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#### 10. CONDUCTED SPURIOUS EMISSION

#### 10.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

#### 10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

#### 10.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

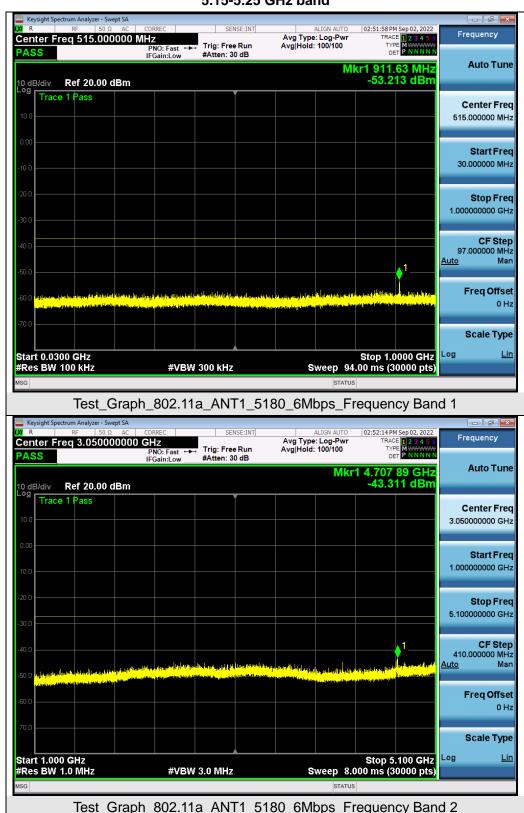
#### 10.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT							
	Measurement R	esult					
Applicable Limits	Test channel	Criteri a					
-27dBm/MHz	5150MHz-5250MH z	PASS					
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	5725MHz-5850MH z	PASS					

Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report. All the 80MHz bandwidth modulation had been tested, the 802.11AC80 was the worst case and record in his test report.

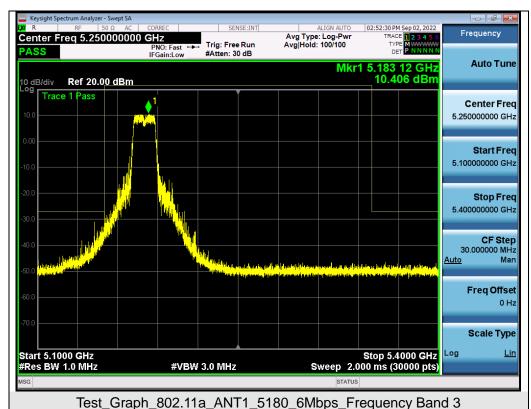


# Test Graphs of Spurious Emissions outside of the 5.15-5.35 GHz band for transmitters operating in the 5.15-5.25 GHz band



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Center Freq 16.200000000 GHz
PASS
PASS 02:52:51 PM Sep 02, 2022 Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 24.963 8 GHz -35.518 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 16.200000000 GHz Start Fred 5.400000000 GHz 27.000000000 GHz **CF Step** 2.160000000 GHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 5.40 GHz #Res BW 1.0 MHz Stop 27.00 GHz Sweep 56.00 ms (30000 pts) Log #VBW 3.0 MHz Test\_Graph\_802.11a\_ANT1\_5180\_6Mbps\_Frequency Band 4

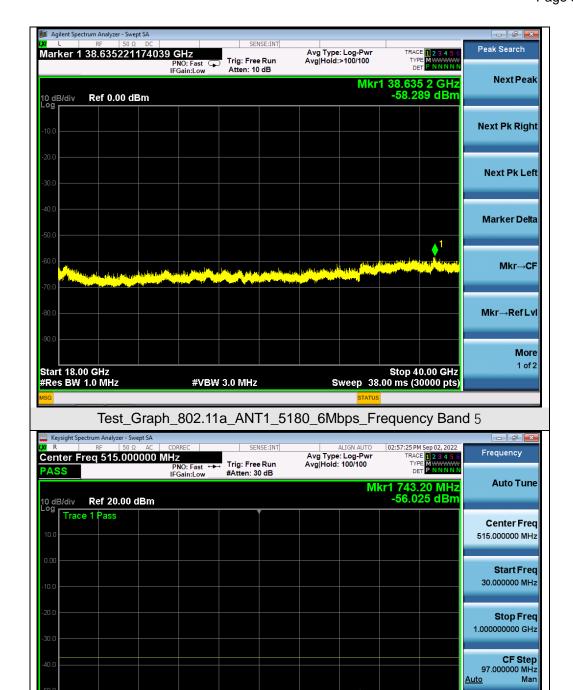
Freq Offset

Scale Type

Log

Stop 1.0000 GHz Sweep 94.00 ms (30000 pts)





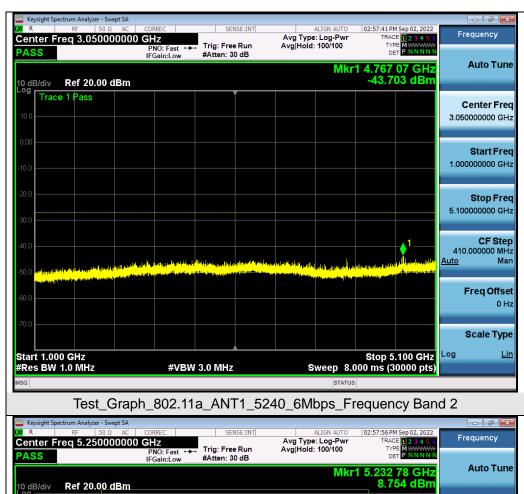
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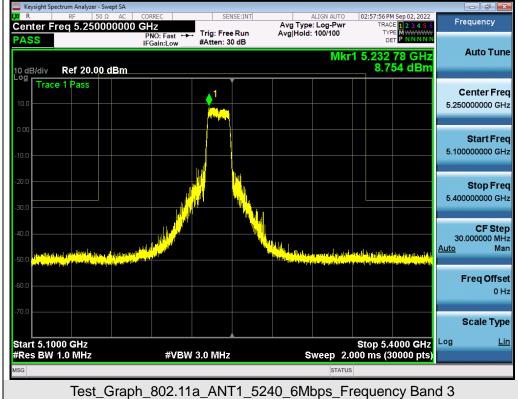
Test\_Graph\_802.11a\_ANT1\_5240\_6Mbps\_Frequency Band 1

