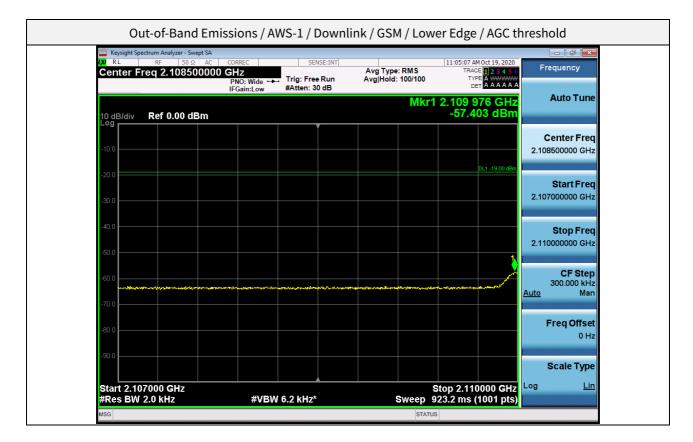


TRACE 12.45 6 00 TYPE 00 <t< th=""></t<>
-53.195 dBm
2.156500000 GHz
DL1 -19.00 dBm
Start Fred 2.155000000 GHz
Stop Free 2.158000000 GHz
СF Step 300.000 кН <u>Auto</u> Маг
Freq Offse 0 Hz
Scale Type



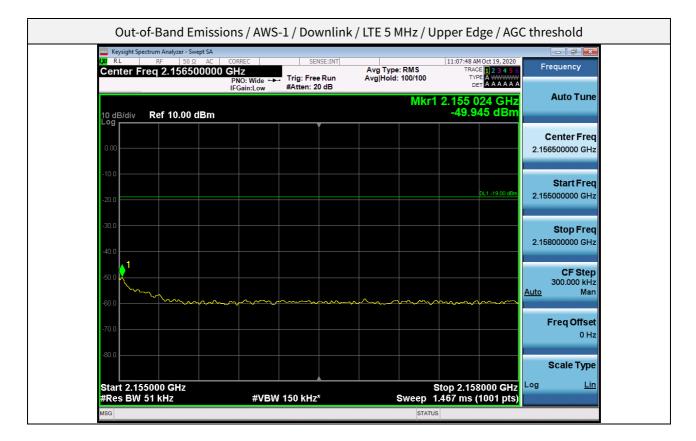




Keysight Spectrum Analyzer - Swept SA		11.07.07 110 110 200	
₩ RL RF 50Ω AC Center Freq 2.10850000		11:07:03 AM Oct 19, 202 Avg Type: RMS TRACE Avg Hold: 100/100 TYPE A A A A A	6 Frequency
10 dB/div Ref 0.00 dBm		Mkr1 2.109 997 GH -56.447 dBr	
-10.0			Center Freq 2.108500000 GHz
-20.0		DL1 -19.00 dE	m
-30.0			Start Fred 2.107000000 GHz
-40.0			Stop Freq
-50.0			2.11000000 GHz
-60.0	Managarah Managarah yang kang kang kang kang kang kang kang k	and the second	CF Step 300.000 kHz <u>Auto</u> Man
-70.0			Freq Offset
-80.0			0 Hz
			Scale Type







Keysight Spectrum Analyzer - Swept SA M RL RF 50 Ω AC Center Freq 2.156500000	CORREC SENSE:INT GHz PNO: Wide →→ IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 100/100	3:10 AM Oct 19, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div Ref 10.00 dBm		Mkr1 2.15 -5	5 000 GHz 0.282 dBm	Auto Tune
0.00				Center Freq 2.156500000 GHz
-10.0			DL1 -19.00 dBm	Start Freq 2.155000000 GHz
-30.0				Stop Freq 2.158000000 GHz
-50.0	<u> </u>			CF Step 300.000 kHz Auto Man
-70.0				Freq Offset 0 Hz
-80.0				Scale Type
Start 2.155000 GHz #Res BW 51 kHz	#VBW 150 kHz*	Stop 2 Sweep 1.467 r	.100000 0112	.og <u>Lin</u>



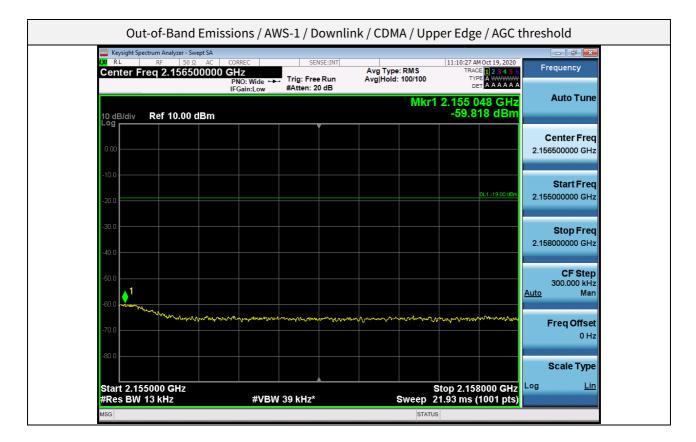


🔤 Keysight Spectrum Analyzer - Swept SA					
⊠ RL RF 50Ω AC Center Freq 2.10850000		SENSE:INT Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold: 100/100	11:09:19 AM Oct 19, 2020 TRACE 1 2 3 4 5 0 TYPE A WWWW DET A A A A A A	4
10 dB/div Ref 10.00 dBm			Mkr	1 2.109 913 GHz -58.467 dBm	Auto Tune
0.00					Center Freq 2.108500000 GHz
-20.0				DL1 -19.00 dBm	Start Freq 2.107000000 GHz
-30.0					Stop Freq 2.110000000 GHz
-50.0					CF Step 300.000 kHz <u>Auto</u> Man
-60.0	~~~~~				Freq Offset 0 Hz
-80.0					Scale Type
Start 2.107000 GHz #Res BW 51 kHz		150 kHz*		Stop 2.110000 GHz 1.467 ms (1001 pts)	Log <u>Lin</u>

Keysight Spectrum Analyzer - Swept SA	CORREC SENSE:INT	11:09:41 AM Oct	□ 🗗 📈
Center Freq 2.10850000		Avg Type: RMS TRACE	2 3 4 5 6 WWWW
	IFGain:Low #Atten: 20 dB	DET	AAAAA Auto Tune
10 dB/div Ref 10.00 dBm		Mkr1 2.110 000 -58.594	
Log			
0.00			Center Freq 2.108500000 GHz
			2.10000000 0112
-10.0			Start Freq
-20.0		DL1	-19.00 dBm 2.107000000 GHz
-30.0			Stop Freq
-40.0			2.110000000 GHz
			CF Step
-50.0			300.000 kHz
.60.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Auto Man
			Freq Offset
-70.0			0 Hz
-80.0			
			Scale Type
Start 2.107000 GHz		Stop 2.11000	0 GHz Log Lin



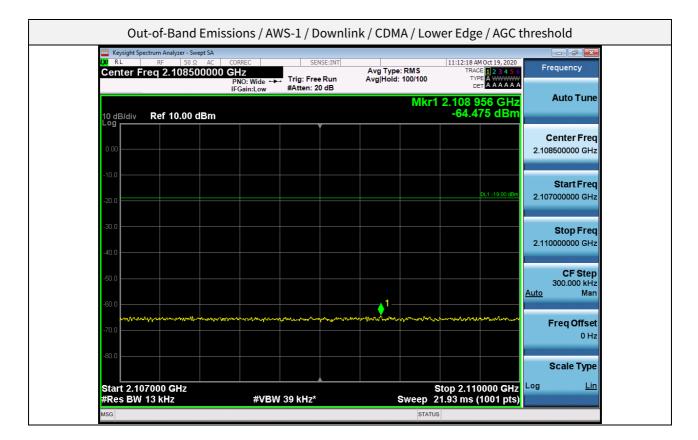




Keysight Spectrum Analyzer - Swept SA RL	CORREC SENSE:INT GHZ PNO: Wide ↔ Trig: Free Run	11:10:51 AM Oct 19 Avg Type: RMS TRACE 12 Avg Hold: 100/100 Type A	Frequency
	IFGain:Low #Atten: 20 dB	Mkr1 2.155 033 (-63.719 d	GHZ Auto Tune
10 dB/div Ref 10.00 dBm			Center Freq 2.156500000 GHz
-10.0		DL1 -19	00 (Em) 2.155000000 GHz
-30.0			Stop Freq 2.158000000 GHz
-50.0			CF Step 300.000 kHz <u>Auto</u> Man
-70.0	anean an a	an a	Freq Offset
-80.0 Start 2.155000 GHz		Stop 2.158000	Scale Type



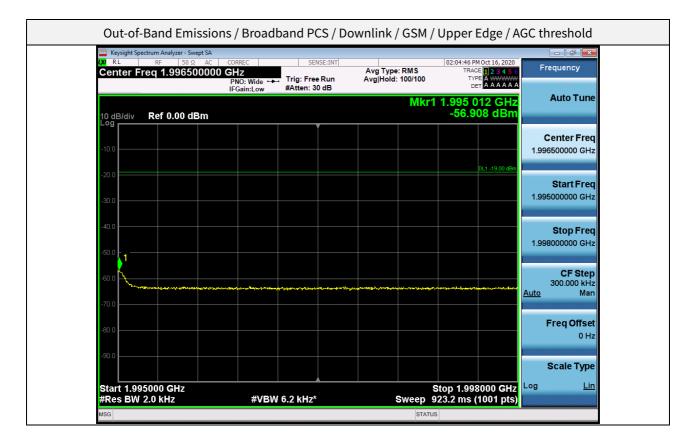




Keysight Spectrum Analyzer - Swept SA			12.42 00 0 0 10 2020	
()20 RL RF 50 Ω AC Center Freq 2.10850000	CORREC SENSE:INT O GHZ PNO: Wide ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 100/100	12:43 AM Oct 19, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div Ref 10.00 dBm		Mkr1 2.	109 841 GHz -64.587 dBm	Auto Tune
0.00			2.	Center Freq 108500000 GHz
-10.0			DL1 -19.00 dBm 2.	Start Freq 107000000 GHz
-30.0			2.	Stop Freq 110000000 GHz
-50.0			Auto	CF Step 300.000 kHz <u>2</u> Man
-60.0	and the second	en men and an		Freq Offset 0 Hz
-80.0				Scale Type
Start 2.107000 GHz #Res BW 13 kHz	#VBW 39 kHz*	Stop	2.110000 GHz ^{Log} 3 ms (1001 pts)	Lin



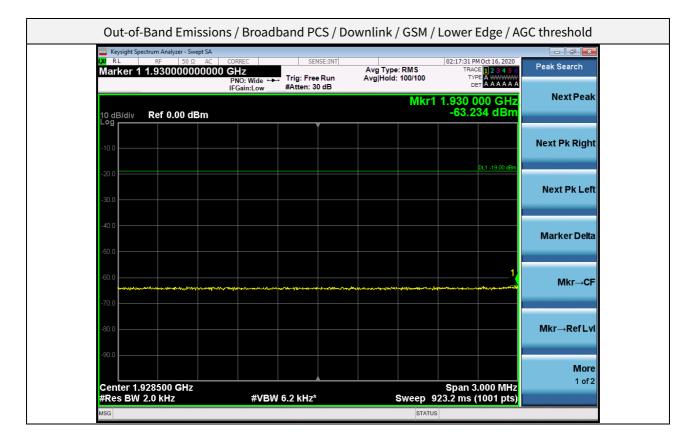




Keylight Spectrum Augrer. Sings Adv Adv Other Frequency PR: Sing Adv Advg Type: RMS Trace Distance Frequency PM: Frequency Advg Type: RMS Trace Distance Advg Type: RMS Ib dB/div Ref 0.00 dBm Center Freq 1.995 018 GHz Auto Tune 10 dB/div Ref 0.00 dBm Center Freq 1.995 0000 GHz Center Freq 10 dB/div Ref 0.00 dBm Center Freq 1.995 0000 GHz Start Freq 10 dB/div Ref 0.00 dBm Center Freq 1.99500000 GHz Start Freq 10 dB/div Ref 0.00 dBm Center Freq 1.99500000 GHz Start Freq 10 dB/div Ref 0.00 dBm Center Freq 1.9950000 GHz Start Freq 10 dB/div Ref 0.00 dBm Center Freq 1.99500000 GHz Start Freq 10 dB/div Ref 0.00 dBm Ref 0.00 dBm Center Freq 1.99500000 GHz 20 dB/div Ref 0.00 dBm Ref 0.00 dBm Ref 0.00 dBm Start Freq 20 dB/div Ref 0.00 dBm Ref 0.00 dBm Ref 0.00 dBm Ref 0.00 dBm 20 dB/div Ref 0.00 dBm	Out-of-Band Emissions / Bro	oadband PCS / Downl	ink / GSM / Upper Edge	e / AGC threshold +10 dB
Log Center Freq 100 0 200 0	074 RL RF 50 Ω AC COR Center Freq 1.996500000 GH PP IFC	Z NO: Wide +++ Trig: Free Run	Avg Type: RMS TRACI Avg Hold: 100/100 TVP DE Mkr1 1.995 0	Oct 16, 2020 Frequency D 3 4 5 6 Frequency A A A A A Auto Tune
200 Start Freq 300 Start Freq 400 Stop Freq 400 Stop Freq 500 Stop Freq 1 Stop Freq S	Log			Center Freq 1.996500000 GHz
Stop Freq 1.99800000 GHz 1.99800000 GHz CF Step 300.00 KHz Auto Man Freq Offset 0 Hz Start 1.995000 GHz Log Lin				Start Freq
2000 300.000 kHz 700 300.000 kHz 800 1 900 1 900 1 1 1				
Start 1.995000 GHz Stop 1.998000 GHz Log Log <th< td=""><td></td><td></td><td></td><td>300.000 kHz</td></th<>				300.000 kHz
Start 1.995000 GHz Stop 1.998000 GHz				0 Hz
#Res BW 2.0 KHZ #VBW 6.2 KHZ* Sweep 923.2 ms (1001 pts)	#Res BW 2.0 kHz	#VBW 6.2 kHz*	Sweep 923.2 ms (*	000 GHz Log Lin



