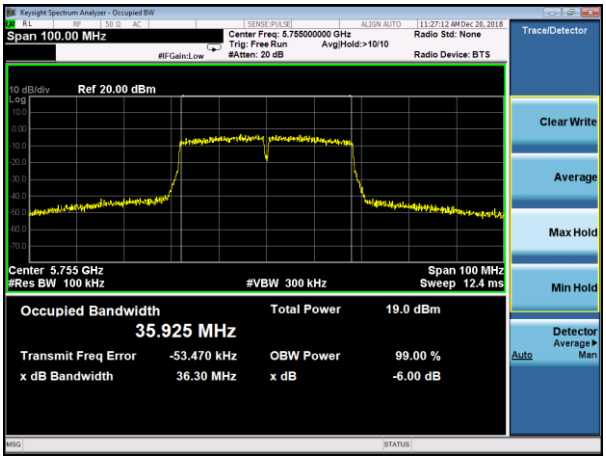
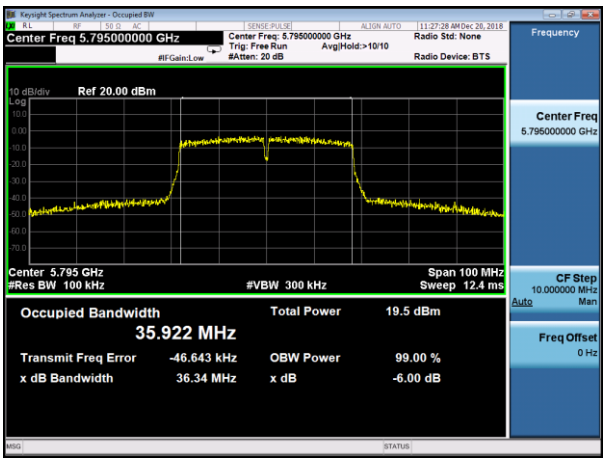
Test plot

(802.11 ac40) 6dB Bandwidth plot on channel 151



(802.11 ac40) 6dB Bandwidth plot on channel 159



7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5250~5350	250 mW or 11 dBm + 10 log B（Note）
5470~5725	250 mW or 11 dBm + 10 log B（Note）
5725~5850	1W

Note：the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

7.2 TEST PROCEDURE

· Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".

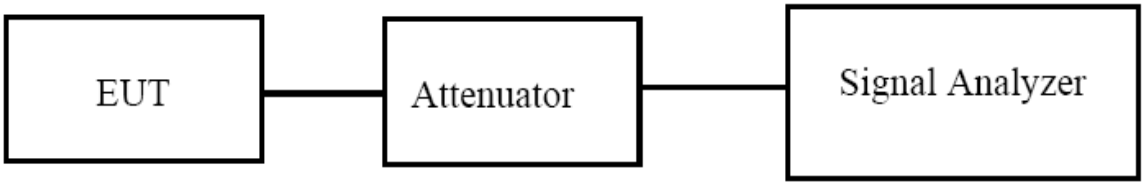
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

EUT：	LTE SMARTPHONE	Model Name. ：	RG725
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V
Test Mode ：	TX (5G) Mode Frequency Band 1 (5150-5250MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH36	5180	15.30	23.98	Pass
CH40	5200	15.00	23.98	Pass
CH48	5240	14.90	23.98	Pass
TX 802.11 n20M Mode				
CH36	5180	15.80	23.98	Pass
CH40	5200	15.00	23.98	Pass
CH48	5240	15.00	23.98	Pass
TX 802.11 n40M Mode				
CH38	5190	12.80	23.98	Pass
CH46	5230	12.60	23.98	Pass
TX 802.11 ac20M Mode				
CH36	5180	13.50	23.98	Pass
CH40	5200	13.40	23.98	Pass
CH48	5240	12.90	23.98	Pass
TX 802.11 ac40M Mode				
CH38	5190	13.30	23.98	Pass
CH46	5230	13.30	23.98	Pass

EUT：	LTE SMARTPHONE	Model Name. ：	RG725
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V
Test Mode ：	TX (5G) Mode Frequency Band 2A (5250-5350MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH52	5260	12.70	23.93	Pass
CH56	5280	13.10	23.91	Pass
CH64	5320	13.30	23.96	Pass
TX 802.11 n20M Mode				
CH52	5260	12.90	23.98	Pass
CH56	5280	13.00	23.97	Pass
CH64	5320	13.10	23.93	Pass
TX 802.11 n40M Mode				
CH54	5270	13.40	23.98	Pass
CH62	5310	13.20	23.98	Pass
TX 802.11 ac20M Mode				
CH52	5260	11.80	23.90	Pass
CH56	5280	11.60	23.92	Pass
CH64	5320	11.90	23.95	Pass
TX 802.11 ac40M Mode				
CH54	5270	11.90	23.98	Pass
CH62	5310	11.70	23.98	Pass