#VBW 300 kHz

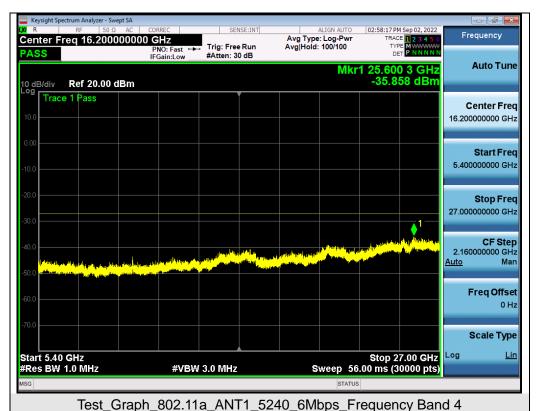
Start 0.0300 GHz #Res BW 100 kHz

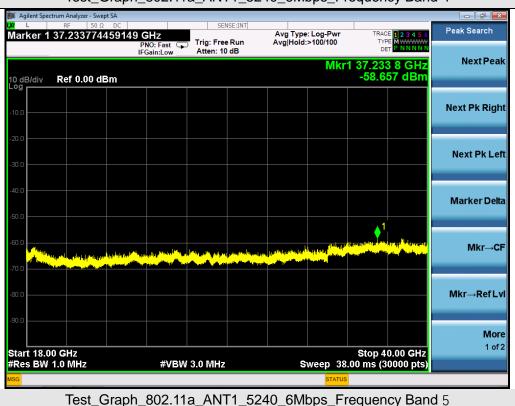




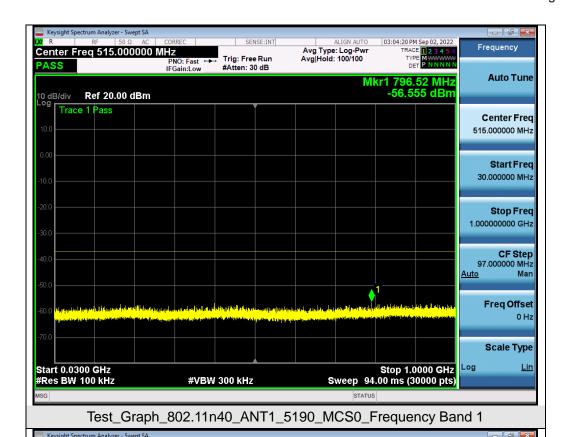






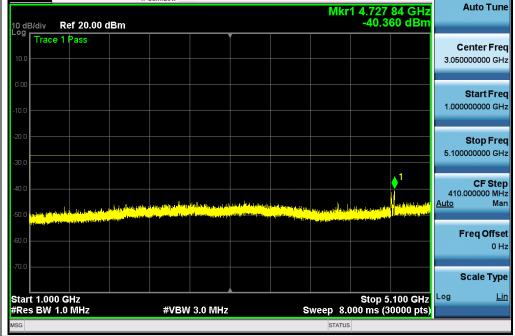






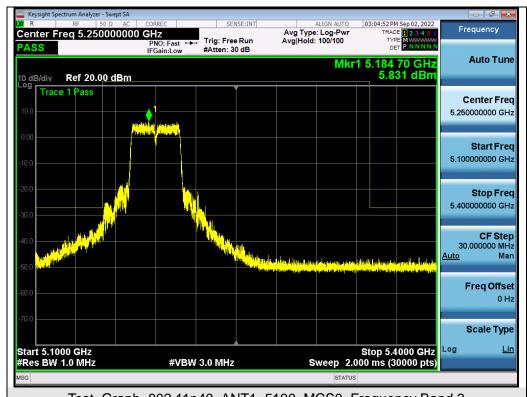
X R RF 50 Ω AC | Center Freq 3.0500000000 GHz

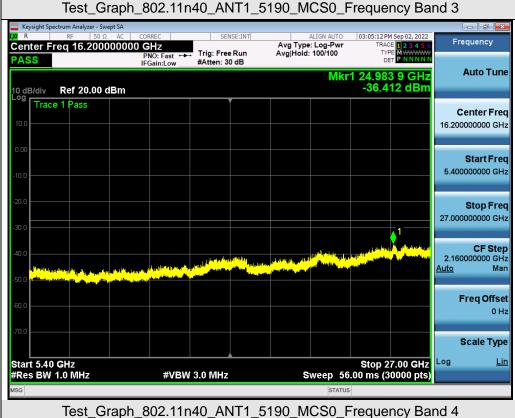
PNO: Fast | FGain:Low Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB Mkr1 4.727 84 GHz -40.360 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass