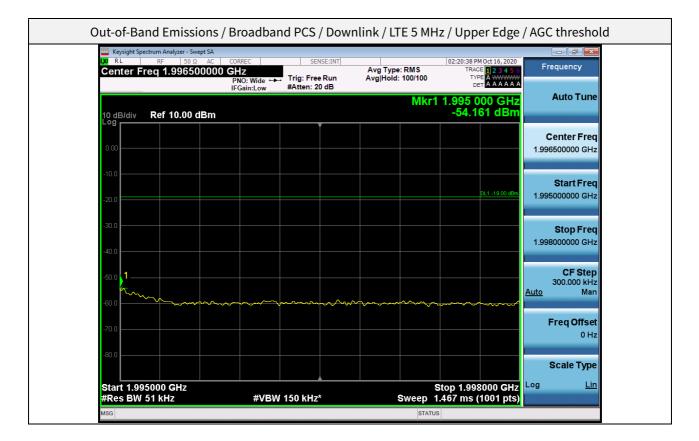




Out-of-Band Emissions / B	roadband PCS / Down	link / GSM / Lower Edge / AGC	threshold +10 dB
Center Freq 1.928500000 G	ORREC SENSE:INT HZ PNO: Wide ↔ Trig: Free Run IFGain:Low #Atten: 30 dB	02:20:09 PM Oct 16, 2020 Avg Type: RMS Avg Hold: 100/100 TRACE TRACE TRACE 12 3 4 5 TRACE DET AAAAA Mkr1 1.929 973 GH: -63.114 dBn	A Auto Tune
10 dB/div Ref 0.00 dBm		0.1.19.00.48	Center Freq 1.928500000 GHz
-20.0			Start Freq 1.927000000 GHz
-40.0			Stop Freq 1.93000000 GHz
-60.0			CF Step 300.000 kHz Auto Man
-80.0			Freq Offset 0 Hz
Center 1.928500 GHz #Res BW 2.0 kHz	#VBW 6.2 kHz*	Span 3.000 MH Sweep 923.2 ms (1001 pts	Scale Type Log <u>Lin</u>
MSG		STATUS	



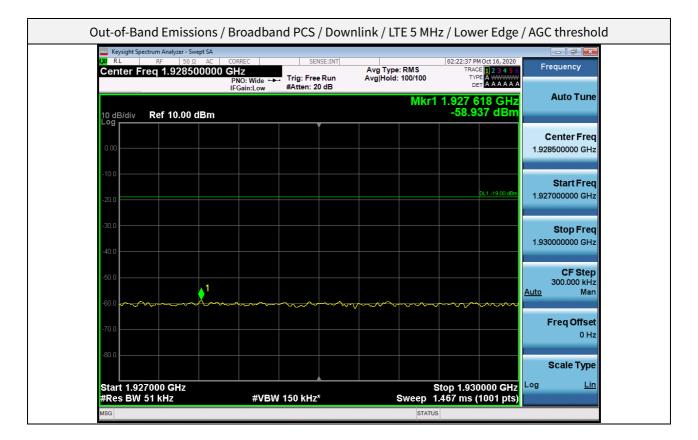




Out-of-Band Emissions / Bro	oadband PCS / Downlink	x / LTE 5 MHz / Upper Edge / A	GC threshold +10 dB
Keysight Spectrum Analyzer - Swept SA	CORREC SENSE:INT CH2 PNO: Wide ++ IFGain:Low #Atten: 20 dB	02:21:01 PM Oct 16, 2020 Avg Type: RMS TRACE 1 2 3 4 5 Avg Hold: 100/100 TYPE A DET AAAAA DET AAAAA	Auto Tune
10 dB/div Ref 10.00 dBm		-53.433 dBm	Center Freq 1.996500000 GHz
-10.0		DL1 -19.00 dBr	Start Freq 1.995000000 GHz
-30.0 -40.0 -50.0 1			Stop Freq 1.998000000 GHz CF Step
-60.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	300.000 kHz Auto Man Freq Offset
-80.0		Stop 1.998000 GHz	0 Hz Scale Type
#Res BW 51 kHz	#VBW 150 kHz*	Sweep 1.467 ms (1001 pts	







Keysight Spectrum Analyzer - Snept SA CORREC SENSE:INT 02:22:59 PM Oct 16, 2020 Frequency Center Freq 1.928500000 GHz Trig: Free Run RANgHold: 100/100 Trig: Trace II 23 8 8 00000 Avg Type: RMS Arg	Out-of-Band Emissions	s / Broadband PCS / Dow	nlink / LTE 5 MHz / Lower Edge / AG	C threshold +10 dB
Log Center Freq 0.00 0 100 0 200 0 200 0 300 0 400 0 600 0 600 0 700 0 700 0	Center Freq 1.9285	2 AC CORREC SENSE: 00000 GHz PNO: Wide IFGain:Low #Atten: 20 dB	Avg Type: RMS an Avg Hold: 100/100 B Mkr1 1.929 829 GHz	Frequency
20.0 0.1 - 1900 dtm Start Freq 30.0 1.927000000 GHz 40.0 1.93000000 GHz 50.0 50.0 50.0 50.0 70.0 50.0 70.0 50.0				
-40.0			DL1 -19 00 dBm	
50.0 60.0 70.0 Freq Offset				
		hanne han an a		300.000 kHz
80.0				0 Hz
Start 1.927000 GHz #Res BW 51 kHz #VBW 150 kHz* Sweep 1.467 ms (1001 pts)	#Res BW 51 kHz	#VBW 150 kHz*	Sweep 1.467 ms (1001 pts)	



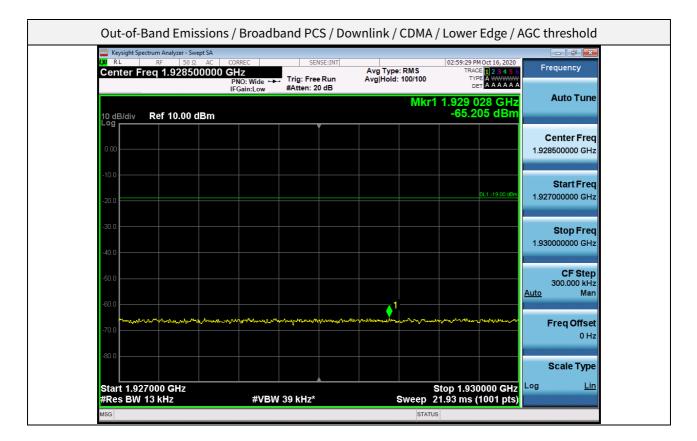


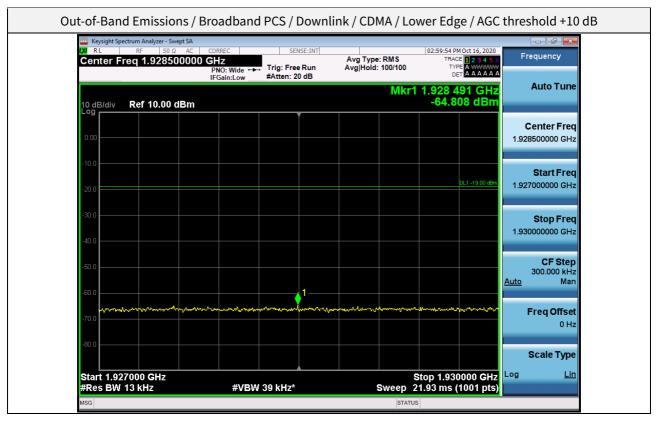
Keysight Spectrum Analyzer - Swept SA K R L R F 50 Ω AC	CORREC SE	NSE:INT	02:57:23 PM Oct 16, 2020	
Center Freq 1.996500000		Avg Type: Ri e Run Avg Hold: 10	MS TRACE 1 2 3 4 5	6 Frequency A
10 dB/div Ref 10.00 dBm			Mkr1 1.995 021 GH -61.613 dBn	Auto Tune
0.00				Center Freq 1.996500000 GHz
-10.0			DL1 -19.00 dBr	Start Freq 1.995000000 GHz
-30.0				Stop Freq 1.998000000 GHz
-60.0				CF Step 300.000 kHz <u>Auto</u> Man
and the second second	water a second and the second and the second s	Marymont and a second second	and a second and a second s	Freq Offset 0 Hz
-80.0				Scale Type

Out-of-Band Emissions /	Broadband PCS / Down	link / CDMA / Upper	Edge / AGC thres	hold +10 dB
Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω Ac Center Freq 1.996500000 10 dB/div Ref 10.00 dBm	CORREC SENSE:INT O GHZ PNO: Wide ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 100/100 Mkr1 1.99	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	ت الله العمر المراجع العمر المراجع العمر المراجع العمر المراجع العمر المراجع المراجع المراجع المراجع المراجع ال Auto Tune
			с	enter Freq 500000 GHz
-10.0				Start Freq 000000 GHz
-30.0				Stop Freq 000000 GHz
-60.0 -60.0			1, <u>Auto</u>	CF Step 300.000 kHz Man
-70.0	aller and leave and an and a second	anal and a second a second a second a second a second a se	F	r eq Offset 0 Hz
Start 1.995000 GHz #Res BW 13 kHz	#VBW 39 kHz*	Stop 1 Sweep 21.93	.998000 GHz Log	Scale Type Lin
MSG		STATUS		











HCT

5.6. CONDUCTED SPURIOUS EMISSIONS

Test Requirements:

§ 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in § 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

§ 22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows:

In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth (i.e., 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
 In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz.

§ 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service. (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.



§ 27.53 Emission limits.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed. (h) AWS emission limits

(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

(3) Measurement procedure.

(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's



frequency block edges, both

upper and lower, as the design permits.

(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

Test Procedures:

Measurements were in accordance with the test methods section 7.6 of KDB 935210 D03 v04r04.

a) Begin with the uplink output (donor) port connected to the spectrum analyzer.

b) Configure the signal generator for AWGN with a 99% OBW of 4.1 MHz, with a center frequency corresponding to the center of the CMRS band under test.

c) Set the signal generator amplitude to the level determined in the power measurement procedure in maximum power measurement test.

d) Turn on the signal generator RF output and measure the spurious emission power levels with an appropriate measuring instrument as follows.

1) Set RBW = measurement bandwidth specified in the applicable rule section for the operational frequency band under consideration. Note that many of the individual rule sections permit the use of a narrower RBW [typically \geq 1% of the emission bandwidth (EBW)] to enhance measurement accuracy, but the result must then be integrated over the specified measurement bandwidth.

2) Set VBW = $3 \times RBW$.

3) Select the power averaging (rms) detector.

4) Sweep time = auto-couple.

5) Set the analyzer start frequency to the lowest radio frequency signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. Note that the number of measurement points in each sweep must be \geq (2 x span/RBW), which may require that the measurement range defined by the preceding start and stop frequencies be subdivided, depending on the available number of measurement points of the spectrum analyzer. Trace average at least 10 traces in power averaging (i.e., rms) mode. 6) Use the peak marker function to identify the highest amplitude level over each measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report.

7) Reset the analyzer start frequency to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the analyzer stop frequency to 10 times the highest frequency of the fundamental emission. Note that the number of measurement points in each sweep must be \geq (2 x span/RBW) which may require that the measurement range defined by the start and stop frequencies above be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.