EUT：	LTE SMARTPHONE	Model Name. ：	RG725
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V
Test Mode ：	TX (5G) Mode Frequency Band 2C (5470-5725MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
		Antenna A		
TX 802.11a Mode				
CH 100	5500	12.40	23.90	Pass
CH 120	5600	12.50	23.98	Pass
CH 140	5700	12.60	23.92	Pass
TX 802.11 n20M Mode				
CH 100	5500	12.20	23.98	Pass
CH 120	5600	12.40	23.98	Pass
CH 140	5700	12.40	23.98	Pass
TX 802.11 n40M Mode				
CH 102	5510	12.30	23.98	Pass
CH 118	5590	12.20	23.98	Pass
CH 134	5670	12.80	23.98	
TX 802.11 ac20M Mode				
CH 100	5500	11.10	23.95	Pass
CH 120	5600	11.00	23.94	Pass
CH 140	5700	11.20	23.95	Pass
TX 802.11 ac40M Mode				
CH 102	5510	11.20	23.98	Pass
CH 118	5590	11.30	23.98	Pass
CH 134	5670	11.60	23.98	

EUT：	LTE SMARTPHONE	Model Name. ：	RG725
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V
Test Mode ：	TX (5G) Mode Frequency Band 3 (5725-5850MHz)		

Test Channel	Frequency	Maximum output power. Antenna port (AV)	LIMIT	Result
	(MHz)	(dBm)	dBm	
TX 802.11a Mode				
CH149	5745	13.20	30.00	Pass
CH157	5785	13.10	30.00	Pass
CH165	5825	13.20	30.00	Pass
TX 802.11 n20M Mode				
CH149	5745	13.10	30.00	Pass
CH157	5785	12.90	30.00	Pass
CH165	5825	12.30	30.00	Pass
TX 802.11 n40M Mode				
CH151	5755	13.20	30.00	Pass
CH159	5795	12.90	30.00	Pass
TX 802.11 ac20M Mode				
CH149	5745	11.80	30.00	Pass
CH157	5785	11.60	30.00	Pass
CH165	5825	11.60	30.00	Pass
TX 802.11 ac40M Mode				
CH151	5755	12.20	30.00	Pass
CH159	5795	11.80	30.00	Pass

8. OUT OF BAND EMISSIONS

8.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(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 e.i.r.p. 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 e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. 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 e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

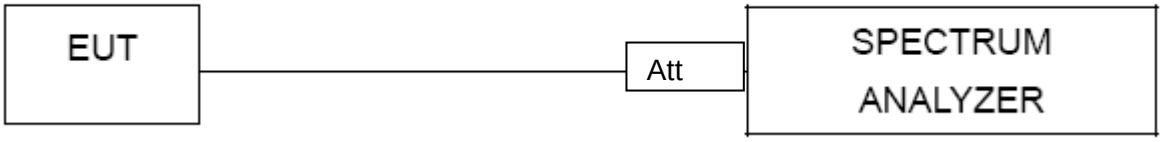
8.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

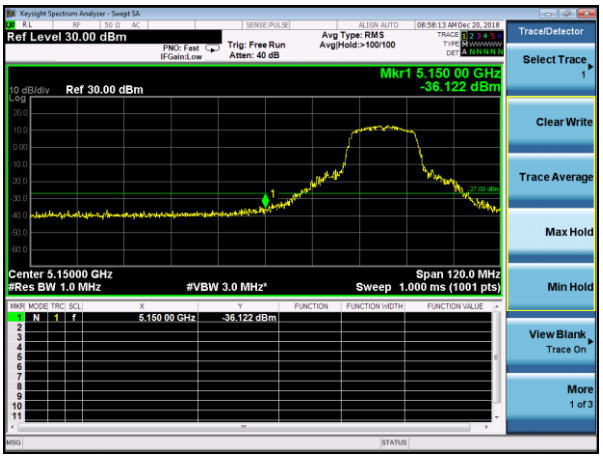
8.6 TEST RESULTS

EUT：	LTE SMARTPHONE	Model Name. ：	RG725
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.8V

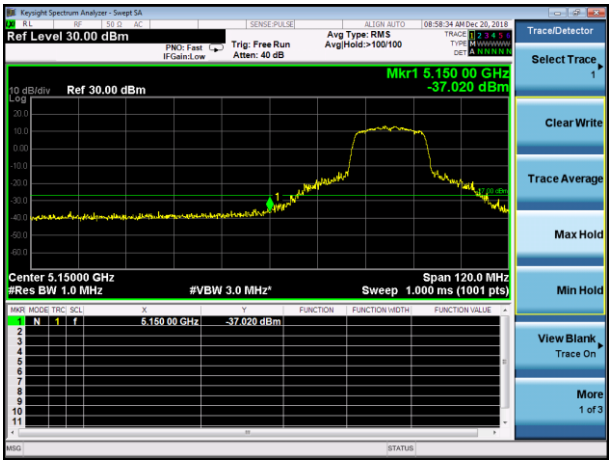
TX (5G) Mode Frequency Band 1/2A (5150-5350MHz)

5.15~5.35 GHz

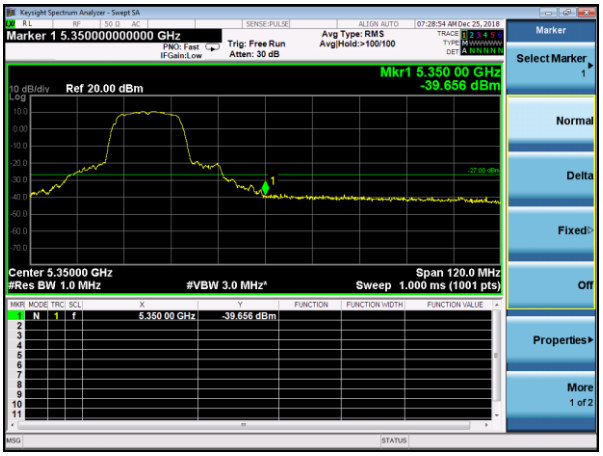
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