Test\_Graph\_802.11n40\_ANT1\_5190\_MCS0\_Frequency Band 2







1.000000000 GHz

<u>Auto</u>

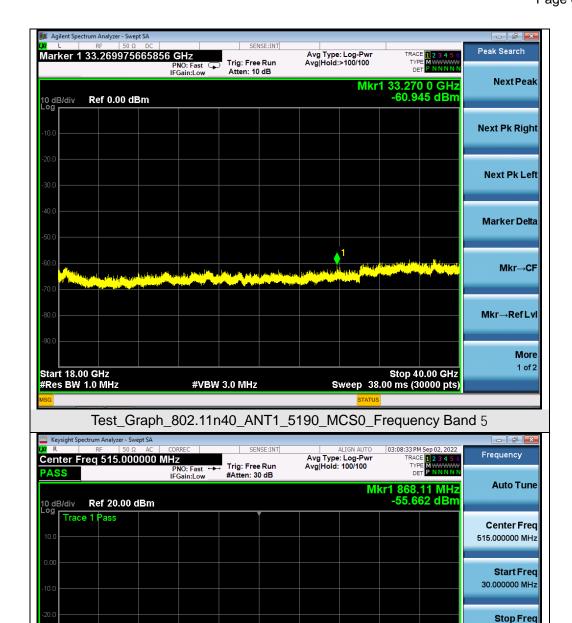
Log

Stop 1.0000 GHz Sweep 94.00 ms (30000 pts) CF Step 97.000000 MHz

Freq Offset

Scale Type





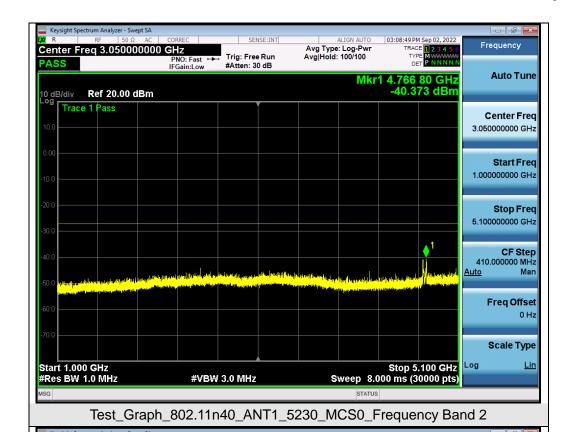
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Test\_Graph\_802.11n40\_ANT1\_5230\_MCS0\_Frequency Band 1

#VBW 300 kHz

Start 0.0300 GHz #Res BW 100 kHz





Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 5.216 86 GHz 4.981 dBm 10 dB/div Ref 20.00 dBm Trace 1 P Center Freq 5.250000000 GHz Start Fred 5.100000000 GHz 5.400000000 GHz **CF Step** 30.000000 MHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type

Test\_Graph\_802.11n40\_ANT1\_5230\_MCS0\_Frequency Band 3

Stop 5.4000 GHz Sweep 2.000 ms (30000 pts)

Log

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#VBW 3.0 MHz

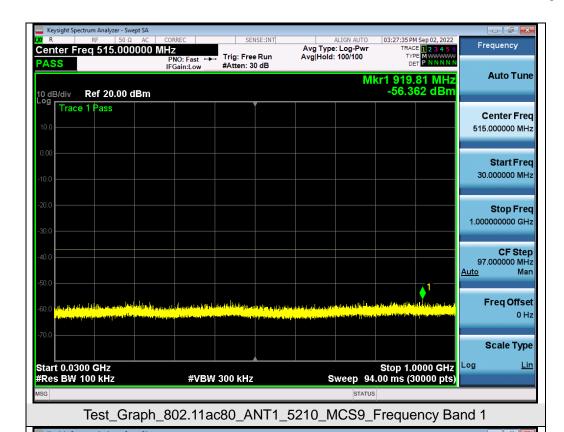
Start 5.1000 GHz #Res BW 1.0 MHz





Agilent Spectrum Analyzer - Swept SA Marker 1 26.031734391146 GHz
PNO: Fast PNO: Fast IFGain:Low Peak Search Avg Type: Log-Pwr Avg|Hold:>100/100 Trig: Free Run Atten: 10 dB **Next Peak** Mkr1 26.031 7 GHz -62.427 dBm 10 dB/div Ref 0.00 dBm Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→RefLvI More 1 of 2 Start 18.00 GHz #Res BW 1.0 MHz Stop 40.00 GHz Sweep 38.00 ms (30000 pts) #VBW 3.0 MHz Test\_Graph\_802.11n40\_ANT1\_5230\_MCS0\_Frequency Band 5





R RF 50 Ω AC | Center Freq 3.050000000 GHz

PNO: Fast → IFGain:Low :50 PM Sep 02, 2022 Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 5.095 63 GHz -40.625 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 3.050000000 GHz Start Fred 1.000000000 GHz Stop Freq 5.100000000 GHz **CF Step** 410.000000 MHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 1.000 GHz #Res BW 1.0 MHz Stop 5.100 GHz Sweep 8.000 ms (30000 pts) Log #VBW 3.0 MHz

Test\_Graph\_802.11ac80\_ANT1\_5210\_MCS9\_Frequency Band 2

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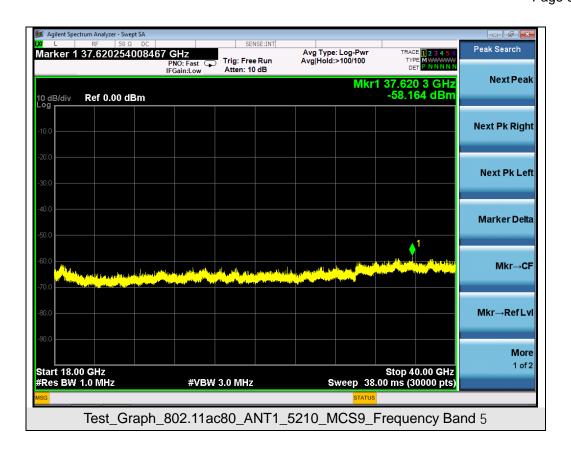