8) Use the peak marker function to identify the highest amplitude level over each of the measured frequency ranges. Record the frequency and amplitude and capture a plot for inclusion in the test report.

e) Repeat b) through d) for each supported frequency band of operation.





Note1. Except band of upper 700 MHz, '43 + 10 Log (Power) = -13 dBm' limit is applied for all spurious test. For upper 700 MHz band, in 763-775 MHz and 793-805 MHz '65 + 10 log (Power) = -35 dBm (6.25 kHz RBW)' limit is applied. Additionally in 1559-1610 MHz shall be limited to -70 dBW/MHz (-40 dBm, 1 MHz RBW) EIRP for wideband signals.

Note2. Coupling In 9 kHz-150 kHz and 150 kHz-30 MHz bands, RBW was reduced to 1 kHz and 10 kHz and correction factor was applied according to section 5.7.2 of ANSI C63.26-2015.

Band	9 ~ 150 kHz Correction	150 kHz ~ 30 MHz Correction
Below 1 GHz (Ref.RBW: 100 kHz)	20 dB	10 dB
Above 1 GHz (Ref.RBW: 1 MHz)	30 dB	20 dB

Note3. RBW and Band Separation is according to note 1 of out-of-band emissions test in this report





Test Results:

Tabulated Result of Uplink Conducted Spurious Emissions

Band	Range (MHz)	Frequency (MHz)	Limit (dBm)	Spurious Emission (dBm)
	0.009 ~ 0.15	0.009 000		-38.595
	0.15~30	0.165		-53.711
	30 ~ 703.9	697.33		-56.463
Lower 700 MHz	716.1 ~ 2 000	1 711.12		-46.321
	2 000 ~ 4 000	3 974.35		-61.788
4 000 ~ 6 000 5 615.95 -57.	-57.525			
	6 000 ~ 8 000	7 453.80	-13	-58.847
	0.009 ~ 0.15	0.010 833	-13	-39.576
	0.15~30	0.165		-51.960
30~775.9 775.90		-49.180		
	787.1 ~ 2 000	1 726.53		-46.595
Upper 700	2 000 ~ 4 000	3 688.85		-60.932
MHz	4 000 ~ 6 000	5 885.85		-57.609
	6 000 ~ 8 000	7 070.70		-58.635
	763 ~ 775	774.92	40	-63.869
	793 ~ 805	793.57	-46	-76.890
	1 559 ~ 1 610	1 563.39	-40	-54.728



Band	Range (MHz)	Frequency (MHz)	Limit (dBm)	Spurious Emission (dBm)
	0.009 ~ 0.15	0.009 000		-40.552
	0.15 ~ 30	0.150		-53.211
Cellular	30 ~ 823	816.38		-55.471
	850 ~ 1 000	851.23		-55.977
1 000 ~ 10 0	1 000 ~ 10 000	7 150.15		-37.253
	0.009 ~ 0.15	0.009 141		-28.365
	0.15 ~ 30	0.150		-41.379
AWS-1	30~1709	1 701.86	-13	-41.715
	1 756 ~ 10 000	7 000.83		-36.826
	10 000 ~ 26 500	25 453.49		-30.415
	0.009 ~ 0.15	0.009 000		-30.425
	0.15 ~ 30	0.150		-39.881
Broadband PCS	30 ~ 1 849	1 845.09		-43.318
1.00	1 916 ~ 10 000	7 511.34		-36.539
	10 000 ~ 26 500	24 761.73		-30.486



Tabulated Result of Downlink Conducted Spurious Emissions

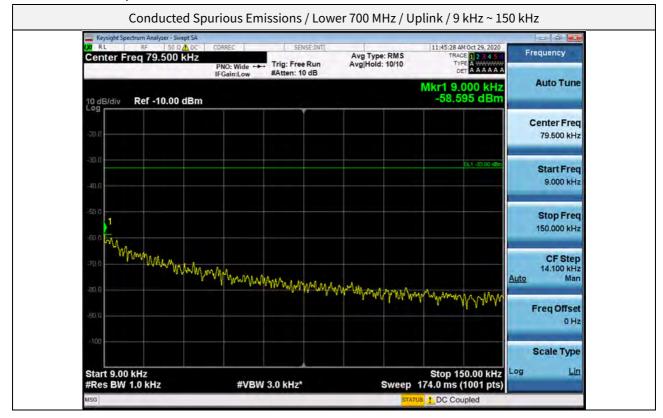
Band	Range (MHz)	Frequency (MHz)	Limit (dBm)	Spurious Emission (dBm)
	0.009 ~ 0.15	0.009 705		-38.657
	0.15 ~ 30	0.160		-52.247
	30 ~ 733.9	727.83		-55.384
Lower 700 MHz	746.1 ~ 2 000	749.49		-52.410
	2 000 ~ 4 000	2 135.35		-48.589
	4 000 ~ 6 000 5 550.20 -5	-57.687		
	6 000 ~ 8 000	7 027.60	-13	-58.504
	0.009 ~ 0.15	0.011 538	-13	-40.649
	0.15~30	0.155		-50.225
30~745.9 733.84		-51.925		
	757.1 ~ 2 000	1 993.04		-52.845
Upper 700	2 000 ~ 4 000	2 142.65		-47.961
MHz	4 000 ~ 6 000	5 516.80		-57.824
	6 000 ~ 8 000	7 595.40		-58.700
	763 ~ 775	764.16	46	-78.403
	793 ~ 805	803.85	-46	-78.418
	1 559 ~ 1 610	1 563.95	-40	-55.938



Band	Range (MHz)	Frequency (MHz)	Limit (dBm)	Spurious Emission (dBm)
	0.009 ~ 0.15	0.010 410		-39.492
	0.15 ~ 30	0.150		-52.975
Cellular	30 ~ 868	851.91		-54.993
	895 ~ 1 000	990.99		-55.927
	1 000 ~ 10 000	7 100.20		-36.919
	0.009 ~ 0.15	0.009 000		-28.505
	0.15 ~ 30	0.150		-42.258
AWS-1	30 ~ 2 109	2 098.50	-13	-42.461
	2 156 ~ 10 000	9 921.56		-37.502
	10 000 ~ 26 500	25 703.46		-30.906
	0.009 ~ 0.15	0.009 141		-27.278
	0.15 ~ 30	0.155		-42.726
Broadband PCS	30 ~ 1 929	1 921.59		-42.621
	1 996 ~ 10 000	7 171.39		-37.051
	10 000 ~ 26 500	24 772.45		-30.560



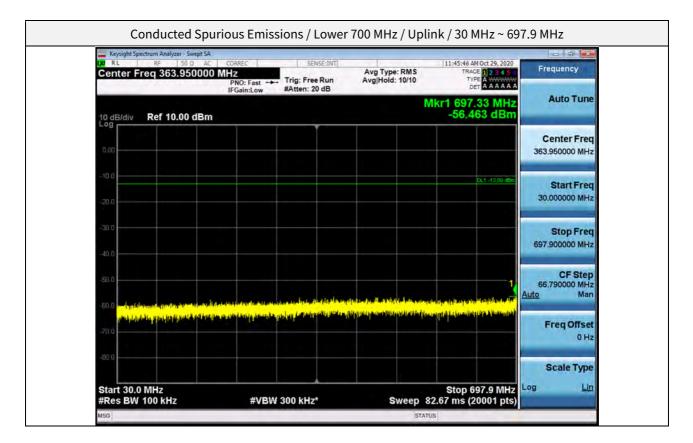
Plot data of Conducted Spurious Emissions

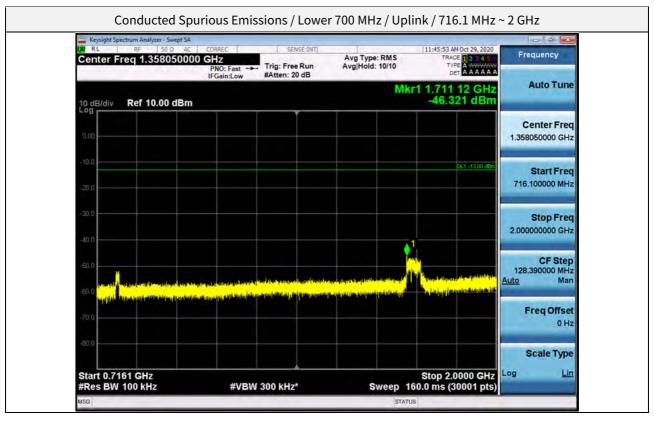


Keysight Spectrum Analyzer - Swept SA RL RF 500 ADC Center Freq 15.075000 MH	CORREC SENSE:INT PNO: Fast IFGain:Low #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	11:45:38 AM Oct 29, 2020 TRACE 1 2 3 4 5 0 Type A DET A A A A A A	Frequency
10 dB/div Ref -10.00 dBm			Mkr1 165 kHz -63.711 dBm	Auto Tune
-20 ū			DL1 -23.00 dBm	Center Freq 15.075000 MHz
-30.0				Start Freq 150.000 kHz
-500 -600 1				Stop Freq 30.000000 MHz
-70.0 -70.0	all a sum of some stands and some	a andar annan ta anna a s	manational sectors and	CF Step 2.985000 MHz Auto Man
	i ya na	na (1421), state in Justin Justin	n yiri kulu atari shi ta'in yiki nga yatar	Freq Offset 0 Hz
-100 Start 150 kHz			Stop 30.00 MHz	Scale Type



