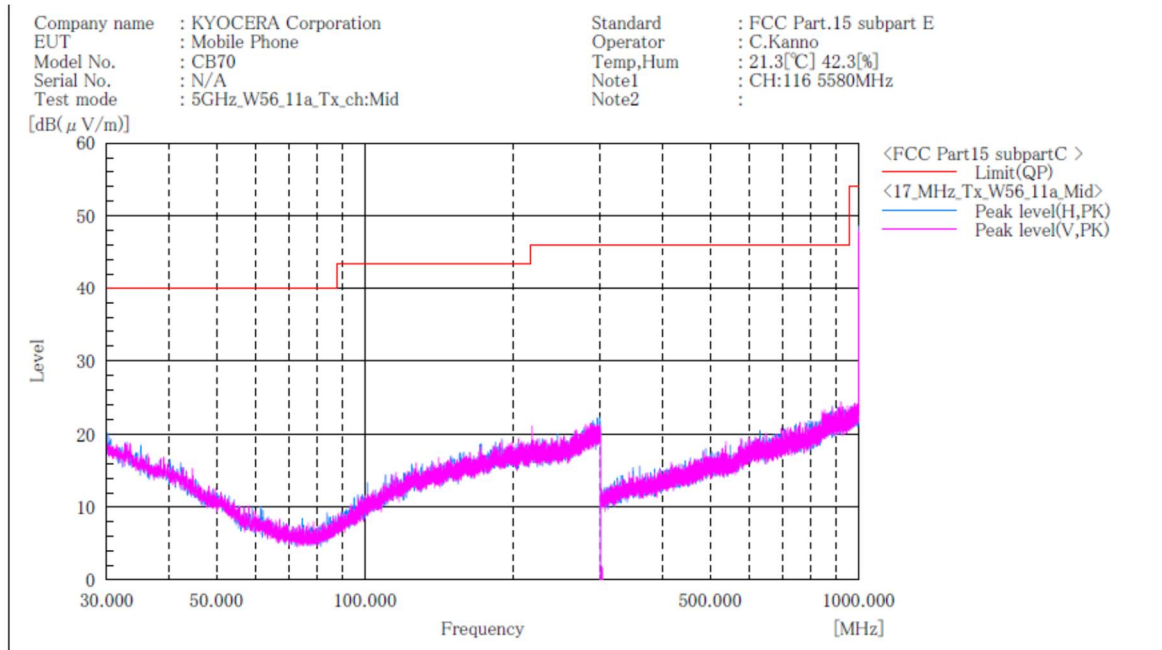
W56 / Channel Low
ABOVE 1GHz

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	5476.085	H	55.0	-----	11.0	66.0	-----	68.2	2.2	-----	100.0	89.0
2	5468.500	V	49.7	-----	11.0	60.7	-----	68.2	7.5	-----	100.0	124.0
3	11000.000	H	45.8	35.0	11.9	57.7	46.9	74.0	16.3	7.1	100.0	82.0

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.

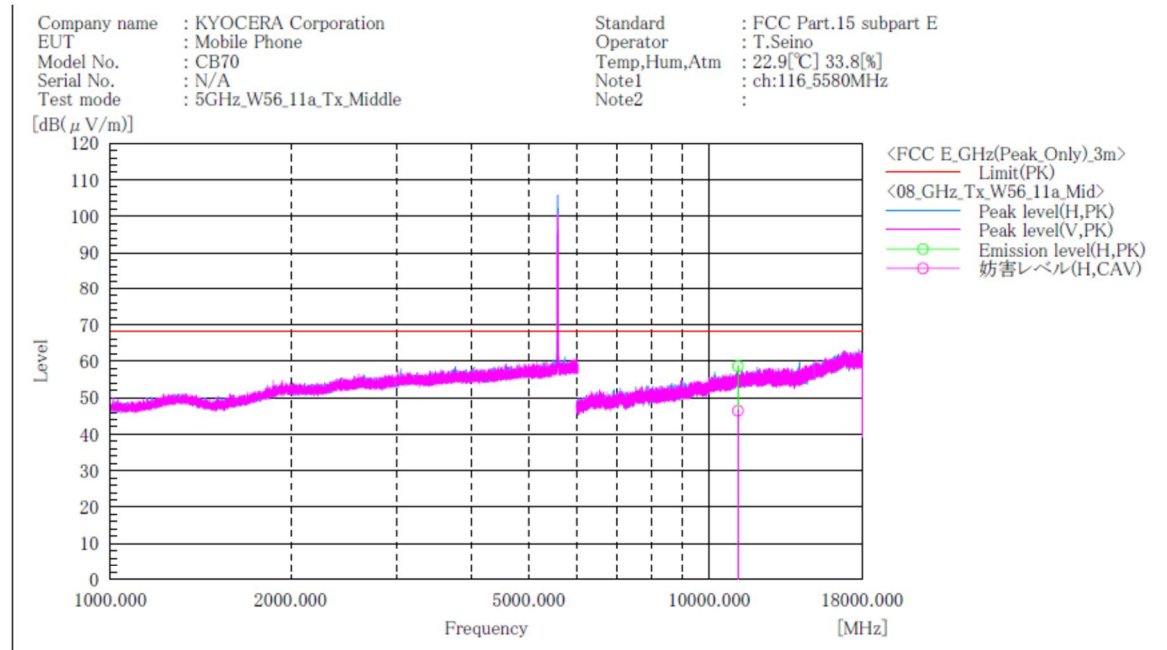
[11a]**W56 / Channel Middle
BELOW 1GHz****Final Result**

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

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]