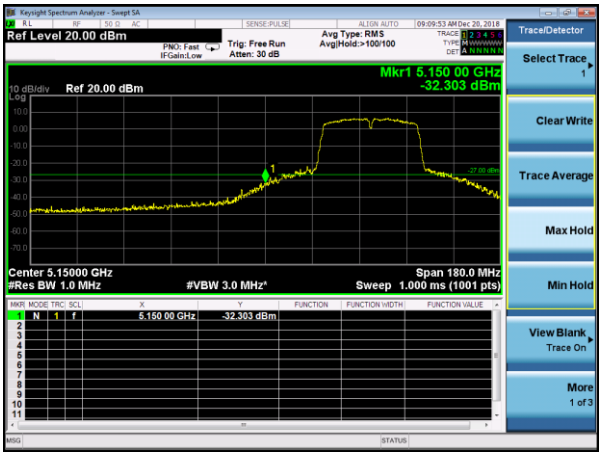
(802.11a) Band Edge, Right Side



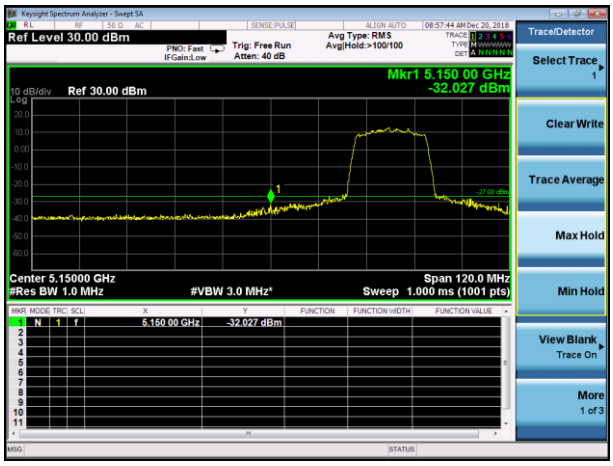
(802.11n20) Band Edge, Right Side

5.15~5.35 GHz

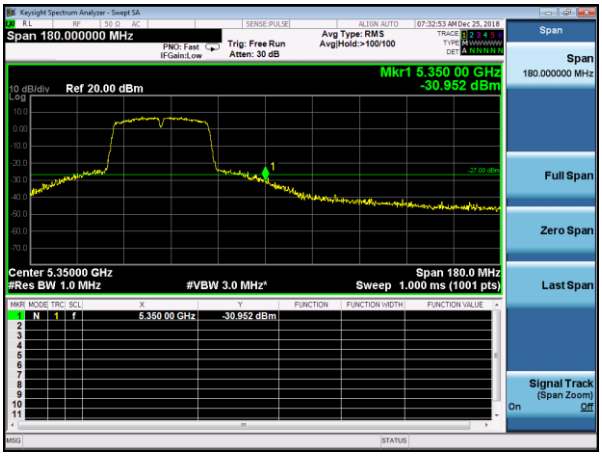
(802.11n40) Band Edge, Left Side



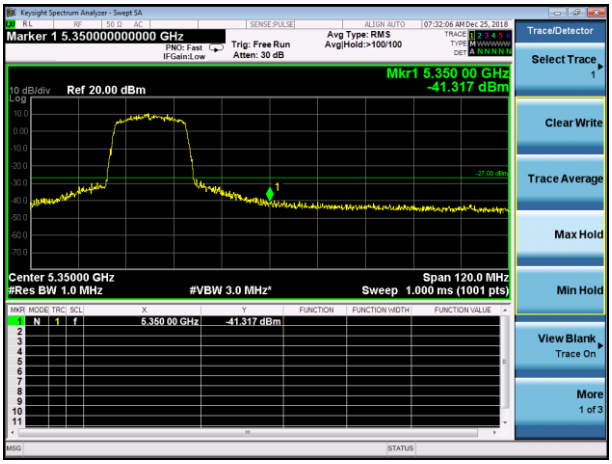
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Right Side