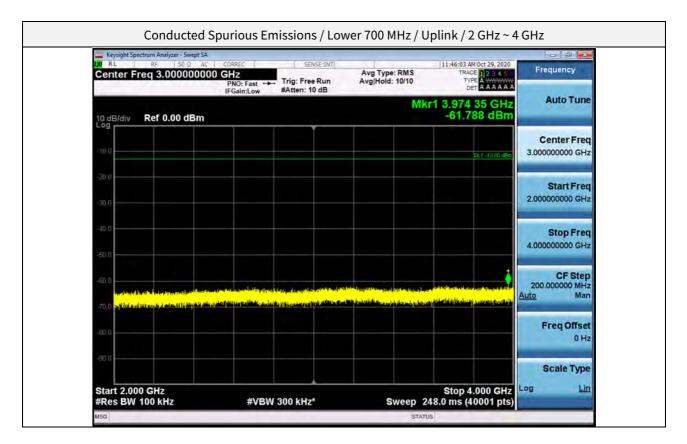


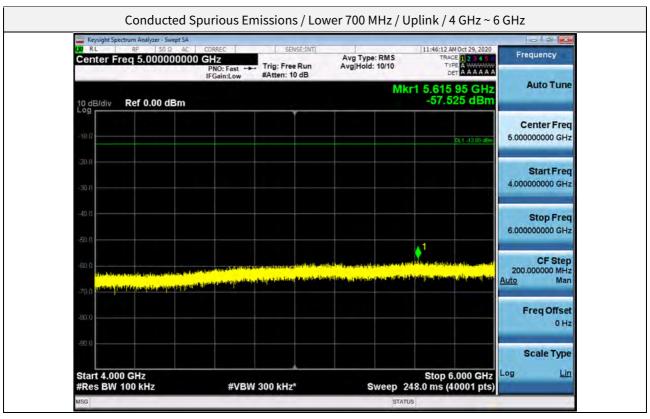






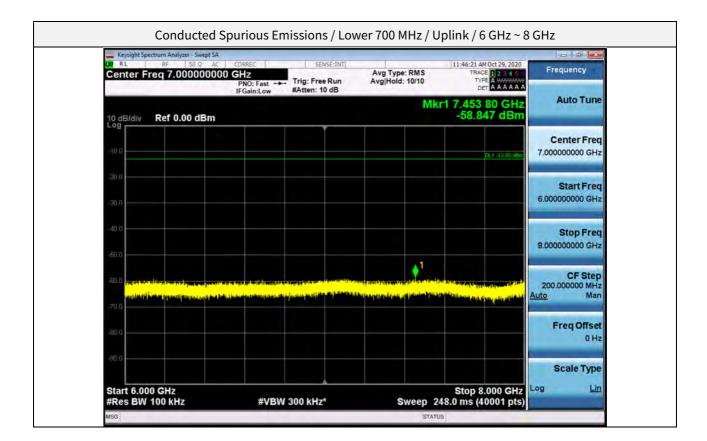






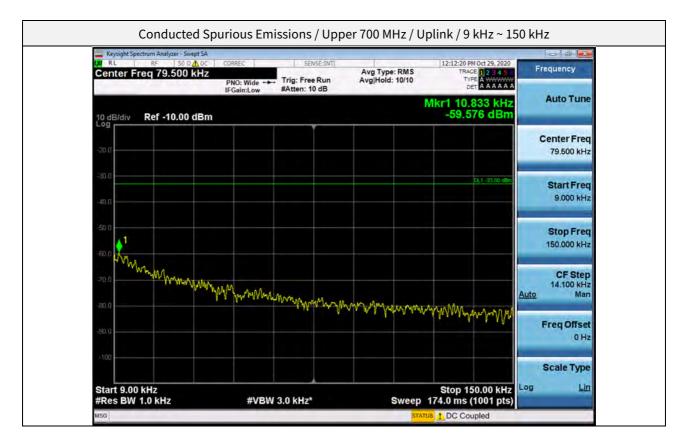


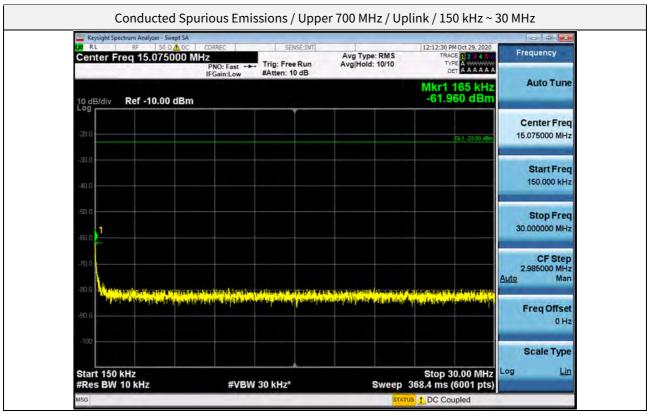






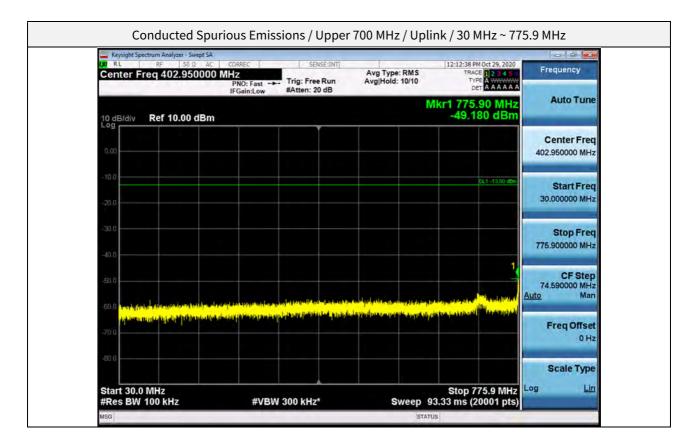


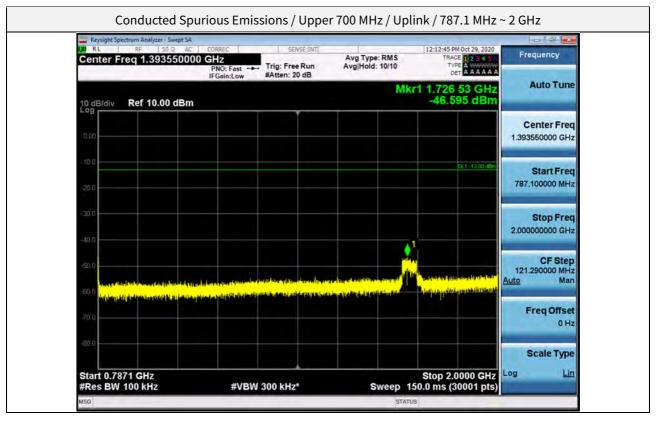






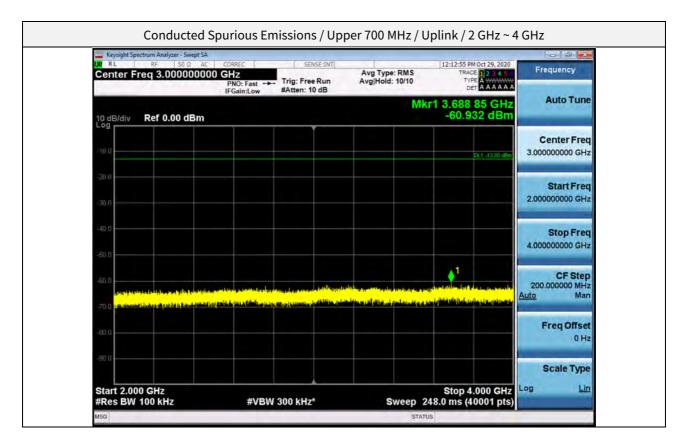


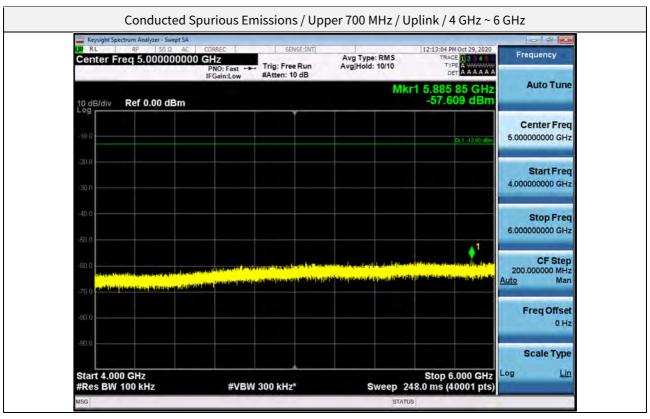






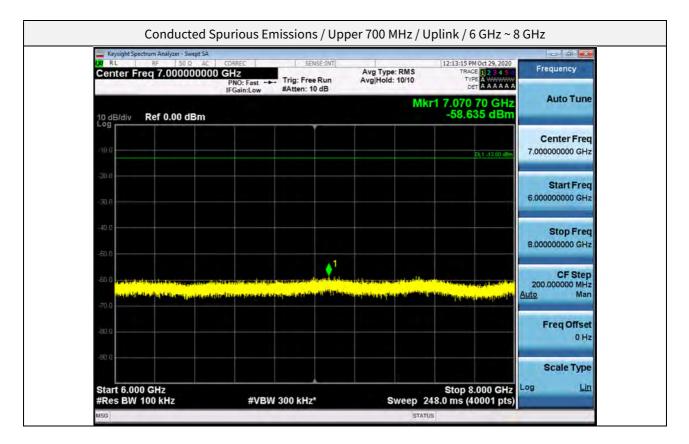


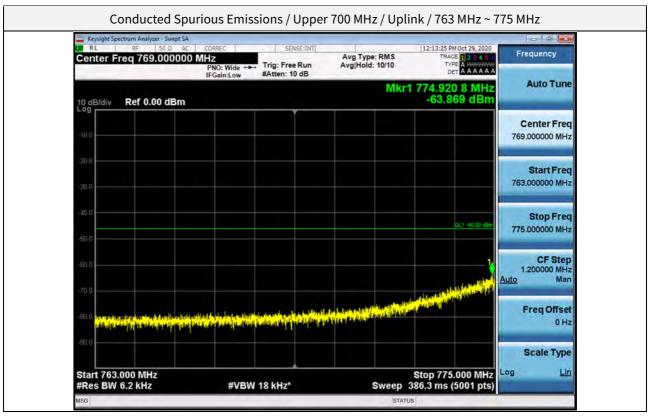






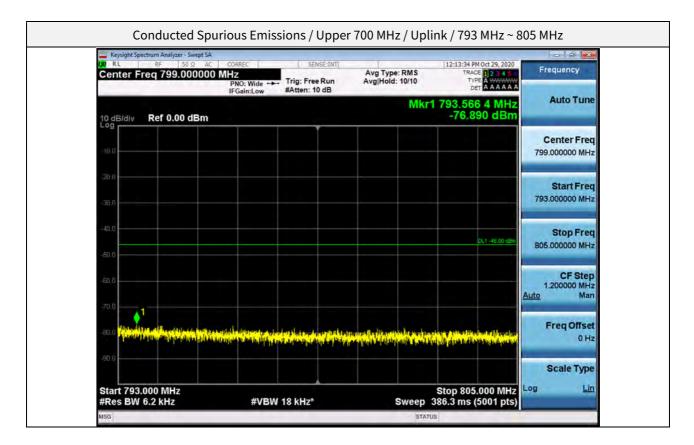


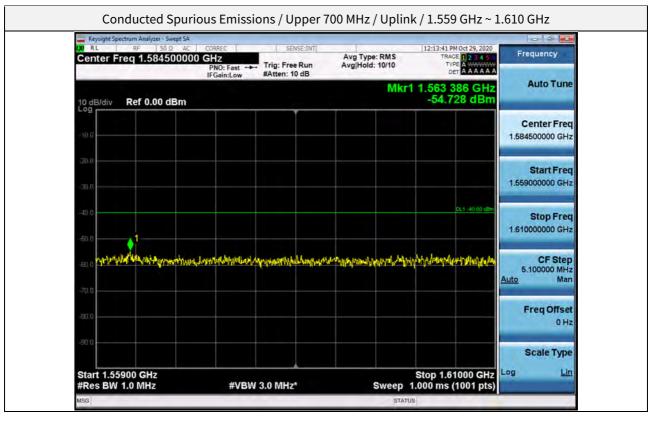






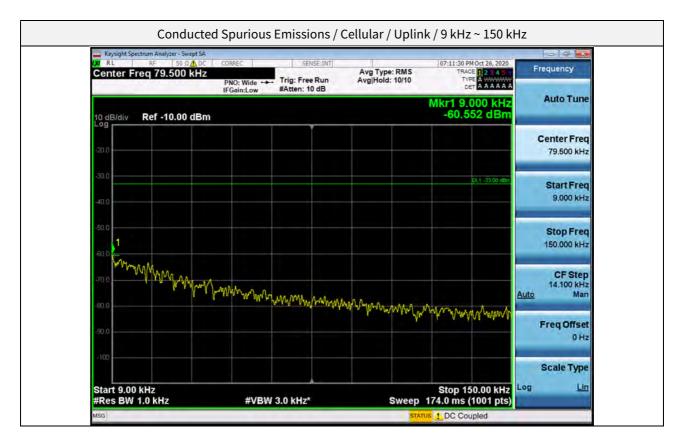


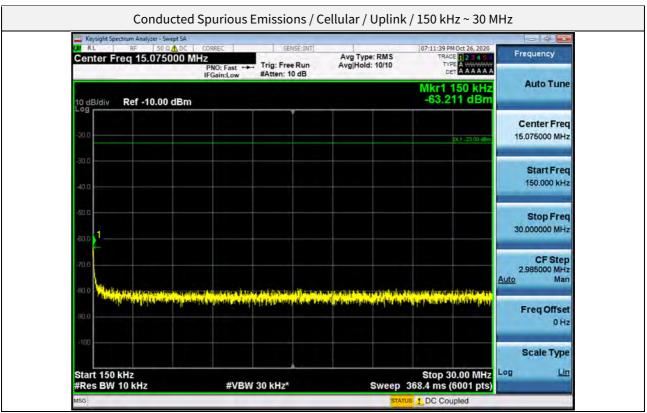






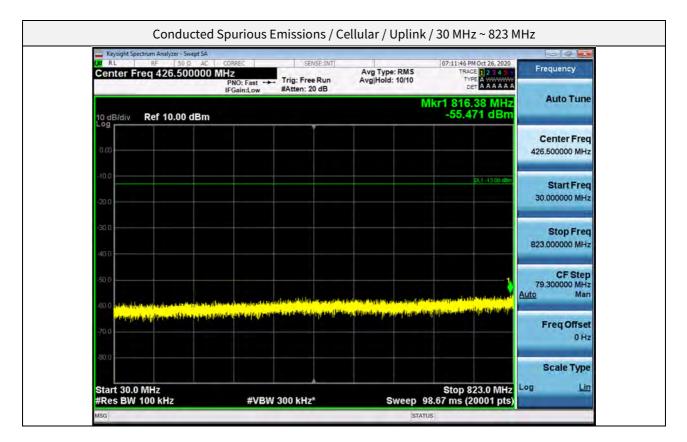








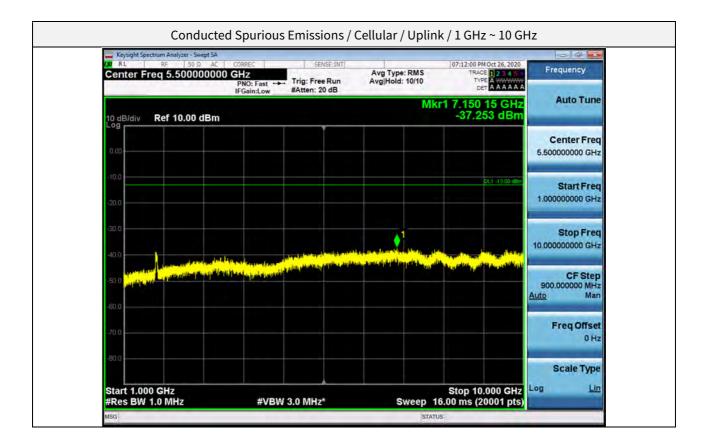




	AC CORREC	SE	NSE:INT				Oct 26, 2020	Frequency
Center Freq 925.0000	PNO: Fast ->	Trig: Fre		Avg Type Avg Hold		TYP	1 2 3 4 5 6 A 4 4 4 4 4 4 4 4 4 4	Frequency
	IFGain:Low	#Atten: 2	000		Mk	1 851.2	25 MHz	Auto Tune
10 dB/div Ref 10.00 dE	3m					-55.97	7 dBm	
								Center Freq
0.00								925.000000 MHz
-10.0							0L1 -13.00 dBm	Start Freq
-20.0						·		850.000000 MHz
								-
-30.0								Stop Freq
40.0								1.00000000 GHz
-50 0 4								CF Step
	w. diret hat her		the star in	الترجيع والم		بالدين ومراجع		15.000000 MHz Auto Man
-co.o		A dia shahada	a state of the sta				anna phá	-
-70,0		_						Freq Offset 0 Hz
-80.0								
00.0								Scale Type
Start 0.85000 GHz			À			Stop 1.00	000 GHz	Log <u>Lin</u>