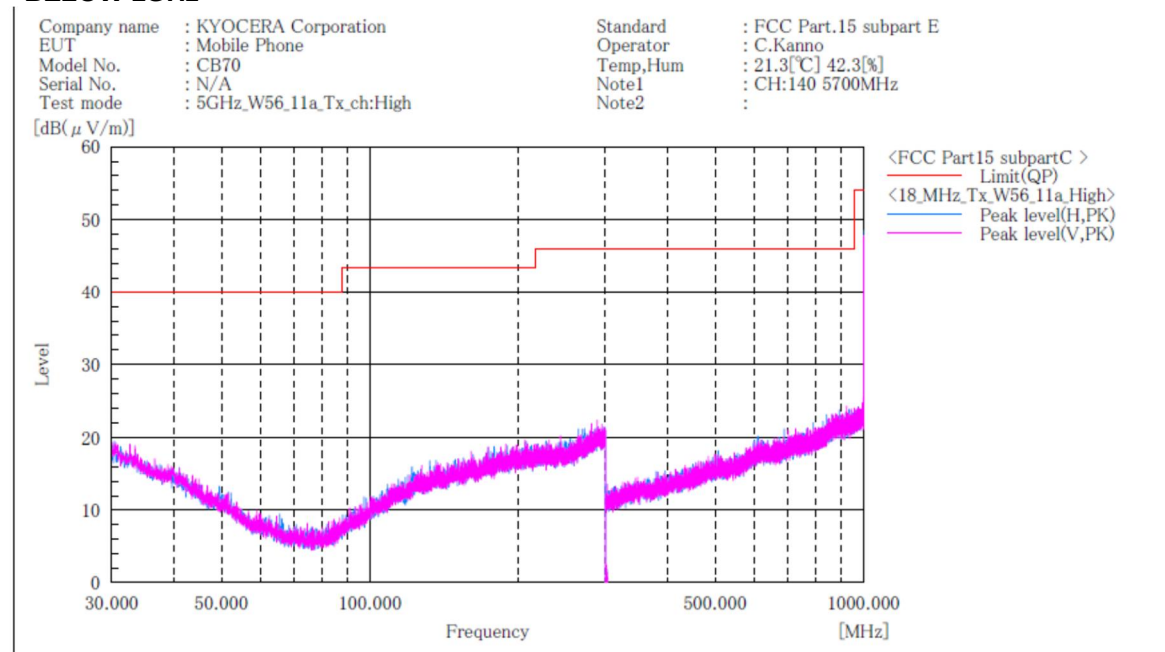
W56 / Channel Middle
ABOVE 1GHz

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	11160.000	H	46.6	34.4	12.0	58.6	46.4	74.0	15.4	7.6	100.0	100.0

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.

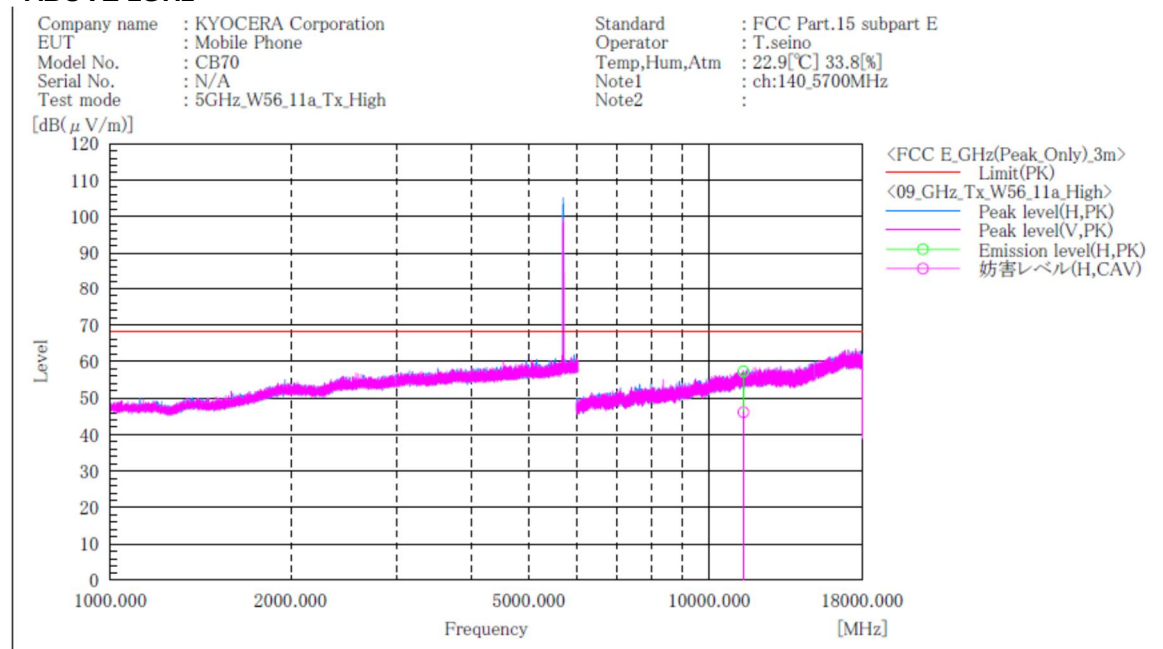
[11a]**W56 / Channel High
BELOW 1GHz****Final Result**