Test\_Graph\_802.11ac80\_ANT1\_5210\_MCS9\_Frequency Band 3

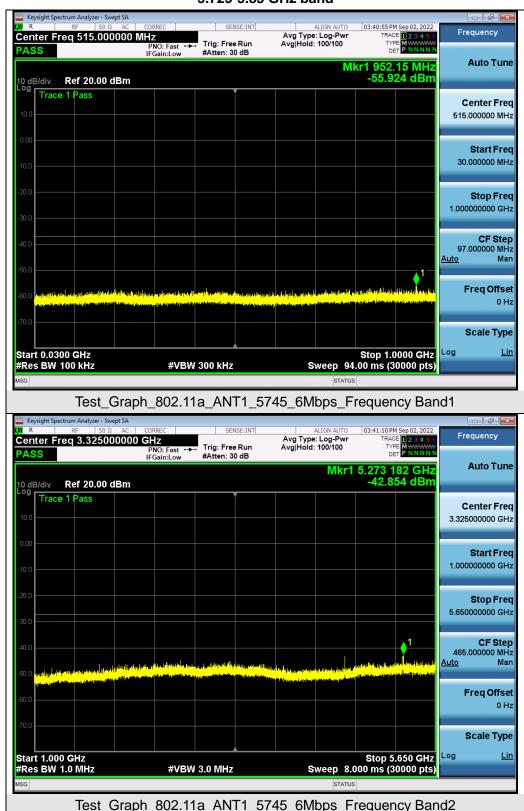






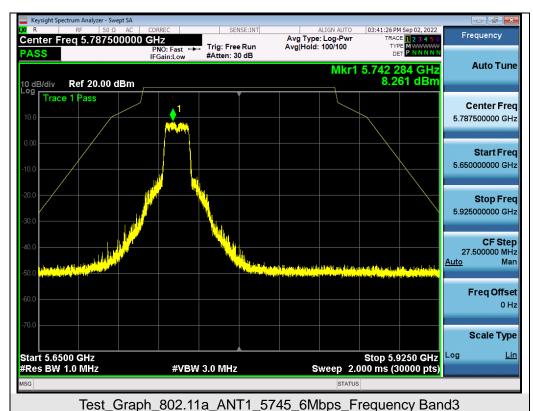


# Test Graphs of Spurious Emissions outside of the 5.725-5.85 GHz band for transmitters operating in the 5.725-5.85 GHz band



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Center Freq 16.462500000 GHz
PNO: Fast
FGain:Low 03:41:47 PM Sep 02, 2022 Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 25.605 5 GHz -35.893 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 16.462500000 GHz Start Fred 5.925000000 GHz Stop Freq 27.000000000 GHz **CF Step** 2.107500000 GHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 5.93 GHz #Res BW 1.0 MHz Stop 27.00 GHz Sweep 54.00 ms (30000 pts) Log #VBW 3.0 MHz Test\_Graph\_802.11a\_ANT1\_5745\_6Mbps\_Frequency Band4

CF Step 97.000000 MHz

Freq Offset

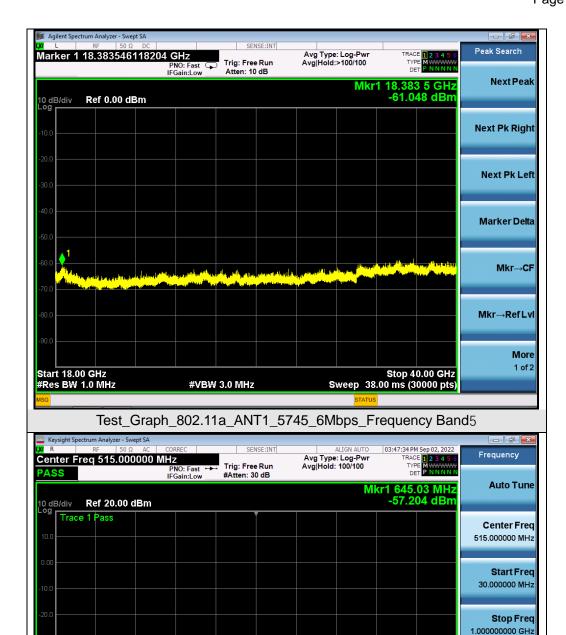
Scale Type

<u>Auto</u>

Log

Stop 1.0000 GHz Sweep 94.00 ms (30000 pts)





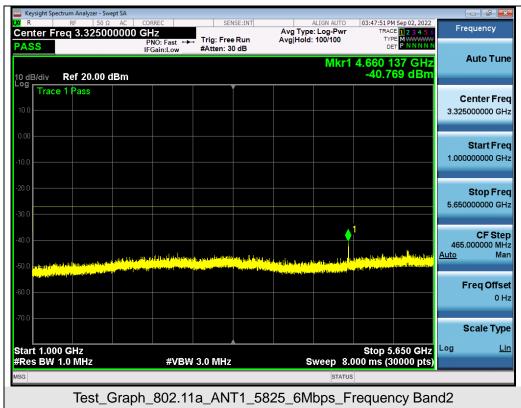
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