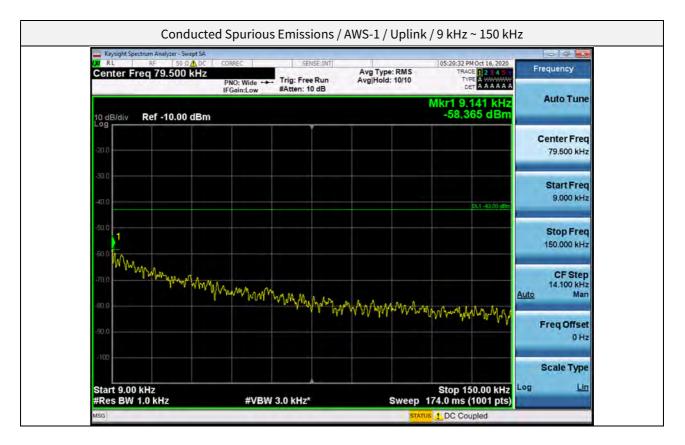


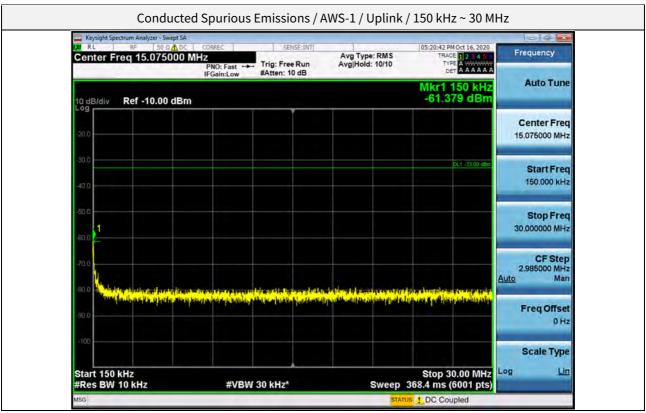






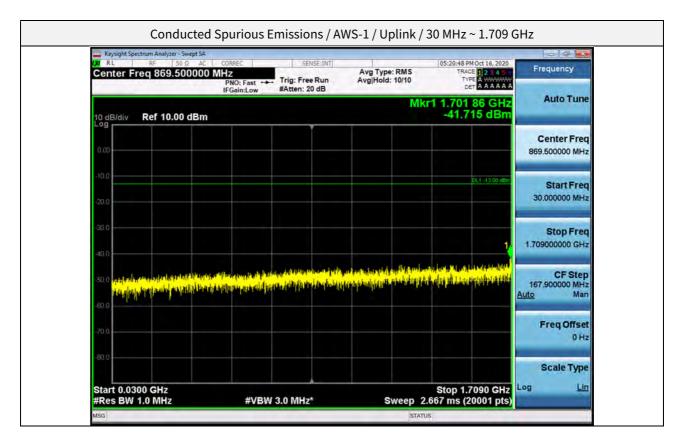


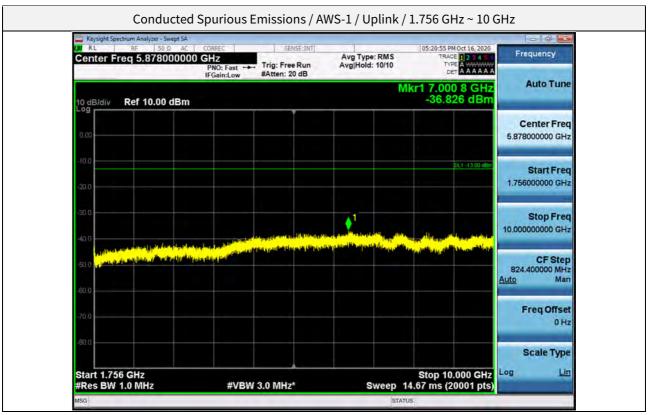






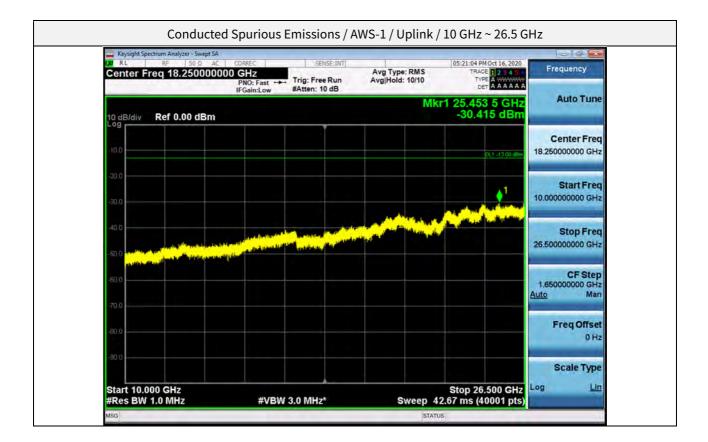






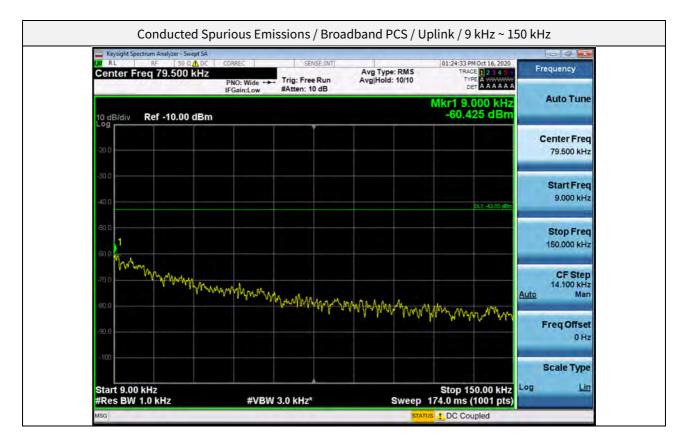








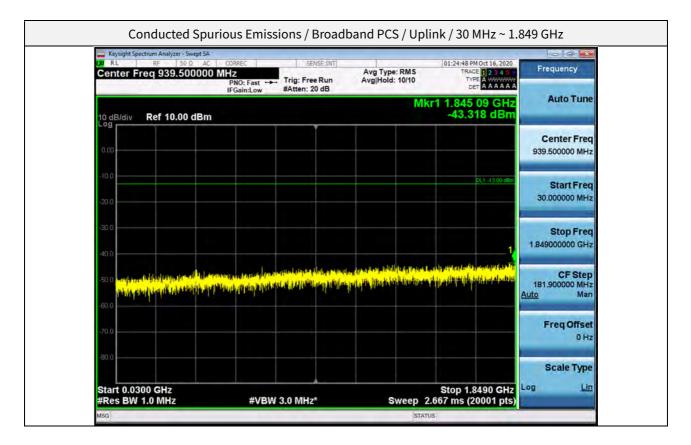


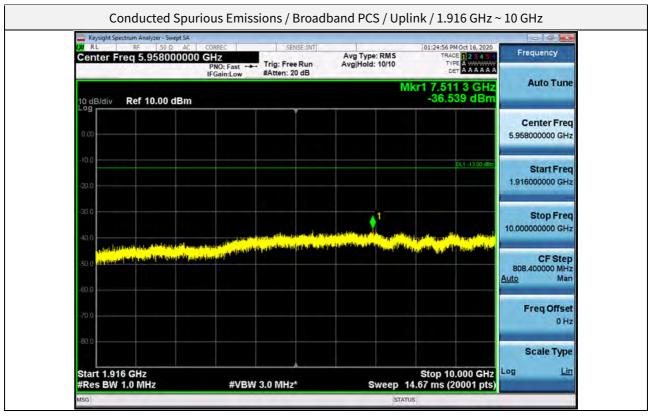


Center Freq 15.075000			01:24:42 PM Oct 16, 2020 TRACE 2 3 4 5 0 TYPE A 4 A A A A	Frequency
10 dB/div Ref -10.00 dB	m		Mkr1 150 kHz -59.881 dBm	Auto Tune
-20.0				Center Freq 15.075000 MHz
-40.0			DL1 -33.00 dBm	Start Freq 150.000 kHz
-50.0				Stop Freq 30.000000 MHz
-70.0				CF Step 2.985000 MHz Auto Man
-80.0 - Milling the stand of participation of the stand o	nd a cara ang ang ang ang ang ang ang ang ang an	n bernen konnen generalen in det berne bereiten. Nervolgen berne in generalen generalen bereiten.	an an thair an tha an tha an train an t An train an t	Freq Offset 0 Hz
-100				Scale Type