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

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 High
ABOVE 1GHz

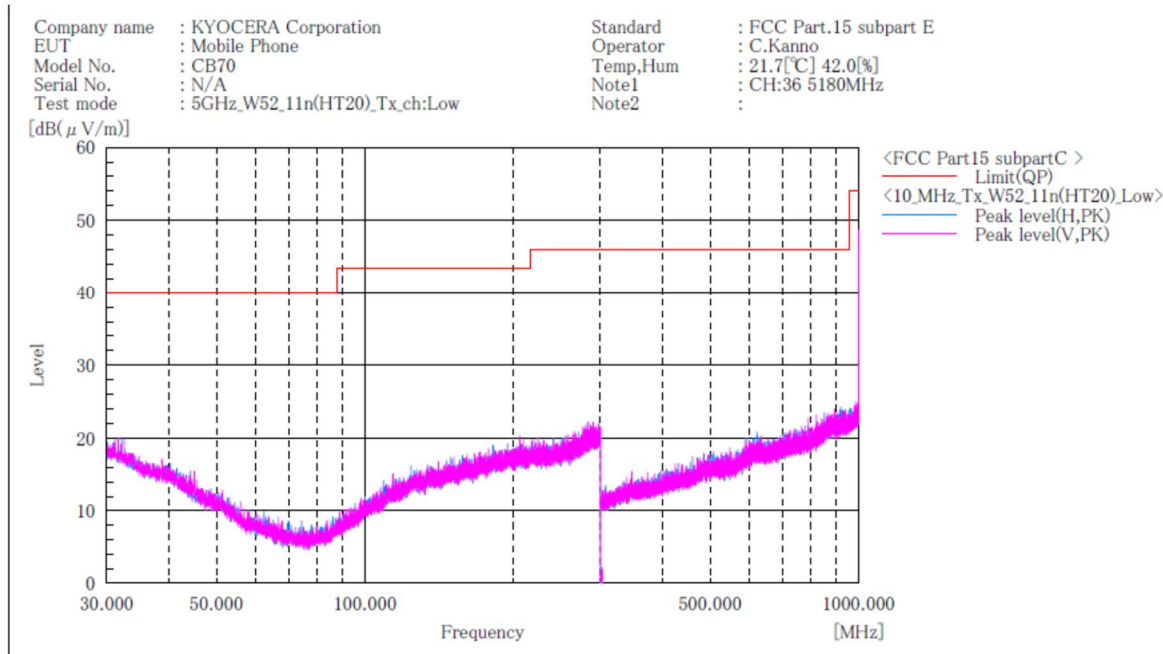
Final Result

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	11400.000	H	45.1	33.9	12.2	57.3	46.1	74.0	16.7	7.9	100.0	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.

[11n(HT20)]
W52 / Channel Low
BELOW 1GHz



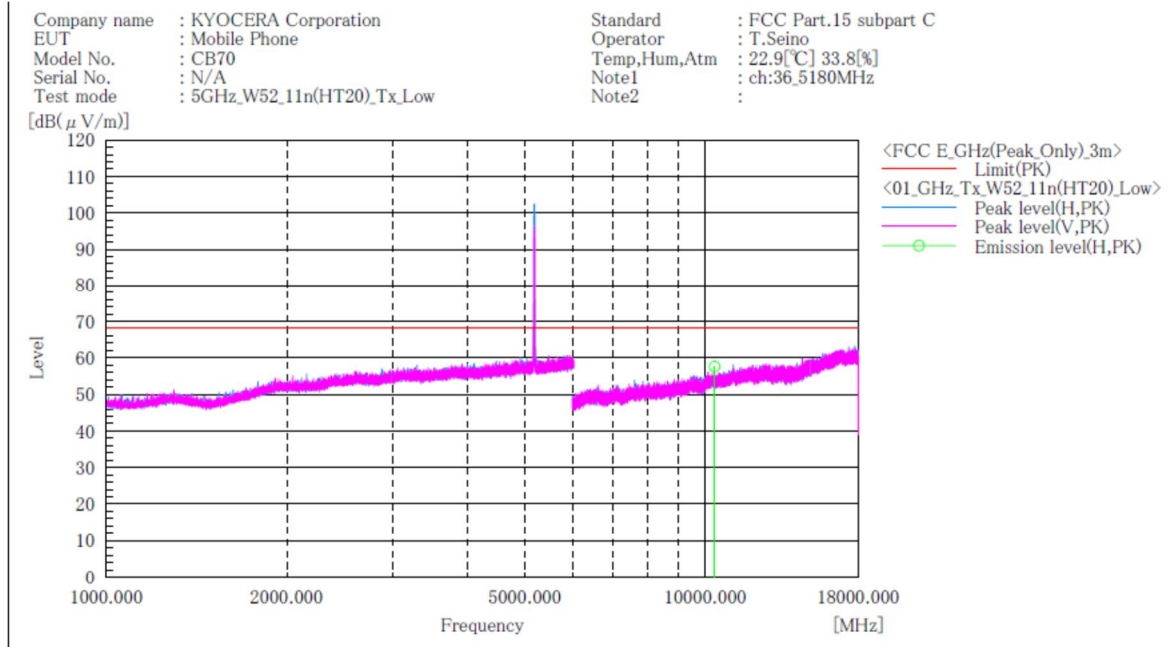
Final Result

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

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.