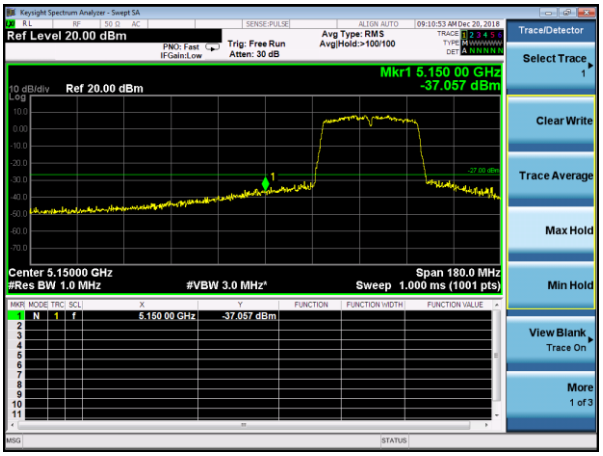


(802.11ac20) Band Edge, Right Side



5.15~5.35 GHz

(802.11ac40) Band Edge, Left Side



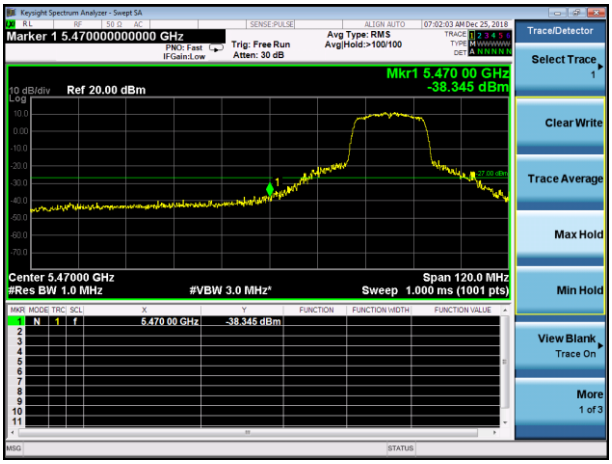
(802.11ac40) Band Edge, Right Side

TX (5G) Mode Frequency Band 2C (5470-5725MHz)

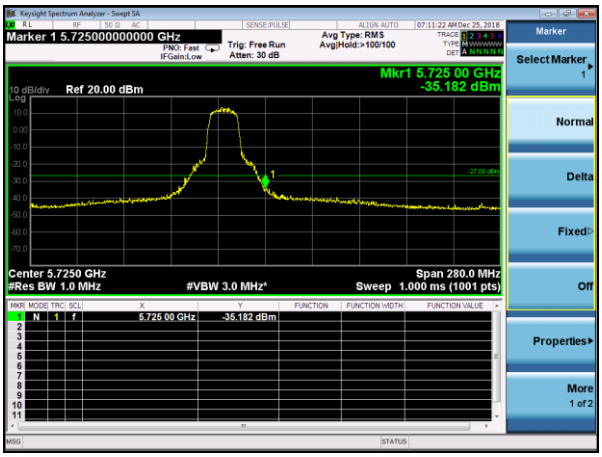
5.47~5.725 GHz

(802.11a) Band Edge, Left Side

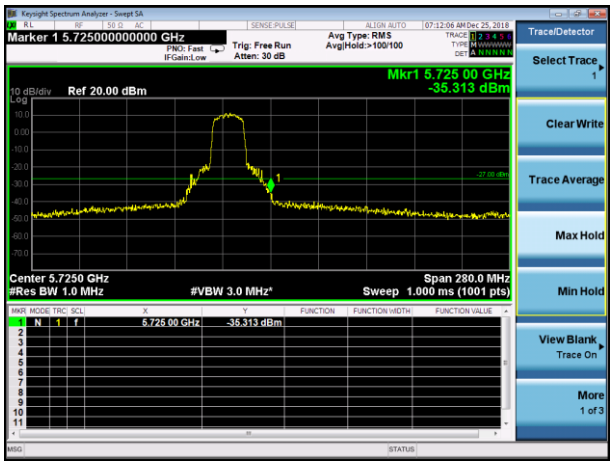
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side



(802.11n20) Band Edge, Right Side

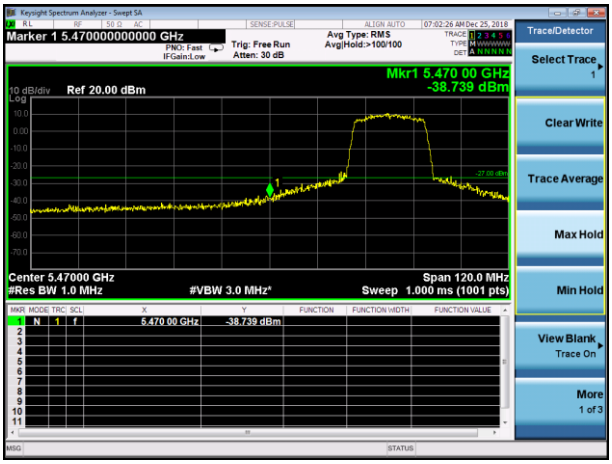


TX (5G) Mode Frequency Band 2C (5470-5725MHz)