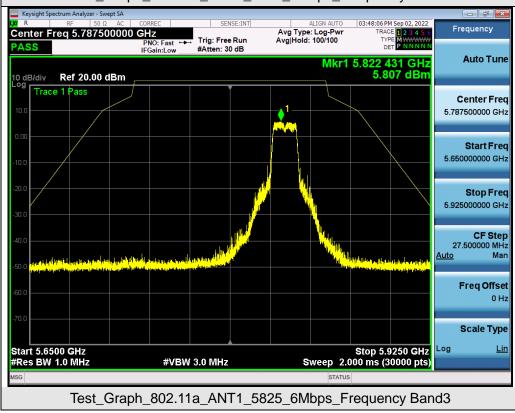
Test\_Graph\_802.11a\_ANT1\_5825\_6Mbps\_Frequency Band1

#VBW 300 kHz

Start 0.0300 GHz #Res BW 100 kHz

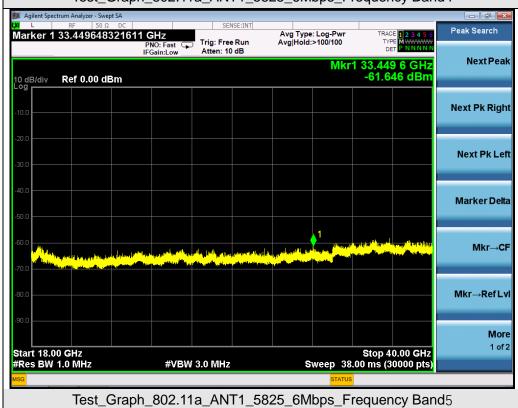




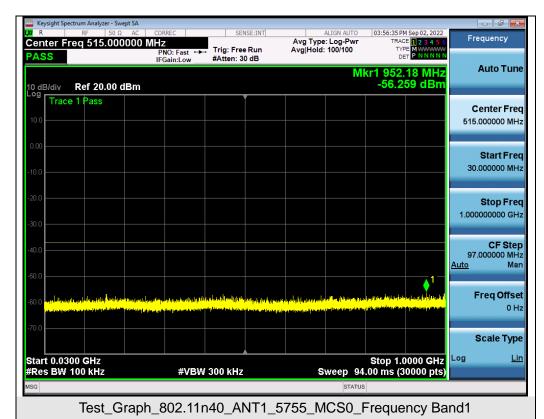










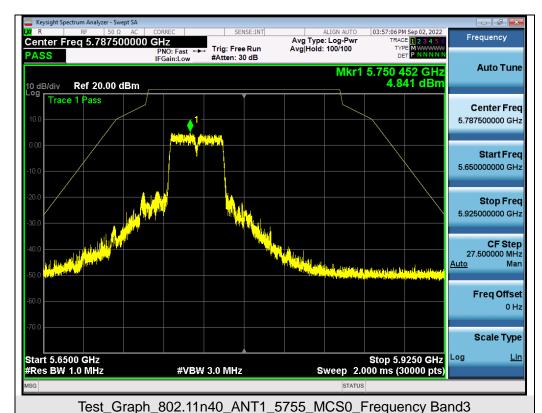


Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 5.291 318 GHz -41.590 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 3.325000000 GHz Start Fred 1.000000000 GHz 5.650000000 GHz **CF Step** 465.000000 MHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 1.000 GHz #Res BW 1.0 MHz Stop 5.650 GHz Sweep 8.000 ms (30000 pts) Log #VBW 3.0 MHz

Test\_Graph\_802.11n40\_ANT1\_5755\_MCS0\_Frequency Band2

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Center Freq 16.462500000 GHz
PNO: Fast
FGain:Low 03:57:27 PM Sep 02, 2022 Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 25.877 4 GHz -35.792 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 16.462500000 GHz Start Fred 5.925000000 GHz Stop Freq 27.000000000 GHz **CF Step** 2.107500000 GHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 5.93 GHz #Res BW 1.0 MHz Stop 27.00 GHz Sweep 54.00 ms (30000 pts) Log #VBW 3.0 MHz Test\_Graph\_802.11n40\_ANT1\_5755\_MCS0\_Frequency Band4

CF Step 97.000000 MHz

> Freq Offset 0 Hz

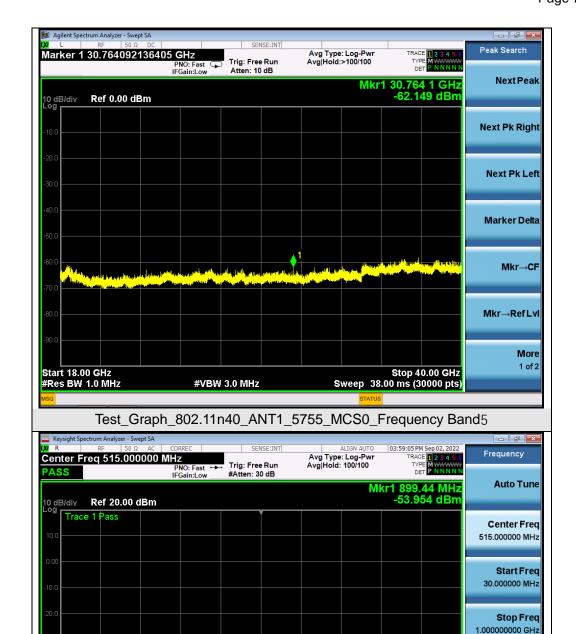
Scale Type

<u>Auto</u>

Log

Stop 1.0000 GHz Sweep 94.00 ms (30000 pts)





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Test\_Graph\_802.11n40\_ANT1\_5795\_MCS0\_Frequency Band1