[11n(HT20)]
W52 / Channel Low
ABOVE 1GHz



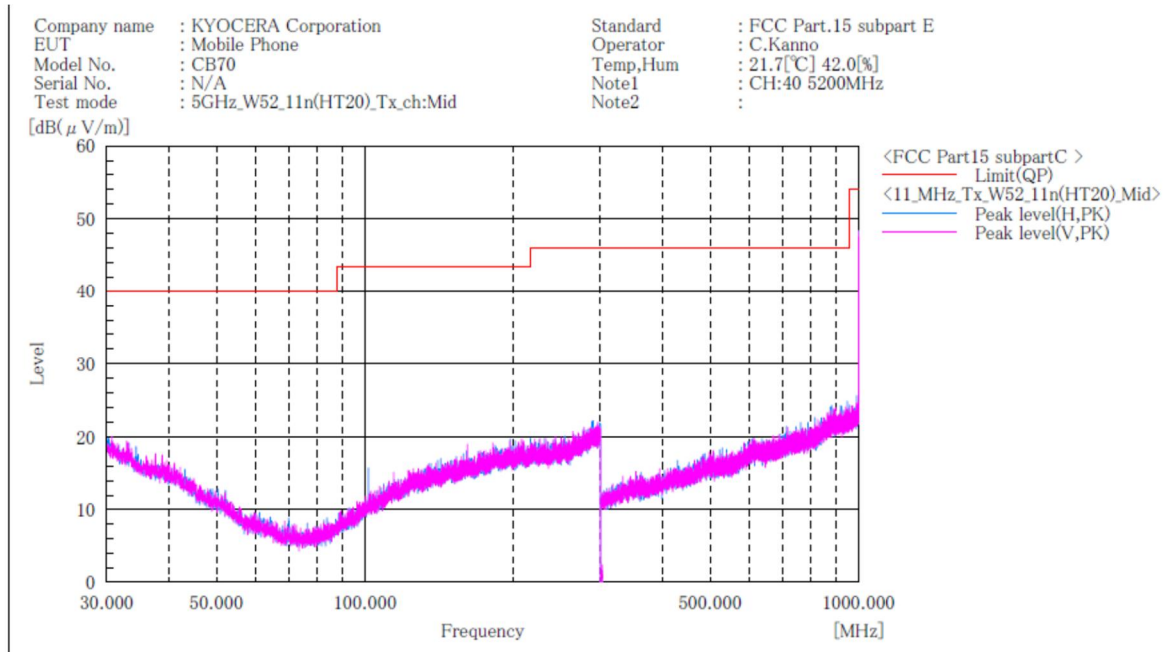
Final Result

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	10360.000	H	46.8	10.8	57.6	68.2	10.6	100.0	81.0

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.

[11n(HT20)]
W52 / Channel Middle
BELOW 1GHz



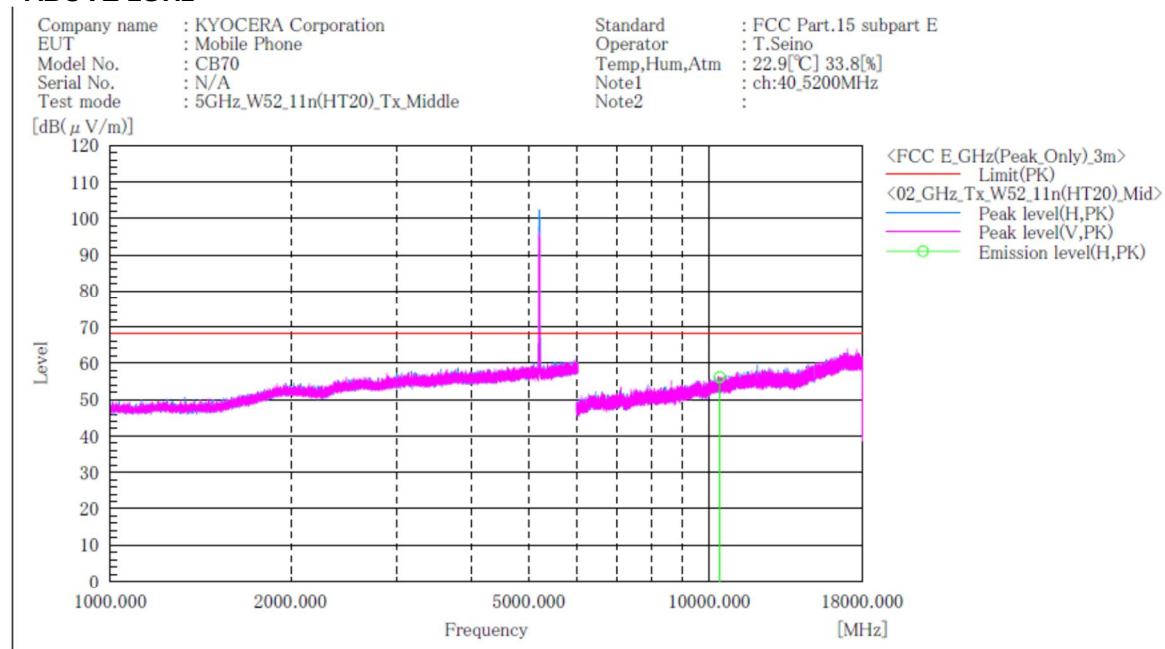
Final Result

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

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.