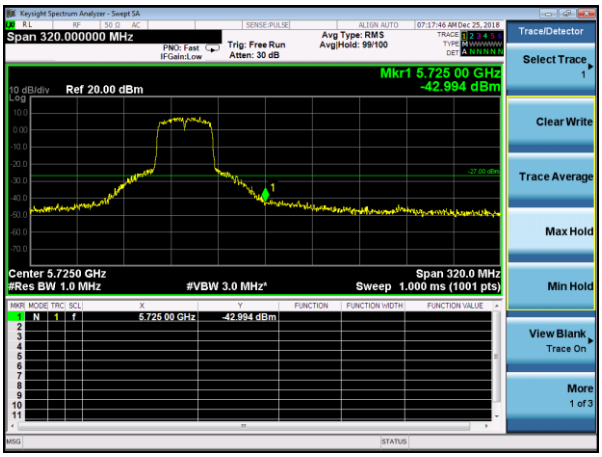
5.47~5.725 GHz

(802.11n40) Band Edge, Left Side

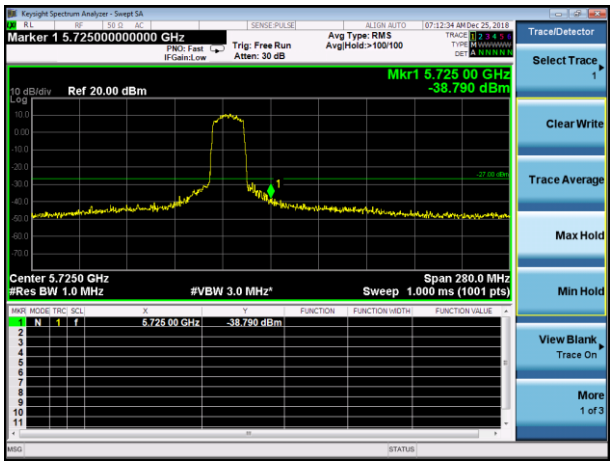
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Right Side



(802.11ac20) Band Edge, Right Side

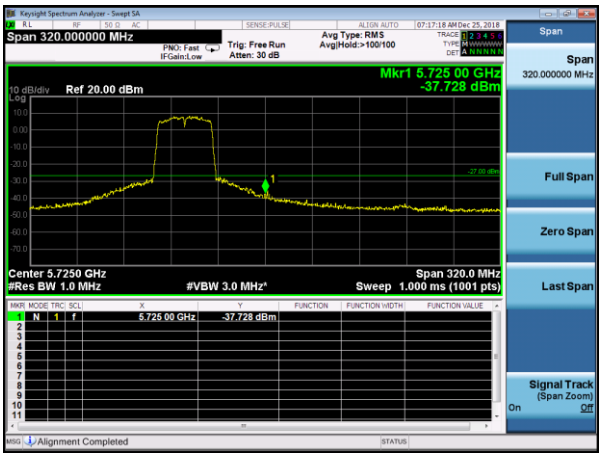


TX (5G) Mode Frequency Band 2C (5470-5725MHz)

5.47~5.725 GHz

(802.11ac40) Band Edge, Left Side

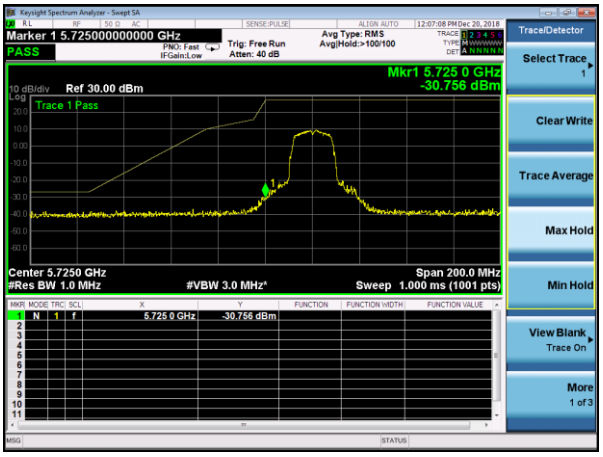
(802.11n40) Band Edge, Right Side



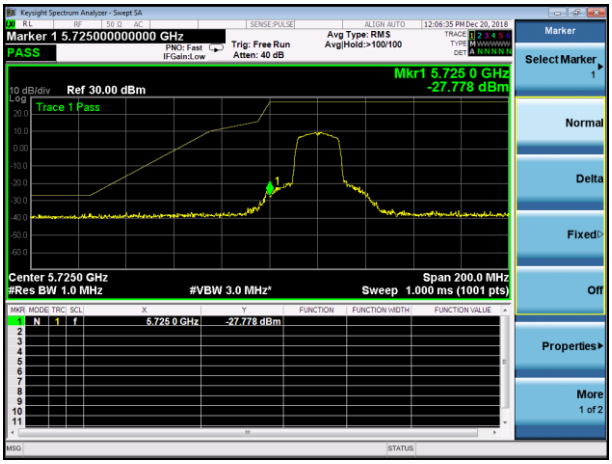
TX (5G) Mode Frequency Band 3 (5.725~5.850 GHz)