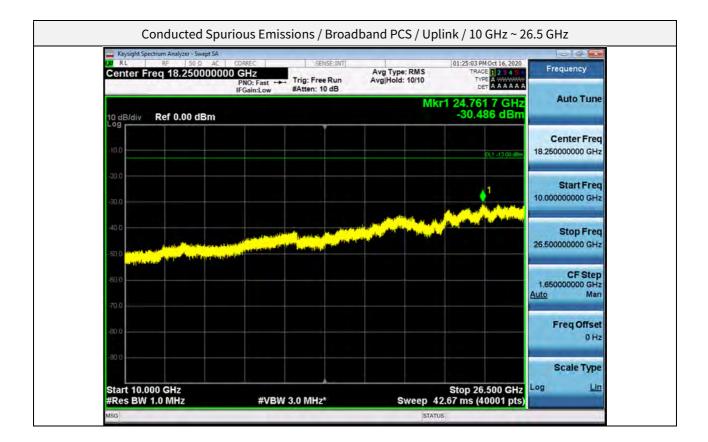






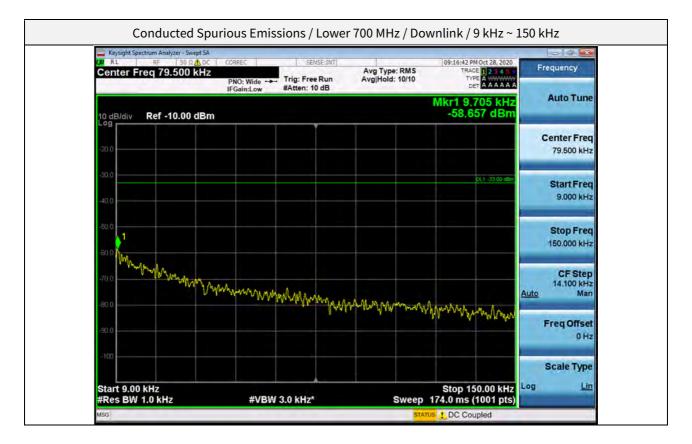








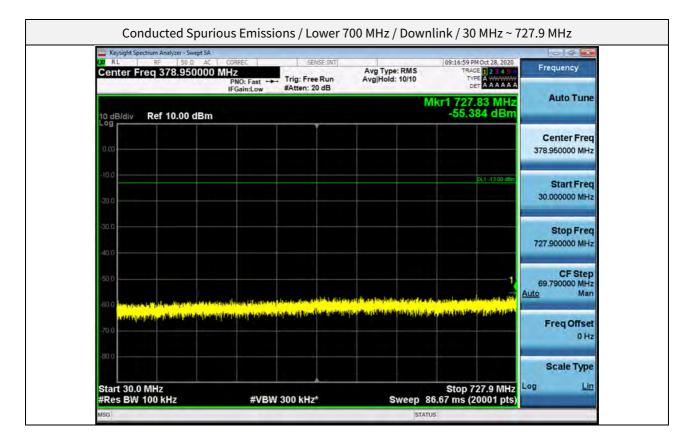


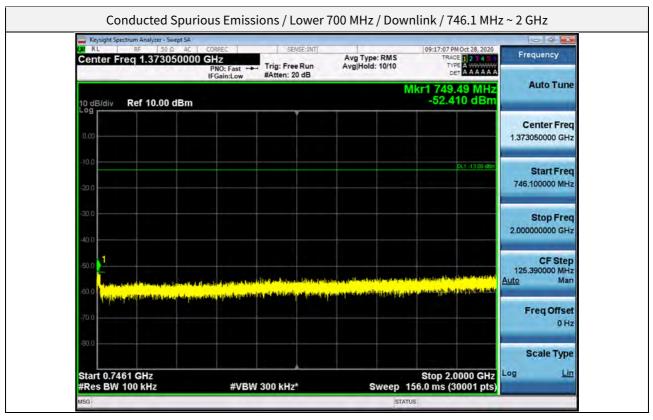


Center Freq 15.075000		Avg Type: RMS Avg Hold: 10/10	09:16:52 PM Oct 28, 2020 TRACE 1 2 3 4 3 6 TYPE A 4444 A A DET A A A A A A A	Frequency
10 dB/div Ref -10.00 dBn	1		Mkr1 160 kHz -62.247 dBm	Auto Tune
-20.0			DL1 -23 00 dBm	Center Freq 15.075000 MHz
-30.0				Start Freq 150.000 kHz
-50.0				Stop Freq 30.000000 MHz
-70.0				CF Step 2.985000 MHz <u>Auto</u> Man
-60.0 Contracting and the second seco	anna sa ga anna an fan fan san an Andria. Anna sa ga anna an fan san an Andria. Anna sa ga anna an fan san an Andria.	an fa ta fan ingeneral yn fan fan fan dy'n Gwleiniger yn fan fan fan fan fan fan fan fan fan fa		Freq Offset 0 Hz
-100				Scale Type



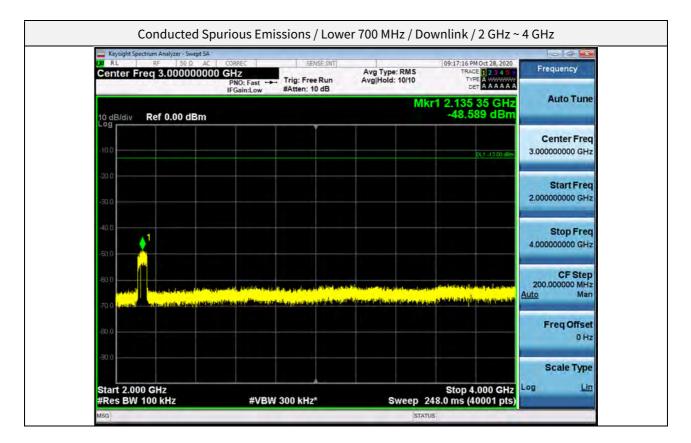








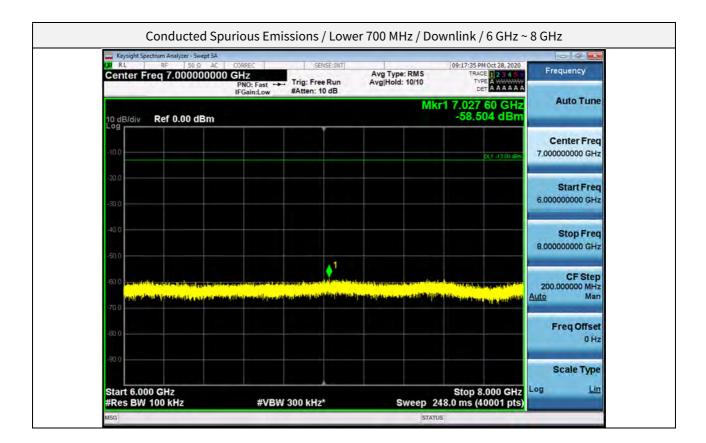




Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 5.000000000	PNO: Fast Trig: Free Run	Avg Type: RMS Avg Hold: 10/10	09:17:26 PM Oct 28, 2020 TRACE 1 2 3 4 5 6 TYPE A A A A A A A	Frequency
10 dB/div Ref 0.00 dBm	IFGain:Low #Atten: 10 dB	Mkr	5.550 20 GHz -57.687 dBm	Auto Tune
-10.0			DL1 -43 00 dBm	Center Freq 5.00000000 GHz
-20.0				Start Freq 4.00000000 GHz
-40.0				Stop Freq 6.00000000 GHz
-50.0 -60.0		and a state of the second s	nden di Militan dan pangan panal di Kita Ngan Latan dan pangan palanjan pangan	CF Step 200.000000 MHz Auto Man
-70.0 -2004 1976 1976 1976 1977 1978 1978				Freq Offset
-90.0				0 Hz Scale Type
Start 4.000 GHz	A		Stop 6.000 GHz	Log <u>Lin</u>

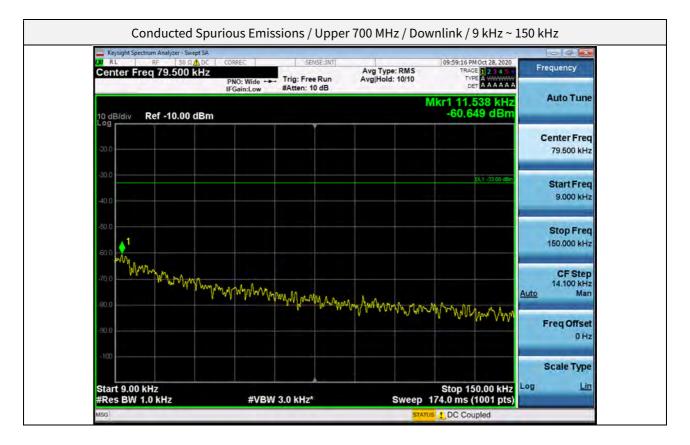








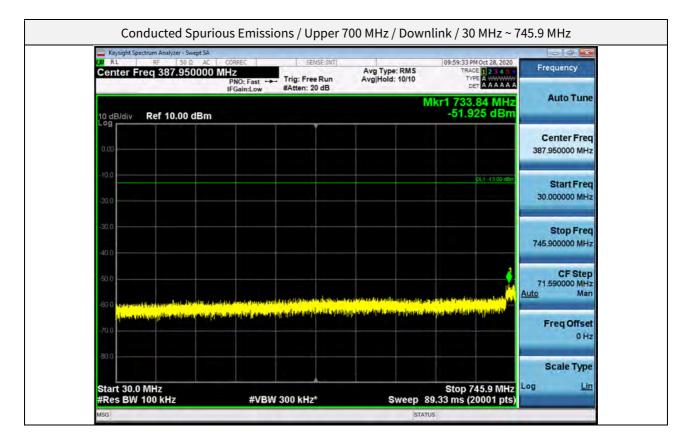




Center Freq 15.075000 I		Avg Type: RMS Avg Hold: 10/10	09:59:26 PM Oct 28, 2020 TRACE 2 3 4 5 6 TYPE A 4 4 4 A A DET A A A A A A A	Frequency
10 dB/div Ref -10.00 dBm			Mkr1 155 kHz -60.225 dBm	Auto Tune
-20.0			DL1 -23 00 dBm	Center Freq 15.075000 MHz
-30.0				Start Freq 150.000 kHz
-60.0				Stop Freq 30,000000 MHz
-70.0				CF Step 2.985000 MHz Auto Man
-90.0	in na bhlias an Ann an an Ann an A 1910 a' ann an Ann a 1911 a' ann an Ann a	an a	n hallan dina kata kata kata kata kata Mana kata kata kata kata kata kata kata k	Freq Offset 0 Hz
				Scale Type



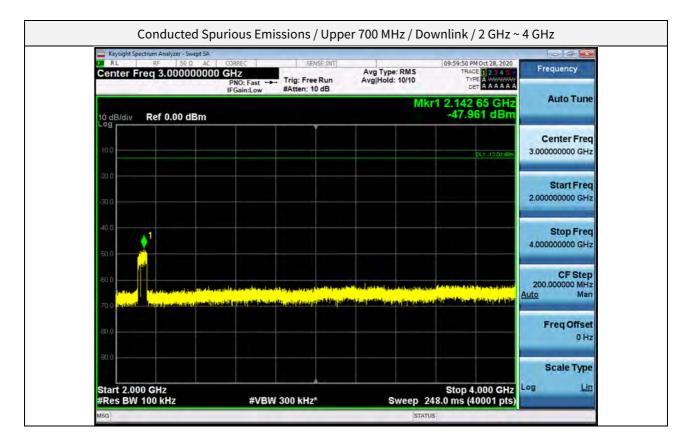


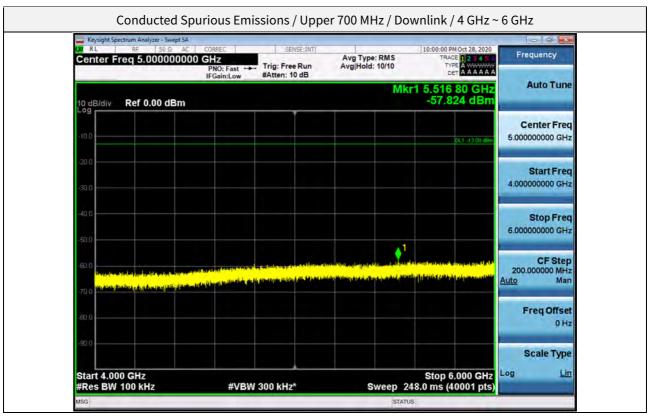


Center Freq 1.378550000 GH	RREC SENSE:INT Z NO: Fast Trig: Free Run Gain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10	09:59:41 PM Oct 28, 2020 TRACE 2 3 4 5 0 TYPE A DET A A A A A A	Frequency
10 dB/div Ref 10.00 dBm		Mkr1	1.993 04 GHz -52.845 dBm	Auto Tune
0.00				Center Freq 1.378550000 GHz
-10.0			DL1 -13 00 dBm	Start Freq 757.100000 MHz
-30.0				Stop Freq 2.00000000 GHz
-50.0	a (her ense als da la factor (statedaes postadore	ann ag leis bh a bhairte leis à tea bhairte an Alainteacha.		CF Step 124.290000 MHz <u>Ito</u> Man
-70.0	e en en gelen de la la procession de la forma de la servicita de la servicita de la servicita de la servicita d			Freq Offset 0 Hz
80.0 Start 0.7571 GHz			Stop 2.0000 GHz	Scale Type



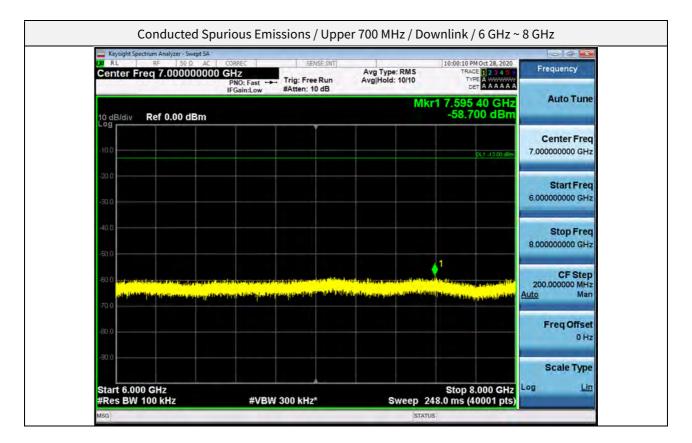








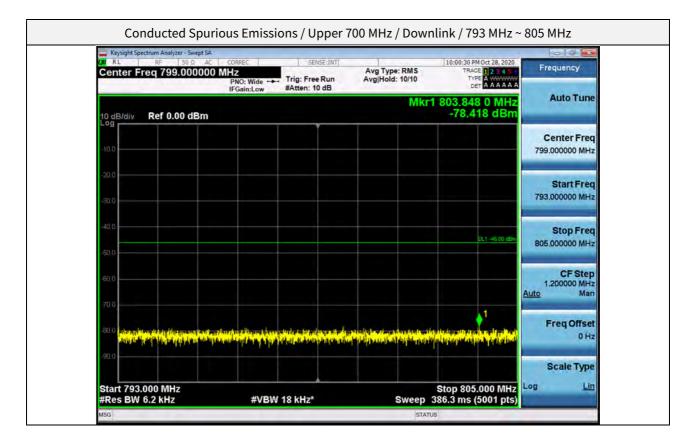




Center Freq 769.00000	C CORREC O MIHZ PNO: Wide → IFGain:Low	Trig: Free R #Atten: 10 c	Avg tun Avg	Type: RMS Hold: 10/10	TYPE	AAAAAA
10 dB/div Ref 0.00 dBm				Mkr1	-78.403	
-10.0						Center Free 769.000000 MHz
-20.0						Start Free 763.000000 MHz
-40.0					DL1	46.00 cm 775.000000 MHz
-60.0						CF Step 1.200000 MHz Auto Man
-80.0 manufacture of the sector	nden en dela de la deservación de la compañía de la Analistica de la compañía de la comp	had a she and a		ing the state of the		Freq Offset
-90.0						Scale Type