[11n(HT20)]
W52 / Channel Middle
ABOVE 1GHz



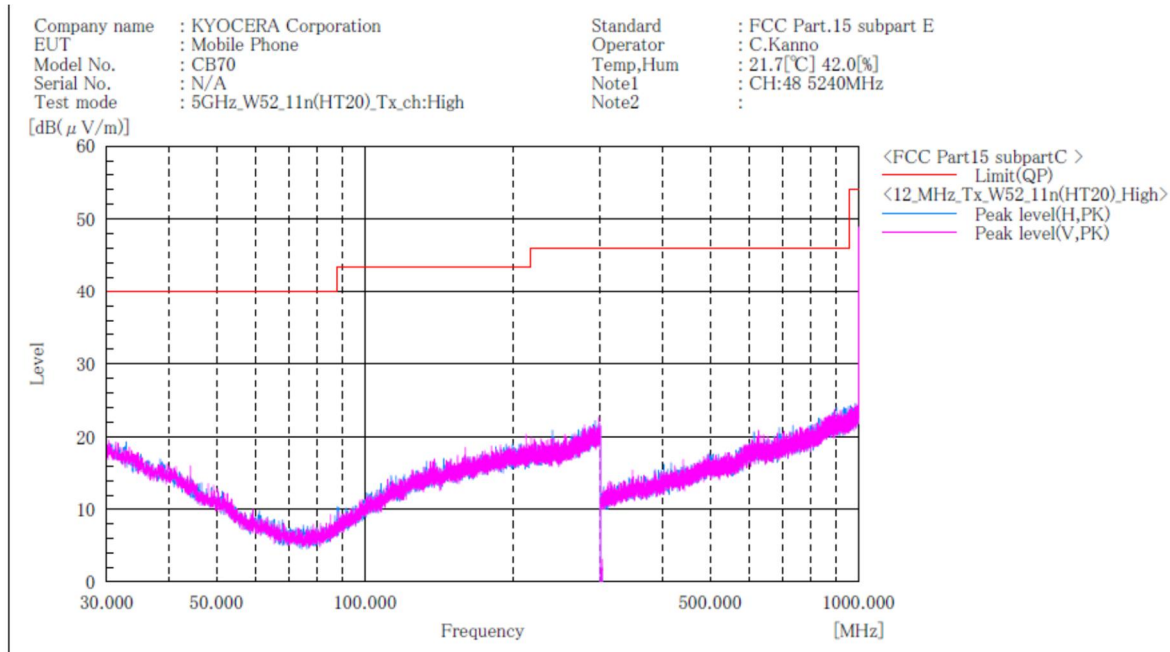
Final Result

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 45.4	10.8	56.2	68.2	12.0	100.0	80.0

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.

[11n(HT20)]
W52 / Channel High
BELOW 1GHz



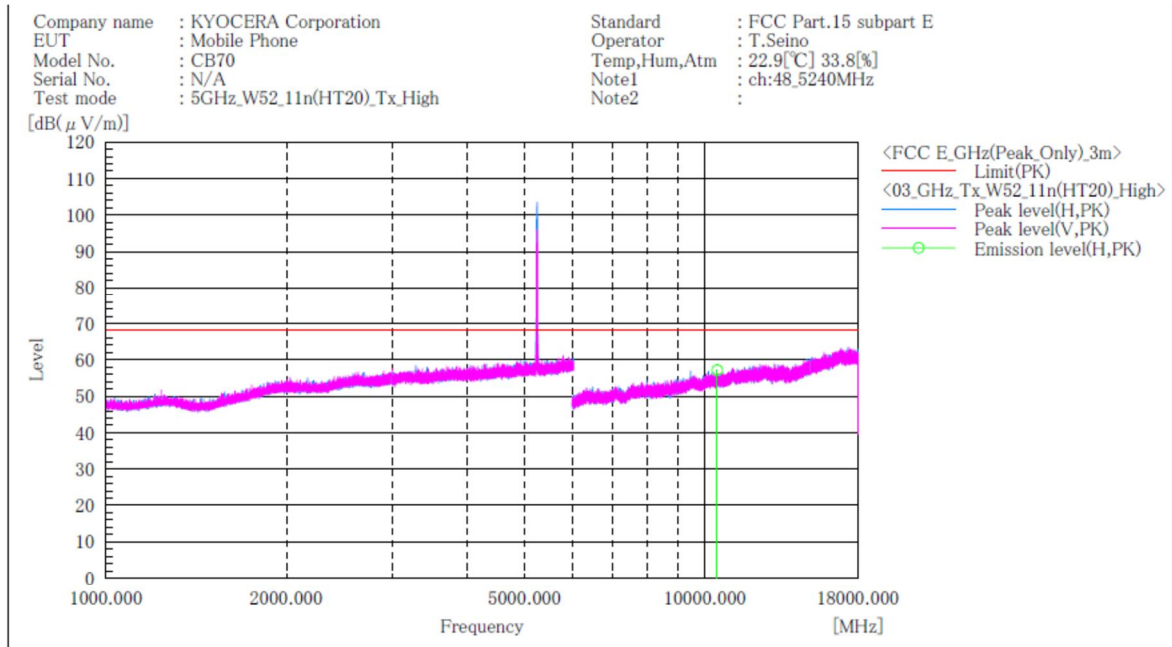
Final Result

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

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.