5.725~5.850 GHz

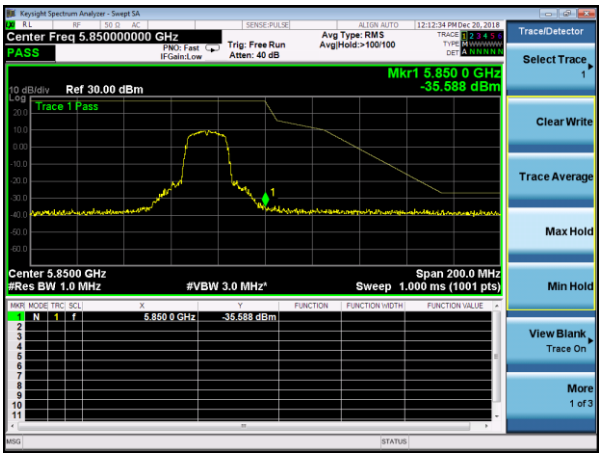
(802.11a) Band Edge, Left Side



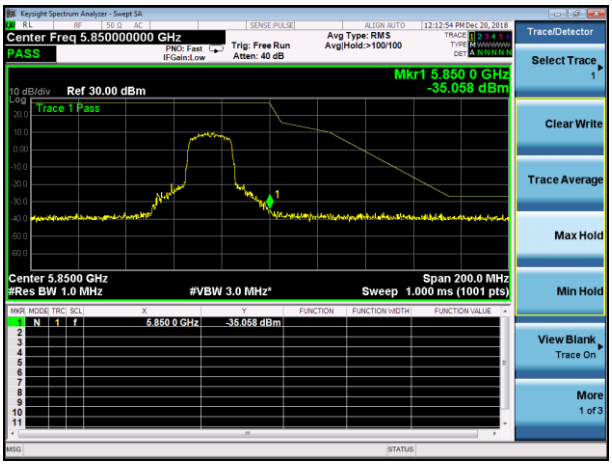
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

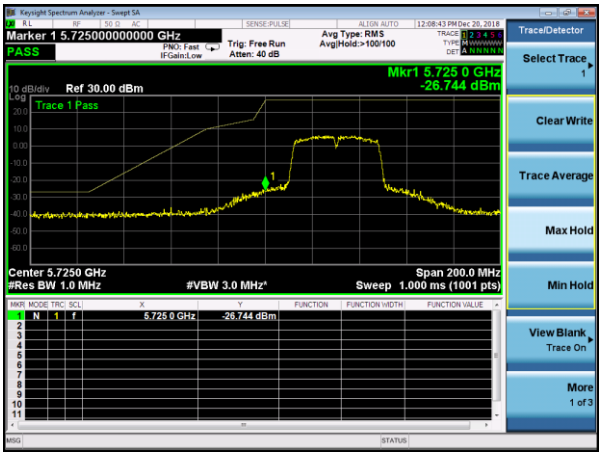


(802.11n20) Band Edge, Right Side

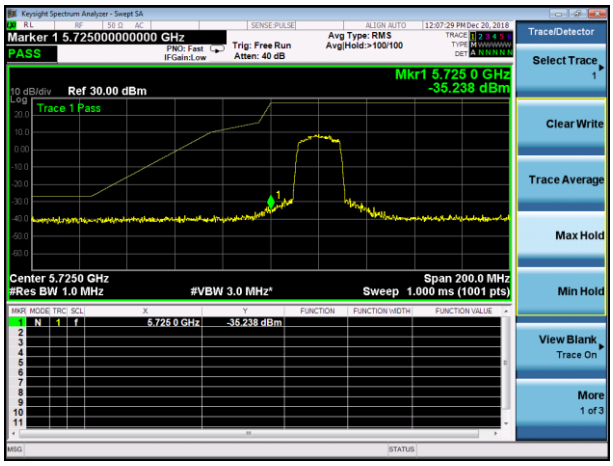


5.725~5.850 GHz

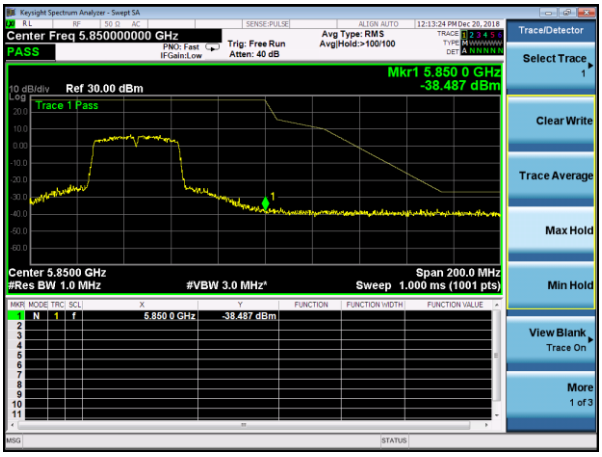
(802.11n40) Band Edge, Left Side



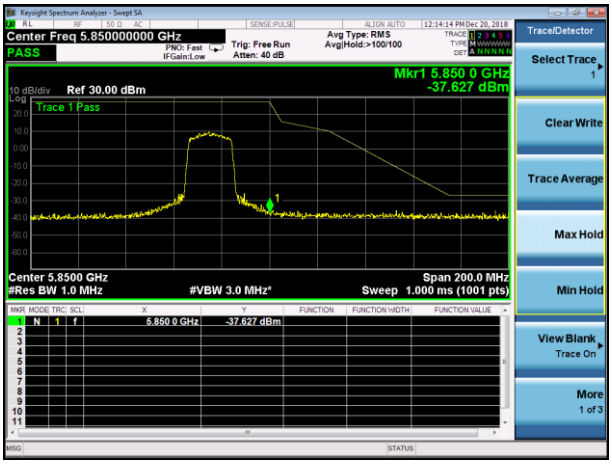
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Right Side