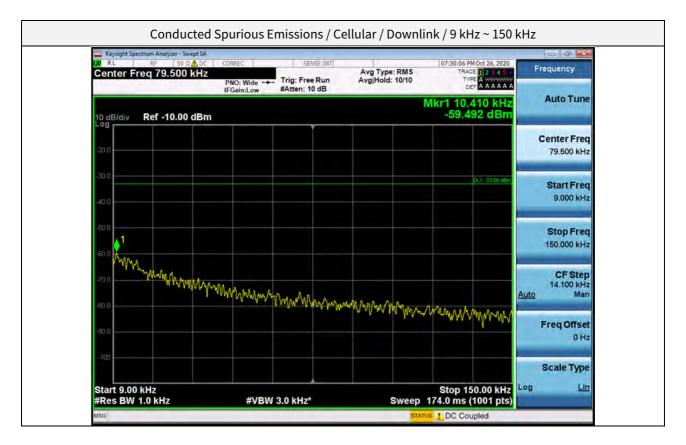


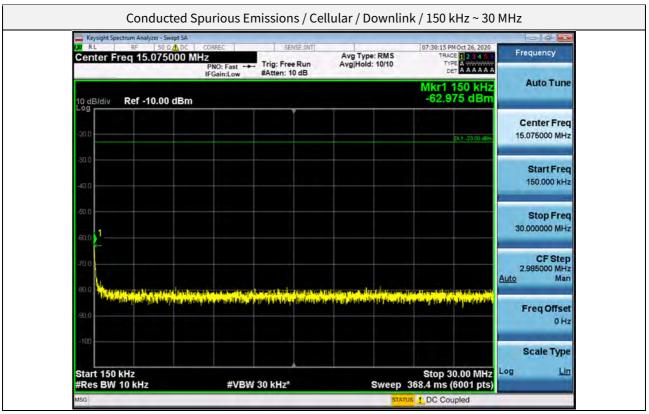


Center Freq 1.58450000	CORREC SENSE:INT O GHZ PNO: Fast + IFGain:Low #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	10:00:37 PM Oct 28, 2020 TRACE 1 2 3 4 5 6 TYPE A DET A A A A A A	Frequency
10 dB/div Ref 0.00 dBm		Mkr1	1.563 947 GHz -55.938 dBm	Auto Tune
-10.0				Center Freq 1.584500000 GHz
-20.0				Start Freq 1.559000000 GHz
-40.0			0L1 -40.00 dBm	Stop Freq 1.61000000 GHz
• • • • • • • • • • • • • • • • • • •	awythilamodilynnwssoifteniaessellwi	haddonad o anna an a	nanghali yakuliyyinna Mil	CF Step 5.100000 MHz Auto Man
-80.0				Freq Offset 0 Hz
-90.0				Scale Type



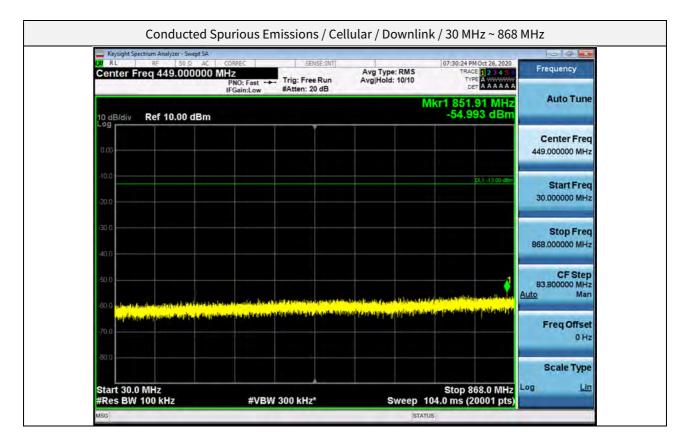








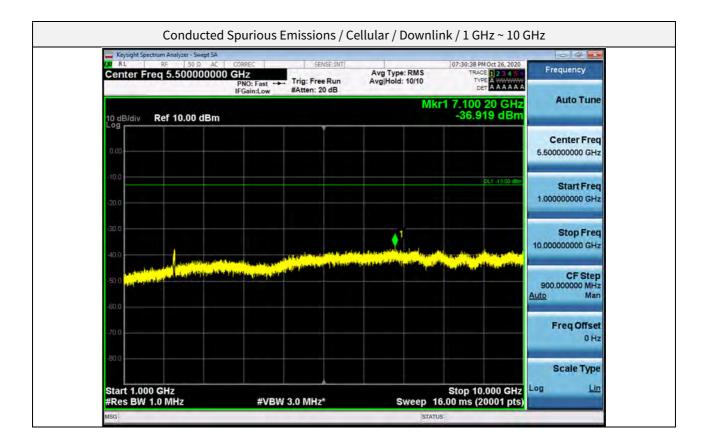




Keysight Spectrum Analyzer - Swept Si			The state of the second	00
Center Freq 947.50000		Avg Type: RMS	07:30:30 PM Oct 26, 2020 TRACE 1 2 3 4 5 6	Frequency
Conter 1100 047.00000	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	DET A A A A A A	
	IPGam:Low #Pritten: 20 00	Mkr1	990.987 5 MHz	Auto Tune
10 dB/div Ref 10.00 dBr	n		-55.927 dBm	
Log	The second se			1
0.00				Center Freq 947,500000 MHz
0,00				947.500000 MHZ
-10.0			DL1 -13 00 dBm	
				Start Freq 895.000000 MHz
-20.0				855.000000 MH2
30.0				
50.0				Stop Freq 1.00000000 GHz
40.0			· · · · · · · · · · · · · · · · · · ·	1.00000000 GH2
				CF Step
-50,0			▲1	10.500000 MHz
eo o intel de mailler de la la sere	elemente de la calina de la calin	and the set of the fall of the set of the set of	al lister in the list of the second	<u>Auto</u> Man
united such south a subscript	for the president of the second second of the second of th	beneficies and a second	and the second second	
-70,0				Freq Offset 0 Hz
				0112
-80.0				Scale Type
Start 0.89500 GHz #Res BW 100 kHz	#VBW 300 kHz*		Stop 1.00000 GHz 3.20 ms (6001 pts)	Log <u>Lin</u>