#VBW 300 kHz

Start 0.0300 GHz #Res BW 100 kHz



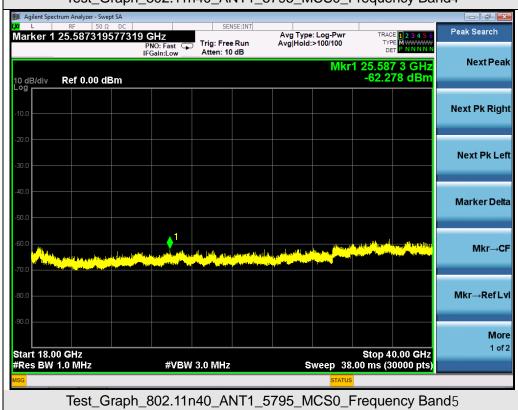


X R RF 50 Ω AL Center Freq 5.787500000 GHz

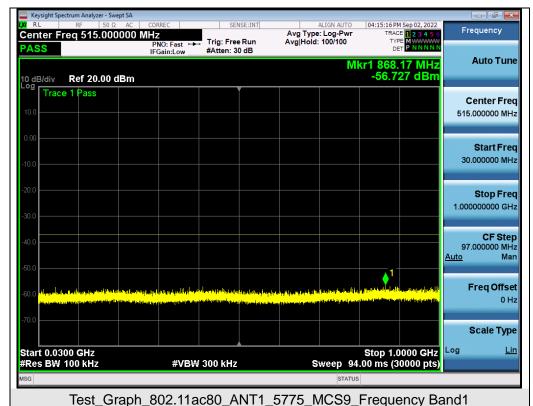
PNO: Fast IFGain:Low Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 5.783 123 GHz 3.876 dBm 10 dB/div Ref 20.00 dBm Trace 1 Center Freq 5.787500000 GHz Start Fred 5.650000000 GHz Stop Freq 5.925000000 GHz **CF Step** 27.500000 MHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 5.6500 GHz #Res BW 1.0 MHz Stop 5.9250 GHz Sweep 2.000 ms (30000 pts) Log #VBW 3.0 MHz Test\_Graph\_802.11n40\_ANT1\_5795\_MCS0\_Frequency Band3











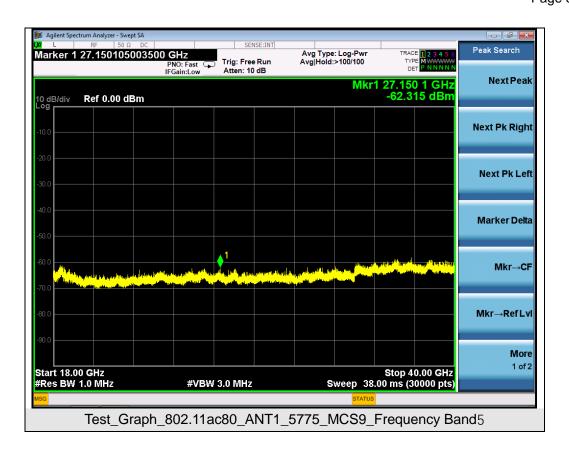






Center Freq 16.462500000 GHz
PASS
PASS
IFGain:Low Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 26.101 5 GHz -35.689 dBm 10 dB/div Ref 20.00 dBm Trace 1 Pass Center Freq 16.462500000 GHz Start Fred 5.925000000 GHz Stop Freq 27.000000000 GHz **CF Step** 2.107500000 GHz <u>Auto</u> Mar Freq Offset 0 Hz Scale Type Start 5.93 GHz #Res BW 1.0 MHz Stop 27.00 GHz Sweep 54.00 ms (30000 pts) Log #VBW 3.0 MHz Test\_Graph\_802.11ac80\_ANT1\_5775\_MCS9\_Frequency Band4







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#### 11. RADIATED EMISSION

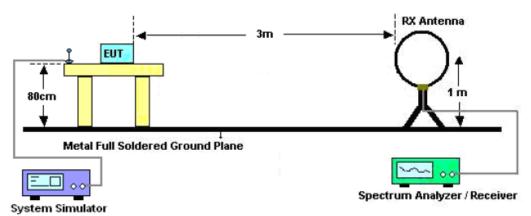
#### 11.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3M VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

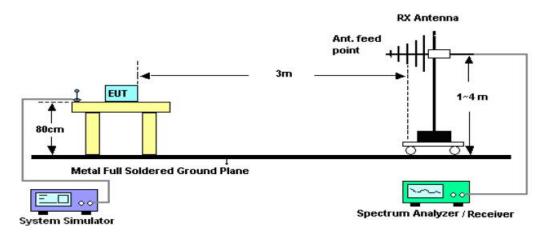


#### 11.2. TEST SETUP

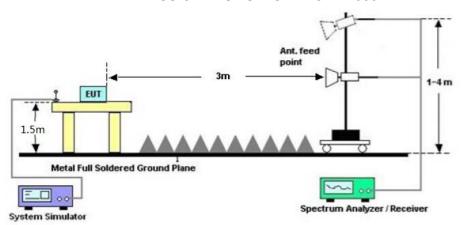
#### Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



#### RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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#### 11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission.

the test records reported below are the worst result compared to other modes.