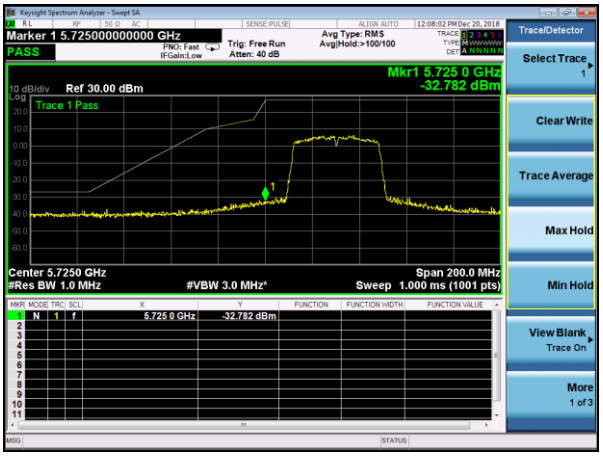


(802.11ac20) Band Edge, Right Side

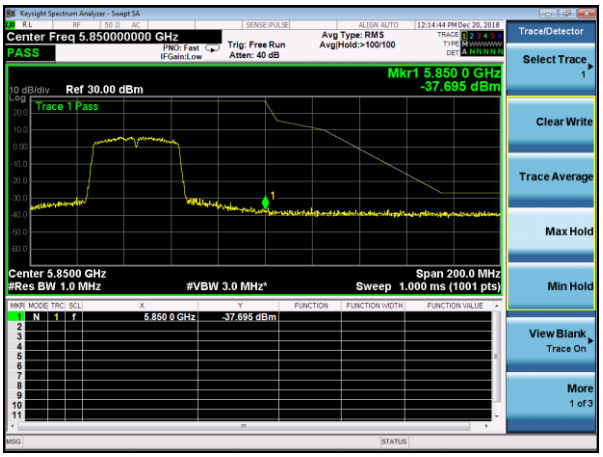


5.725~5.850 GHz

(802.11ac40) Band Edge, Left Side



(802.11ac40) Band Edge, Right Side



9.SPURIOUS RF CONDUCTED EMISSIONS

9.1CONFORMANCE LIMIT

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

9.2MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

9.3TEST SETUP

Please refer to Section 6.1 of this test report.

9.4TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBW= 300KHz to measure the peak field strength , and mwasure frequeny range from 9KHz to 26.5GHz.

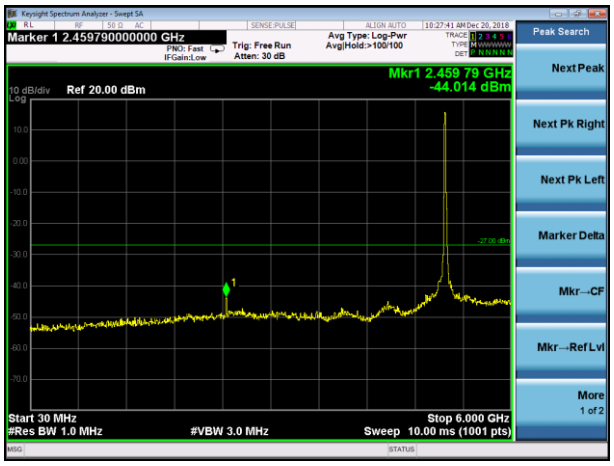
9.5TEST RESULTS

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.

TX (5G) Mode Frequency Band 1 (5150-5250MHz)