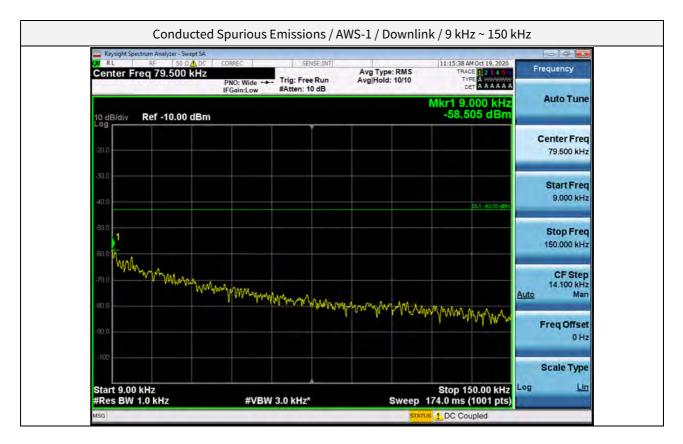


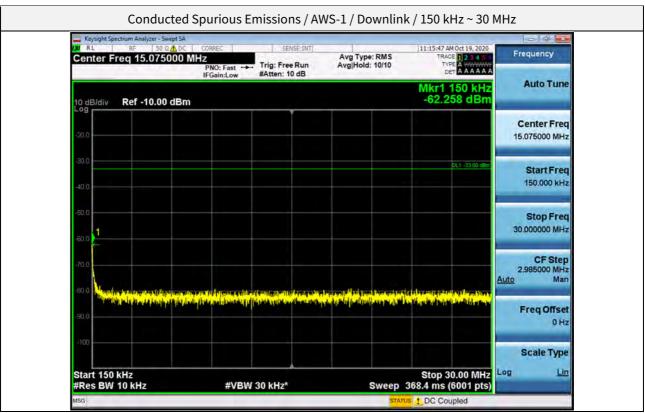






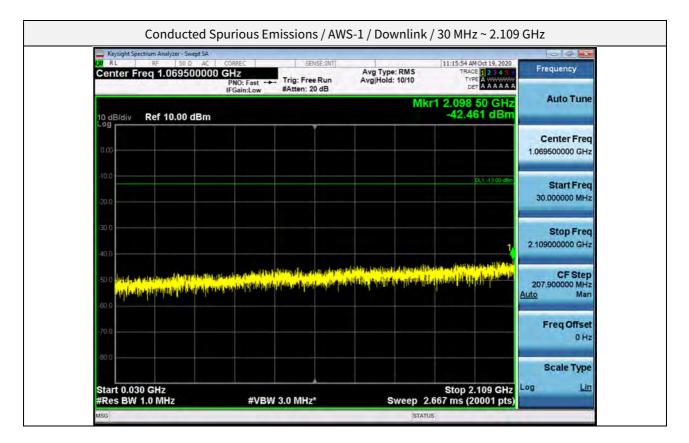


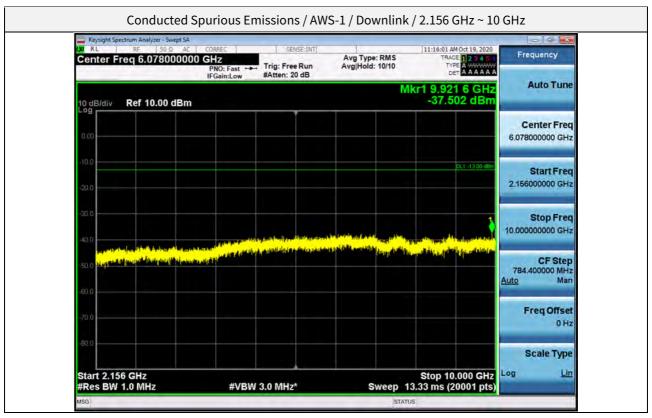






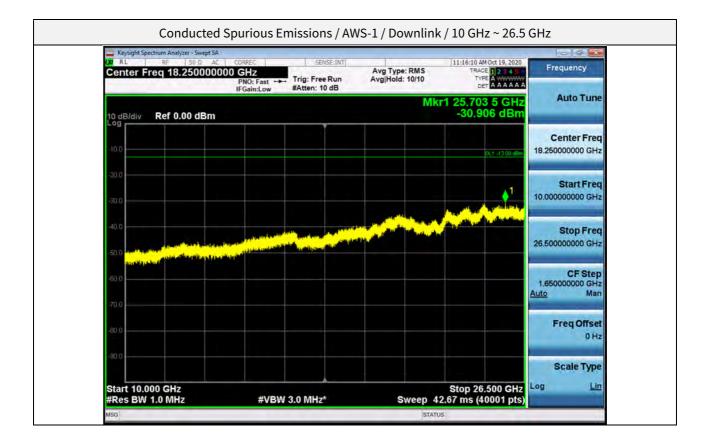






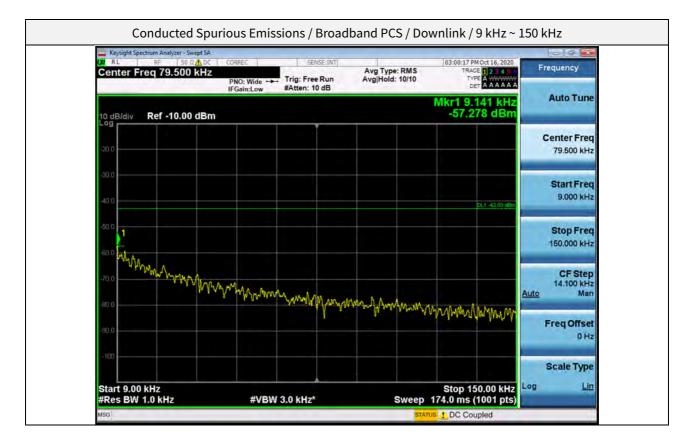








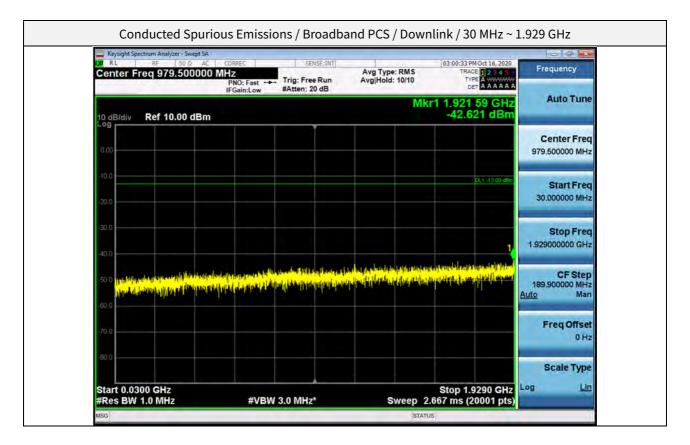


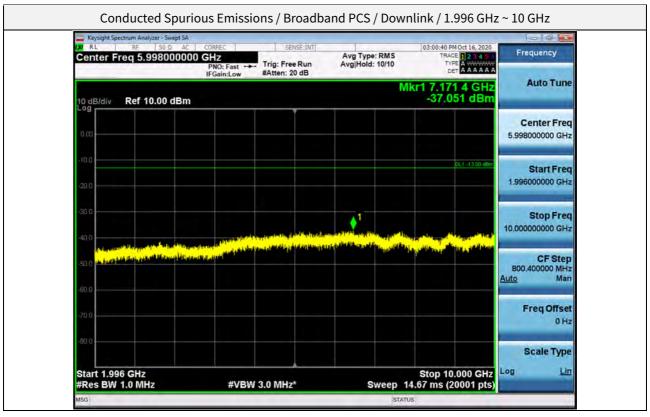


Keysight Spectrum Analyzer - Swept SA (₩ RL RF 50.02 DC Center Freq 15.075000 N	CORREC SENSE:INT NHZ PNO: Fast IFGain:Low #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	03:00:27 PM Oct 16, 2020 TRACE 1 2 3 4 5 5 TYPE A DET A A A A A A	Frequency
10 dB/div Ref -10.00 dBm			Mkr1 155 kHz -62.726 dBm	Auto Tune
-20.0				Center Freq 15.075000 MHz
-40.0			0L1 -33 00 dBm	Start Freq 150.000 kHz
-50 0 -60 0 1				Stop Freq 30,000000 MHz
-70.0				CF Step 2.985000 MHz <u>Auto</u> Man
-80.0 - <mark>Hydroland ar yw argant by ang 10 ang 11</mark> Maria ar yn ar yn yn ar yn -90.0 -	genter stør for en allen forer pred tel geneteren for kennen for en som en som en som en som en som en som en s Forere en angen en som en s Forere en angen en som en s	l frankraf frægelsk falset er frankraf Aler og statetter forset er er frægelser Aler og statetter forset er er af frægelser	nikating kang ini ang pang ini ang pang ini Kang ini kang pang pang pang pang pang pang pang p	Freq Offset 0 Hz
-100				Scale Type



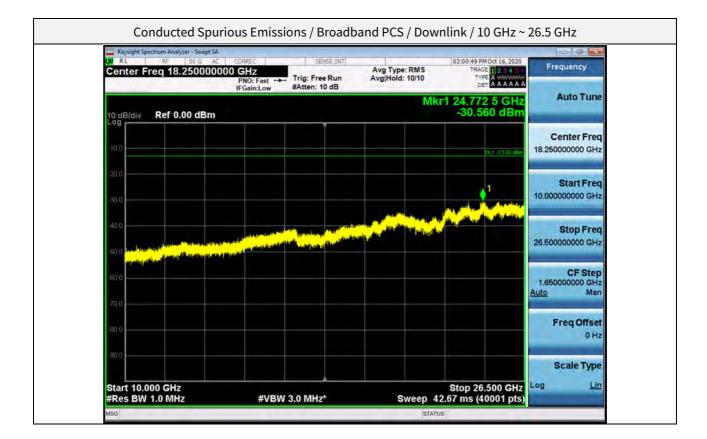
















Test Requirements:

§ 20.21(e)(8)(i)(A) NOISE LIMITS.

(1) The transmitted noise power in dBm/MHz of consumer boosters at their uplink port shall not exceed –103 dBm/MHz—RSSI. RSSI (received signal strength indication expressed in negative dB units relative to 1 mW) is the downlink composite received signal power in dBm at the booster donor port for all base stations in the band of operation.

(2) The transmitted maximum noise power in dBm/MHz of consumer boosters at their uplink and downlink ports shall not exceed the following limits:

(ii) Mobile booster maximum noise power shall not exceed-59 dBm/MHz.

(iii) Compliance with Noise limits will use instrumentation calibrated in terms of RMS equivalent voltage, and with booster input ports terminated or without input signals applied within the band of measurement.

§ 20.21(e)(8)(i)(H) Transmit Power Off Mode (uplink and downlink noise power).

When the consumer booster cannot otherwise meet the noise and gain limits defined herein it must operate in "Transmit Power Off Mode." In this mode of operation, the uplink and downlink noise power shall not exceed -70 dBm/MHz and both uplink and downlink gain shall not exceed the lesser of 23 dB or MSCL.

Test Procedures:

Measurements were in accordance with the test methods section 7.7 of KDB 935210 D03 v04r04.

7.7.1 Maximum transmitter noise power level

a) Begin with the uplink output (donor) port connected to the spectrum analyzer.

b) Set the spectrum analyzer RBW to 1 MHz with the VBW \geq 3 RBW.

c) Select the power averaging (rms) detector and trace average over at least 100 traces.

d) Set the center frequency of the spectrum analyzer to the center of the CMRS band under test with the span \geq 2 the CMRS band.

e) Measure the maximum transmitter noise power level.

f) Save the spectrum analyzer plot as necessary for inclusion in the final test report.

g) Repeat b) to f) for all operational uplink and downlink bands.

h) Connect the EUT for uplink noise power measurement in the presence a downlink signal. Affirm the coupled path of the RF coupler is connected to the spectrum analyzer.

i) Configure the signal generator for AWGN operation with a 99% OBW of 4.1 MHz.

j) Set the spectrum analyzer RBW for 1 MHz, VBW ≥ 3 RBW, with a power averaging (rms) detector with at least 100 trace averages.

k) Set the center frequency of the spectrum analyzer to the center of the CMRS band under test, with the span \geq 2 the CMRS



band. This shall include all

spectrum blocks in the particular CMRS band under.

l) For uplink noise measurements, set the spectrum analyzer center frequency for the uplink band under test, and tune the signal generator to the center of the paired downlink band.

m) Measure the maximum transmitter noise power level while varying the downlink signal generator output level from -90 dBm to -20 dBm, as measured at the input port, in 1 dB steps inside the RSSI-dependent region, and in 10 dB steps outside the RSSI-dependent region. Report the six values closest to the limit, with at least two points within the RSSI-dependent region of the limit.

n) Repeat h) through m) for all operational uplink bands.

7.7.2 Variable uplink noise timing

a) Set the spectrum analyzer to the uplink frequency to be measured.

b) Set the span to 0 Hz, with a sweep time of 10 seconds.

c) Set the power level of signal generator to the lowest level of the RSSI-dependent noise.

d) Select MAX HOLD and increase the power level of signal generator by 10 dB for mobile boosters, and 20 dB for fixed boosters.

e) Confirm that the uplink noise decreases to the specified level within 1 second for mobile devices, and within 3 seconds for fixed devices.

f) Repeat a) to e) for all operational uplink bands.

g) Include plots and summary table in test report.



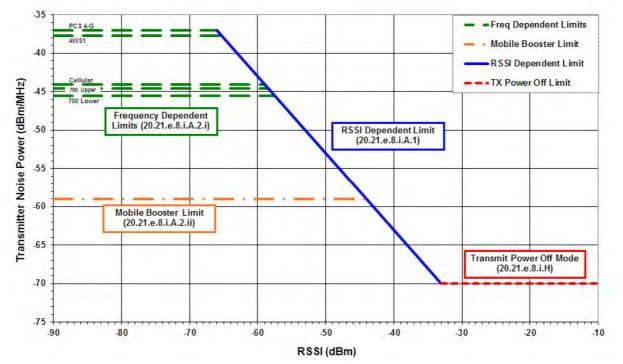
Note1. Test limit is according to 'Frequency Dependent Limits' line of figure in Note3.

- Limit in -90 dBm to -103 dBm/MHz (-102.5 dBm/MHz + 20 log₁₀(f)), RSSI range
- : -102.5 dBm/MHz + 20 log10(f)
- Limit in -103 dBm/MHz (-102.5 dBm/MHz + 20 log₁₀(f)) to -33 dBm, RSSI range :-103 dBm/MHz—RSSI
- Limit in -33 dBm to -10 dBm RSSI range: -70 dBm/MHz
- Timing limit is according to fixed devices 3 second limit in section 7.7.2 of KDB 935210 D03
- * (f) is the uplink mid-band frequency of the operating frequency bands (in MHz).

Note2. Following switch coupled loss is corrected in signal generating.

Band	Uplink generating loss (dB)	Downlink generating loss (dB)
Lower 700 MHz	3.46	4.62
Upper 700 MHz	4.04	3.96
Cellular	4.53	4.78
AWS-1	4.97	5.13
Broadband PCS	8.17	5.16

Note3. Tests refer to following noise limit in appendix D of KDB 935210 D03 v04r04.





Test Result:

Tabulated Result of Uplink Maximum Transmitter Noise Power Level

Band	Frequency (MHz)	Limit (dBm/MHz)	Noise Level (dBm/MHz)
Lower 700 MHz	698.504	-45.51	-49.40
Upper 700 MHz	786.010	-44.64	-45.13
Cellular	834.900	-44.05	-46.84
AWS-1	1 723.680	-37.73	-39.77
Broadband PCS	1 873.270	-37.01	-40.04

Tabulated Result of Downlink Maximum Transmitter Noise Power Level

Band	Frequency (MHz)	Limit (dBm/MHz)	Noise Level (dBm/MHz)
Lower 700 MHz	733.292	-45.15	-45.86
Upper 700 MHz	750.224	-44.98	-45.45
Cellular	870.850	-43.60	-44.16
AWS-1	2 137.630	-35.92	-43.43
Broadband PCS	1 967.310	-36.64	-39.60





Tabulated Result of Variable Uplink Noise Power

Band	RSSI (dBm)	Frequency (MHz)	Limit (dBm/MHz)	Noise Level (dBm/MHz)
Lower 700 MHz	-44	705.488	-58.51	-61.848
	-45	713.084	-57.51	-61.644
	-90	705.632	-45.51	-50.288
	-80	706.424	-45.51	-50.366
	-70	704.948	-45.51	-50.450
	-46	713.444	-56.51	-61.589
	-70	785.922	-44.64	-44.989
	-90	786.098	-44.64	-45.008
Upper 700 MHz	-80	785.262	-44.64	-45.020
	-45	785.152	-57.64	-58.487
	-46	785.680	-56.64	-58.223
	-47	786.296	-55.64	-58.372
	-45	834.450	-58.05	-58.981
	-46	829.050	-57.05	-59.047
	-47	836.900	-56.05	-58.210
Cellular	-70	831.300	-44.05	-46.360
	-80	829.950	-44.05	-46.378
-	-90	831.950	-44.05	-46.432
	-90	1 727.820	-37.73	-38.995
	-80	1 727.820	-37.73	-39.079
	-70	1 726.920	-37.73	-39.104
AWS-1	-53	1 732.860	-49.73	-52.514
-	-54	1 732.410	-48.73	-52.713
	-55	1 731.600	-47.73	-52.116
	-49	1 881.200	-54.01	-54.101
	-50	1 881.330	-53.01	-53.779
	-48	1 880.940	-55.01	-56.000
Broadband PCS -	-52	1 881.200	-51.01	-52.258
	-51	1 882.500	-52.01	-53.310
	-58	1 867.550	-45.01	-46.586



Tabulated Result of Variable Uplink Noise Timing

Band	Frequency (MHz)	Limit (ms)	Noise Timing (ms)
Lower 700 MHz	707.000	-	260.00
Upper 700 MHz	781.500		250.00
Cellular	836.500	3 000	70.00
AWS-1	1 732.500		600.00
Broadband PCS	1 882.500		450.00



Plot data of Maximum transmitter noise power level