[11n(HT20)]
W52 / Channel High
ABOVE 1GHz



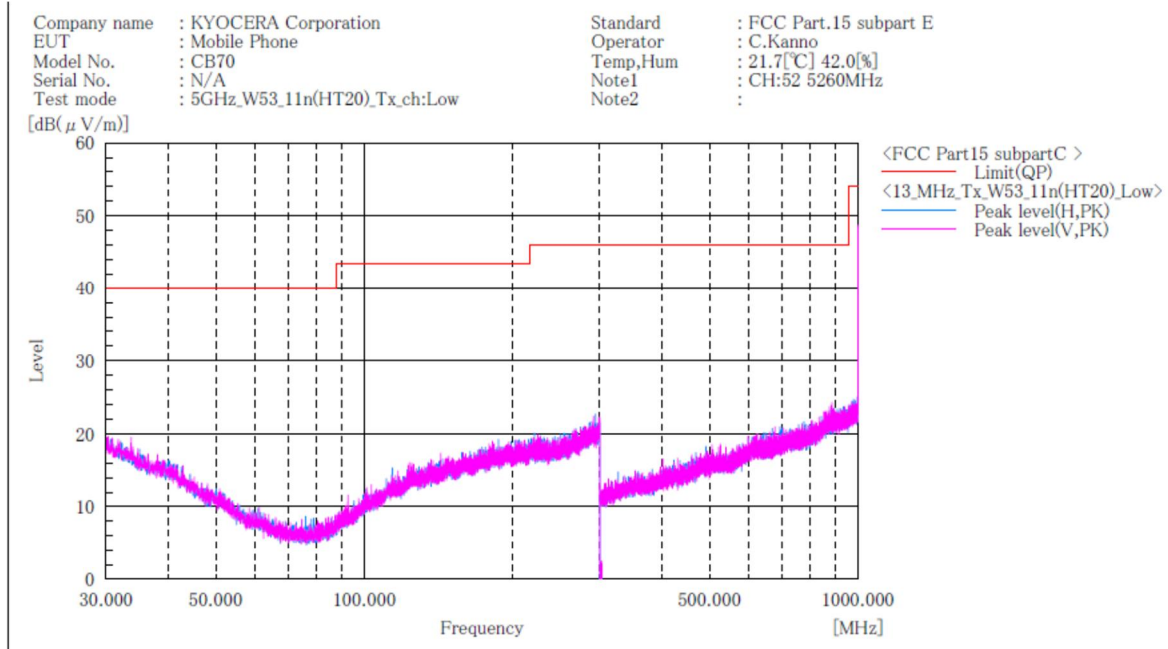
Final Result

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	46.2	11.0	57.2	68.2	11.0	100.0	78.0

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.

[11n(HT20)]
W53 / Channel Low
BELOW 1GHz



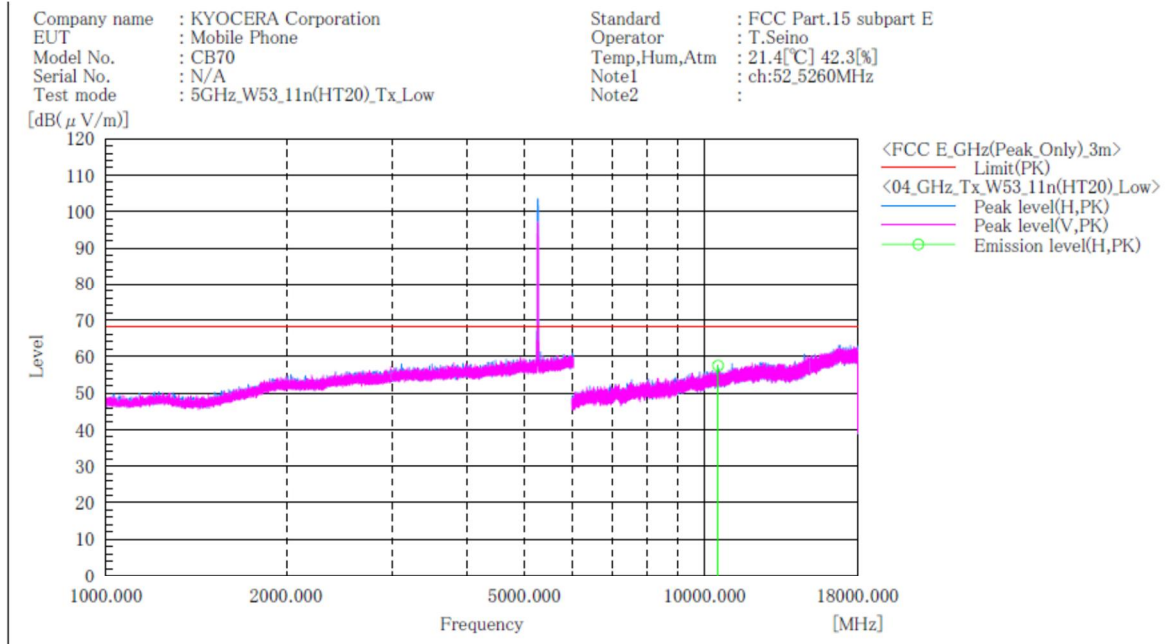
Final Result

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

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.

[11n(HT20)]
W53 / Channel Low
ABOVE 1GHz



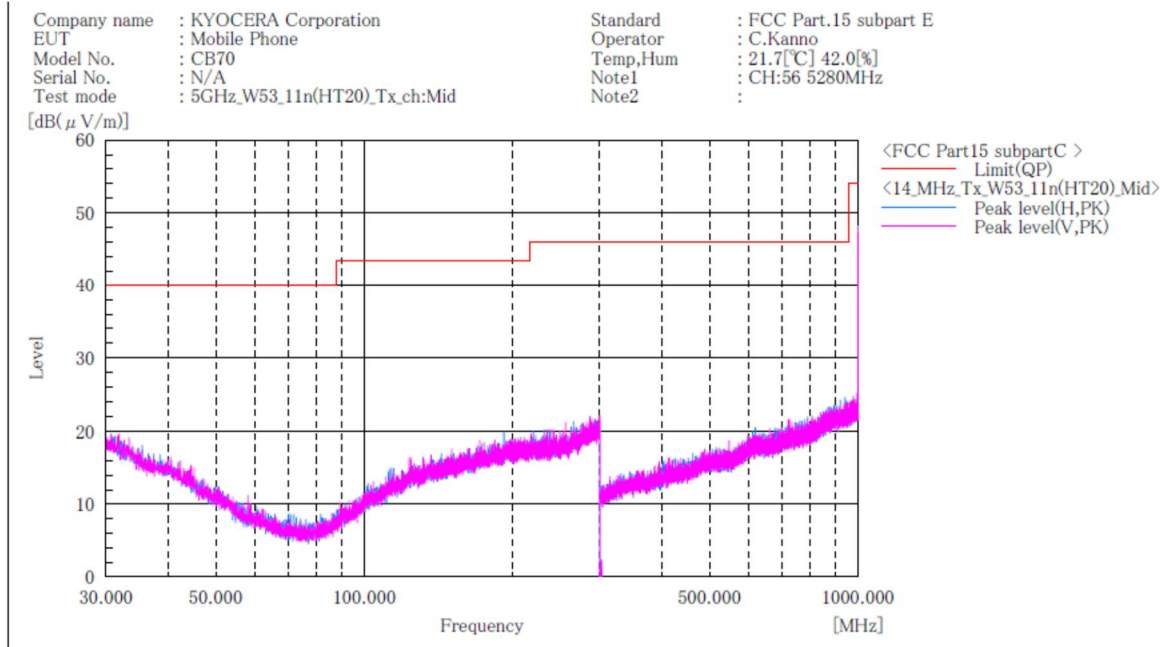
Final Result

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	10520.000	H	46.4	11.1	57.5	68.2	10.7	100.0	84.0

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.