Test Plot

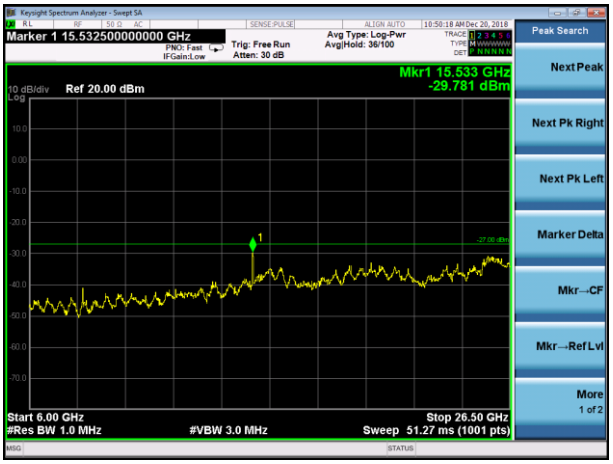
802.11a on channel 36



802.11n20 on channel 36

802.11a on channel 36

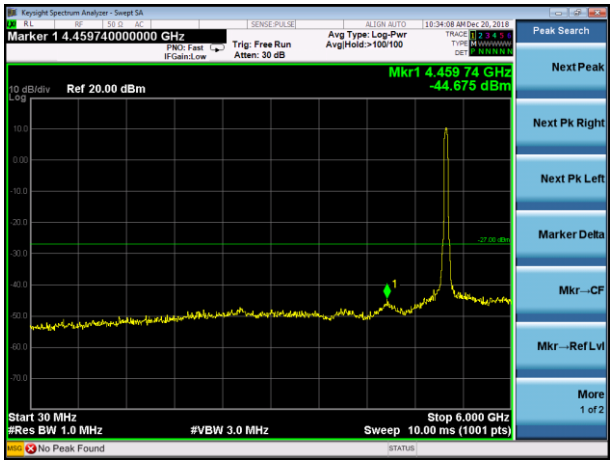
802.11n20 on channel 36



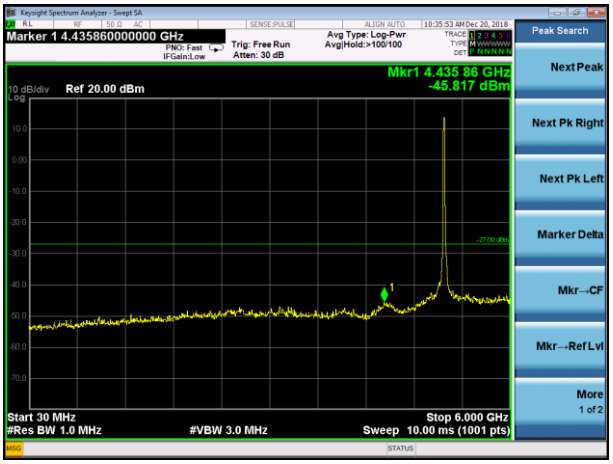
Note: Pre-test all modes and channels, only the worst data is recorded in the report

Test Plot

802.11n40 on channel 38



802.11ac20 on channel 36



802.11n40 on channel 38

802.11ac20 on channel 36

Note: Pre-test all modes and channels, only the worst data is recorded in the report

Test Plot

802.11ac40 on channel 38

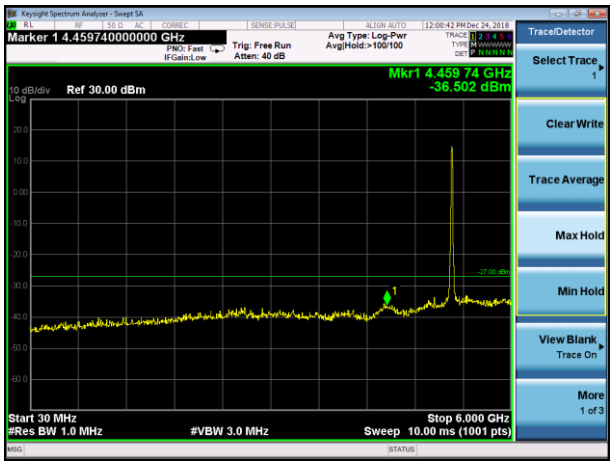
802.11ac40 on channel 38

Note: Pre-test all modes and channels, only the worst data is recorded in the report

TX (5G) Mode Frequency Band 2A (5250-5350MHz)

Test Plot

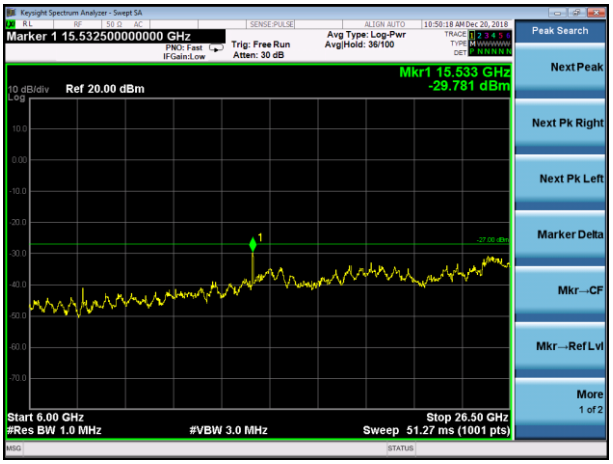
802.11a on channel 52



802.11n20 on channel 52

802.11a on channel 52

802.11n20 on channel 52

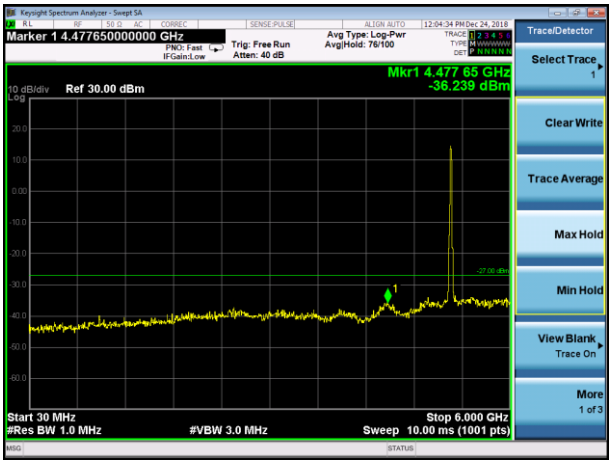


Note: Pre-test all modes and channels, only the worst data is recorded in the report

Test Plot

802.11n40 on channel 54

802.11ac20 on channel 52



802.11n40 on channel 54

802.11ac20 on channel 52

Note: Pre-test all modes and channels, only the worst data is recorded in the report

Test Plot

802.11ac40 on channel 54

802.11ac40 on channel 54

Note: Pre-test all modes and channels, only the worst data is recorded in the report

TX (5G) Mode Frequency Band 2C (5740-5725MHz)

Test Plot

802.11a on channel 120

802.11n20 on channel 120

802.11a on channel 120

802.11n20 on channel 120

Note: Pre-test all modes and channels, only the worst data is recorded in the report

Test Plot

802.11n40 on channel 118

802.11ac20 on channel 120

802.11n40 on channel 118

802.11ac20 on channel 120

Note: Pre-test all modes and channels, only the worst data is recorded in the report