#### 11.4. TEST RESULT

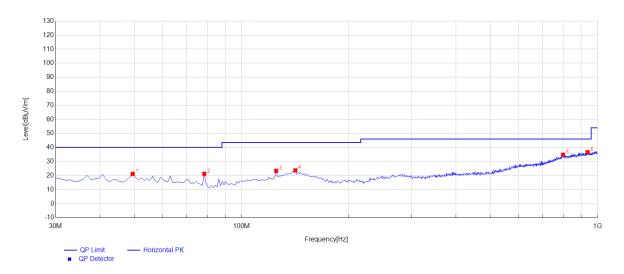
#### Radiated emission below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



Radiated emission from 30MHz to 1000MHz

EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal

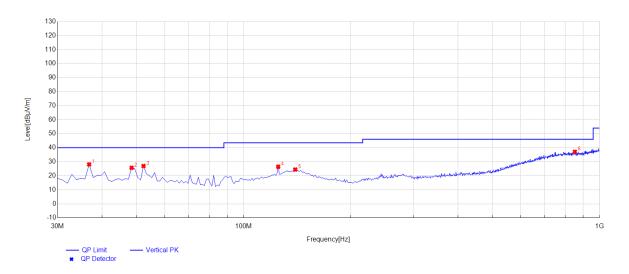


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	49.4	21.17	11.61	40.00	18.83	100	268	Horizontal
2	78.5	21.29	7.46	40.00	18.71	100	177	Horizontal
3	125.06	23.40	14.57	43.50	20.10	100	50	Horizontal
4	141.55	23.77	17.65	43.50	19.73	100	1	Horizontal
5	800.18	34.88	29.21	46.00	11.12	100	352	Horizontal
6	937.92	36.66	31.25	46.00	9.34	100	1	Horizontal

**RESULT: PASS** 



EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.79	28.11	10.73	40.00	11.89	100	39	Vertical
2	48.43	25.67	11.53	40.00	14.33	100	98	Vertical
3	52.31	26.96	11.49	40.00	13.04	100	0	Vertical
4	125.06	26.45	16.57	43.50	17.05	100	1	Vertical
5	139.61	24.43	19.79	43.50	19.07	100	82	Vertical
6	852.56	37.11	31.59	46.00	8.89	100	277	Vertical

#### **RESULT: PASS**

**Note:** All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.



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#### Radiated emission above 1GHz

EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type		
10360.042	46.23	9.14	55.37	68.20	-12.83	peak		
15540.063	40.28	10.22	50.50	74.00	-23.50	peak		
15540.063	31.98	10.22	42.20	54.00	-11.80	AVG		
Remark:	Remark:							
Factor = Anter	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

### RADIATED EMISSION ABOVE 1GHZ-Vertical

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10360.042	47.54	9.14	56.68	68.20	-11.52	peak
15540.063	41.26	10.22	51.48	74.00	-22.52	peak
15540.063	32.87	10.22	43.09	54.00	-10.91	AVG



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EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5200MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
10400.042	47.56	9.14	56.70	68.20	-11.50	peak	
15600.063	42.18	10.22	52.40	74.00	-21.60	peak	
15600.063	33.46	10.22	43.68	54.00	-10.32	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

### RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10400.042	47.52	9.14	56.66	68.20	-11.54	peak
15600.063	40.26	10.22	50.48	74.00	-23.52	peak
15600.063	31.87	10.22	42.09	54.00	-11.91	AVG
Remark:						

Factor = Antenna Factor + Cable Loss - Pre-amplifier.



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EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5240MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
10480.042	47.52	9.27	56.79	68.20	-11.41	peak	
15720.063	42.19	10.38	52.57	74.00	-21.43	peak	
15720.063	33.54	10.38	43.92	54.00	-10.08	AVG	

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

#### RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10480.042	46.29	9.27	55.56	68.20	-12.64	peak
15720.063	42.37	10.38	52.75	74.00	-21.25	peak
15720.063	32.48	10.38	42.86	54.00	-11.14	AVG
Remark:					_	

Factor = Antenna Factor + Cable Loss - Pre-amplifier.



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EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5745MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
11490.042	46.28	9.42	55.70	74.00	-18.30	peak	
11490.042	37.48	9.42	46.90	54.00	-7.10	AVG	
17235.063	40.25	10.51	50.76	68.20	-17.44	peak	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

#### RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
11490.042	46.28	9.42	55.70	74.00	-18.30	peak	
11490.042	36.52	9.42	45.94	54.00	-8.06	AVG	
17235.063 40.28 10.51 50.79 68.20 -17.41 peak							
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



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EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5785MHz	Antenna	Horizontal/Vertical

## RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11570.042	46.28	9.42	55.70	74.00	-18.30	peak
11570.042	35.27	9.42	44.69	54.00	-9.31	AVG
17355.063	41.68	10.51	52.19	68.20	-16.01	peak
Remark:						
Factor = Anter	na Factor + Cabl	e Loss – Pre-	amplifier.			

....

## RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11570.042	47.82	9.42	57.24	74.00	-16.76	peak
11570.042	36.27	9.42	45.69	54.00	-8.31	AVG
17355.063	42.19	10.51	52.70	68.20	-15.50	peak
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier			



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EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5825MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.042	47.51	9.62	52.98	74.00	-21.02	peak
11650.042	38.64	9.62	45.05	54.00	-8.95	AVG
17475.063	42.19	10.75	47.61	68.20	-26.39	peak

#### RADIATED EMISSION ABOVE 1GHZ-Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
46.52	9.62	53.55	74.00	-20.45	peak
36.57	9.62	47.64	54.00	-6.36	AVG
42.19	10.75	48.61	68.20	-25.39	peak
Remark:					
	(dBµV) 46.52 36.57	(dBµV) (dB) 46.52 9.62 36.57 9.62	(dBμV)     (dB)     (dBμV/m)       46.52     9.62     53.55       36.57     9.62     47.64	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       46.52     9.62     53.55     74.00       36.57     9.62     47.64     54.00	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       46.52     9.62     53.55     74.00     -20.45       36.57     9.62     47.64     54.00     -6.36

#### **RESULT: PASS**

**Note:** All test channels had been tested. The 802.11a20 is the worst case and recorded in the test report.

Other frequencies radiation emission from 1GHz to 40GHz at least have 20dB margin and not recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.