[11n(HT20)]
W53 / Channel Middle
BELOW 1GHz



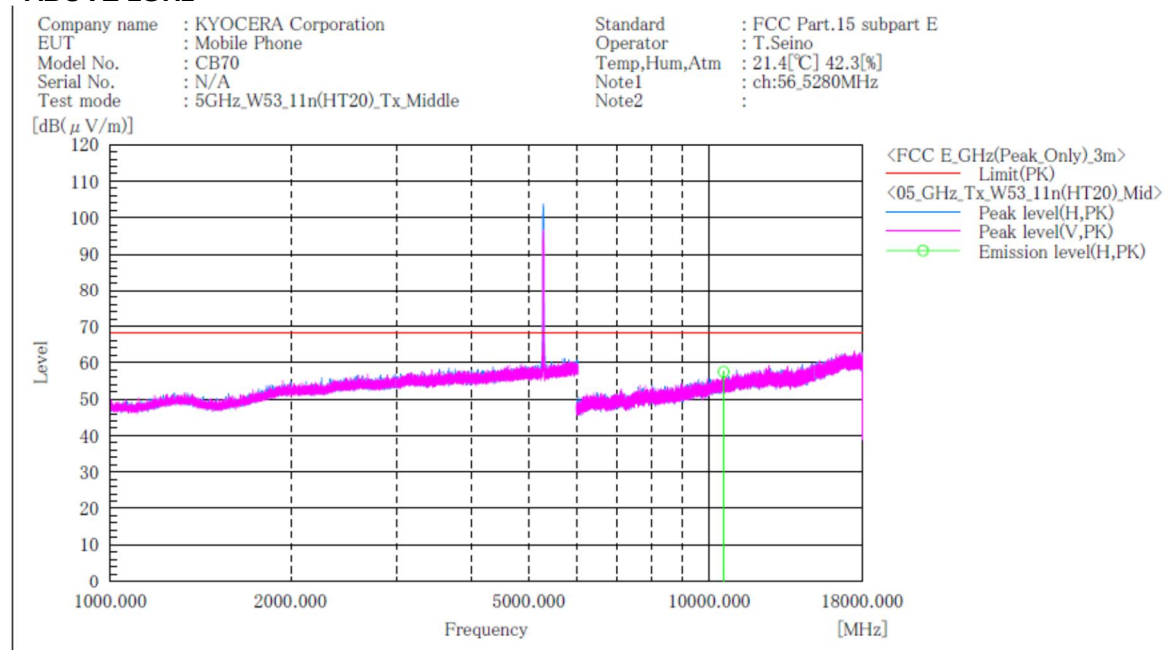
Final Result

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

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.

[11n(HT20)]
W53 / Channel Middle
ABOVE 1GHz



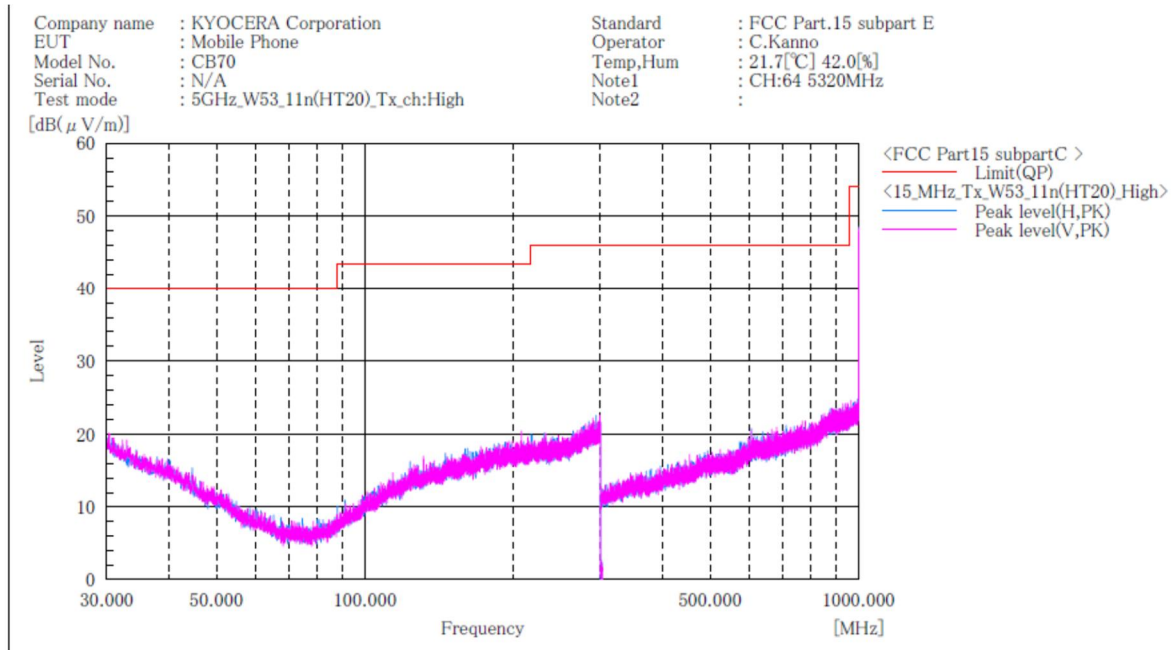
Final Result

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	10560.000	H	46.3	11.2	57.5	68.2	10.7	100.0	84.0