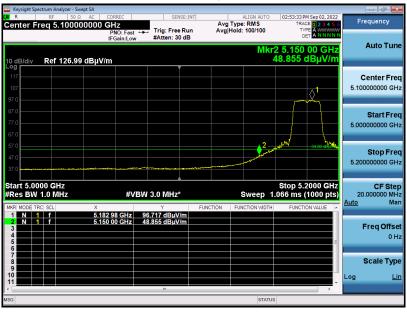
## Test result for band edge emission at restricted bands

EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal

## Test Graph for Peak Measurement



Test Graph for Average Measurement



**RESULT: PASS** 



EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Android Tablet	Model Name	KST102SF
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





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#### Note:

- 1. All the modes are tested. All the 20MHz bandwidth modulation had been tested, the 802.11a20 at 5180MHz was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 at 5190MHz was the worst case and record in his test report. All the 80MHz bandwidth modulation had been tested, the 802.11AC80 at 5210MHz was the worst case and record in his test report.
- 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer.
- Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz and 5.35GHz-5.46GHz
  record in the report. Other restricted band 7.25GHz-7.77GHz were considered as ambient noise. No
  recording in the test report.
- 4. The sideband standard of Band 4 frequency band is not defined, the transmitted signal does not fall in the restricted band, and the edge signal is far away from the edge of other restricted bands, and it is not recorded in the report.



## 12. LINE CONDUCTED EMISSION TEST

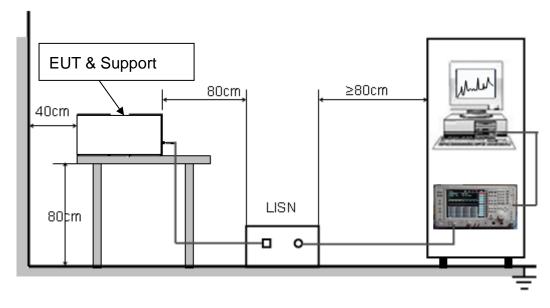
## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Francisco	Maximum RF Line Voltage					
Frequency	Q.P (dBµV)	Average (dBμV)				
150kHz~500kHz	66-56	56-46				
500kHz~5MHz	56	46				
5MHz~30MHz	60	50				

## Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

## 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





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#### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

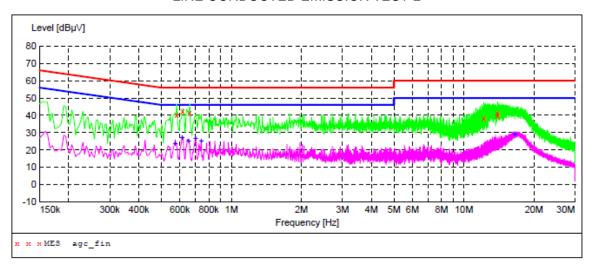
## 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case was reported on the Summary Data page.



#### 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

## LINE CONDUCTED EMISSION TEST-L



# MEASUREMENT RESULT: "agc\_fin"

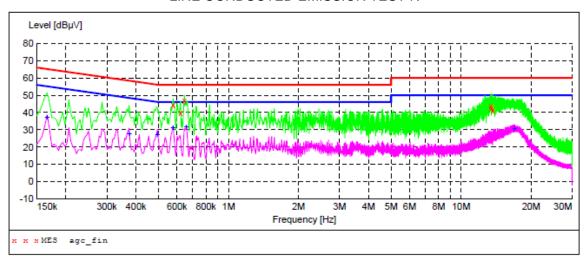
2022/9/2 16:25 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.662000	40.40 42.30 41.30	5.4 5.4 5.4	56 56	13.7 14.7	QP QP	L1 L1 L1
12.182000 13.938000 13.958000	38.40 39.60 41.10	7.6 8.1 8.1	60 60 60	21.6 20.4 18.9	QP	L1 L1 L1

# MEASUREMENT RESULT: "agc\_fin2"

2022/9/2 16:25 Frequency MHz	Level dBµV	Transd dB		Margin dB	Detector	Line
0.654000 0.702000	23.80 27.20 25.50 26.60 25.30 29.20	5.4 5.4 5.4 5.4 5.4 8.5	46 46 46 46 46 50	18.8 20.5 19.4 20.7	AV AV AV	L1 L1 L1 L1 L1



## LINE CONDUCTED EMISSION TEST-N



# MEASUREMENT RESULT: "agc\_fin"

2022/9/2 1 Frequency MH	y Level	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.57800 0.62200 0.64600	0 40.00	5.4 5.4	56 56	16.0	QP	N N
13.43800 13.48200	0 43.70 0 42.20	5.4 7.9 7.9	56 60 60	9.3 16.3 17.8	QP QP	N N
13.68200	0 41.10	8.0	60	18.9	QP	N

# MEASUREMENT RESULT: "agc\_fin2"

2022/9/2 16:2: Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
0.166000 0.374000 0.494000 0.578000	37.10 27.80 27.20 31.30	6.8 5.8 5.4 5.4	55 48 46 46	20.6 18.9	AV AV	N N N
0.658000 16.930000	31.60 30.60	5.4 8.5	46 50		AV	N N

#### **RESULT: PASS**

**Note:** All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.



## **APPENDIX A: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC14070220802AP01

**APPENDIX B: PHOTOGRAPHS OF EUT** 

Refer to the Report No.: AGC14070220802AP02

----END OF REPORT----



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- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.