Note:

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

[11n(HT20)]
W53 / Channel High
BELOW 1GHz



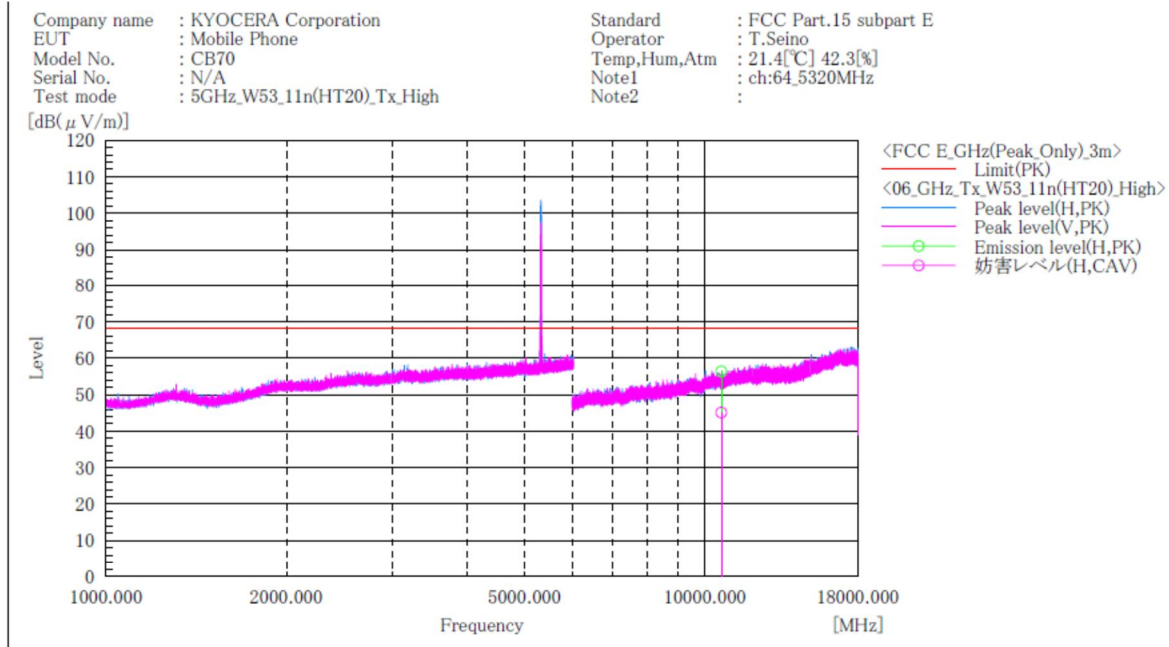
Final Result

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

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.

[11n(HT20)]
W53 / Channel High
ABOVE 1GHz



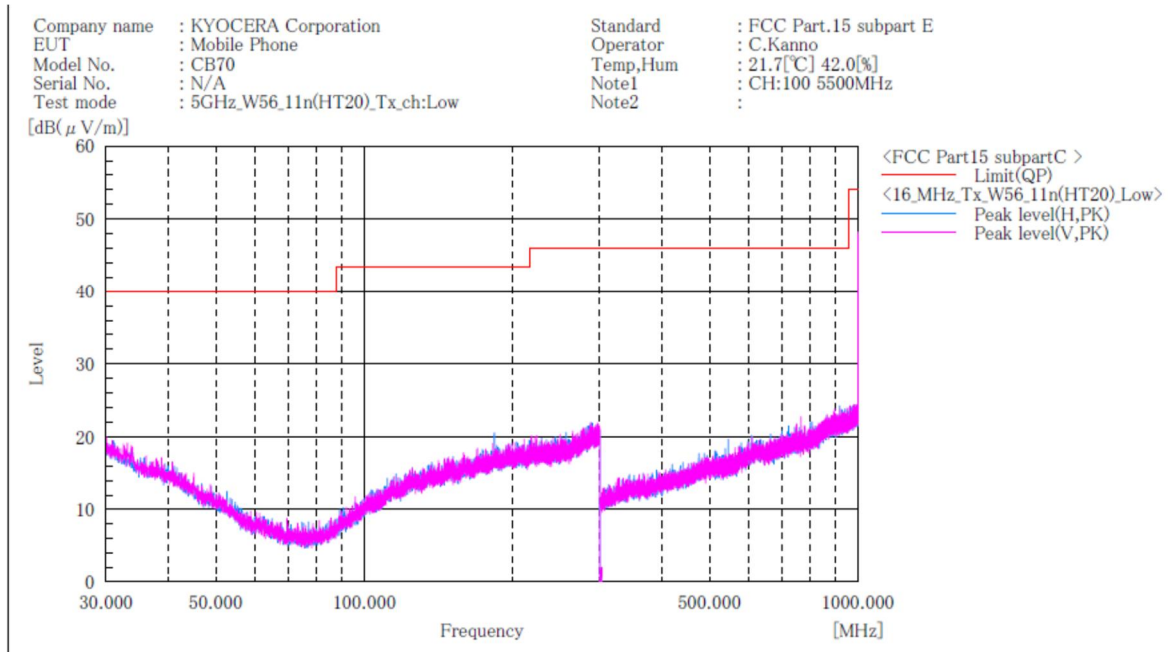
Final Result

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	10640.000	H	45.1	33.8	11.3	56.4	45.1	74.0	17.6	8.9	100.0	77.0

Note:

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

[11n(HT20)]
W56 / Channel Low
BELOW 1GHz



Final Result

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

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.