8. UNWANTED CONDUCTED EMISSIONS

FCC Rules

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.

§ 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.

(c) Alternative out of band emission limit. Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) Interference caused by out of band emissions. If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

Test Procedures:

Measurements were in accordance with the test methods section 3.6 of KDB 935210 D05 v01r02. 3.6.1 General

Refer to the applicable rule part(s) for specified limits on unwanted (out-of-band/out-of-block and spurious) emissions.

Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation. Out-of-band/out-of-block emissions (including intermodulation products) shall be measured under each of the following two stimulus conditions:

a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges;

b) a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.

NOTE—Single-channel boosters that cannot accommodate two simultaneous signals within the passband may be excluded from the test stipulated in step a).

3.6.2 Out-of-band/out-of-block emissions conducted measurements

a) Connect a signal generator to the input of the EUT.

If the signal generator is not capable of generating two modulated carriers simultaneously, then two discrete signal generators can be connected with an appropriate combining network to support this two-signal test.

b) Set the signal generator to produce two AWGN signals as previously described (e.g., 4.1 MHz OBW).

c) Set the center frequencies such that the AWGN signals occupy adjacent channels, as defined by industry standards such as 3GPP or 3GPP2, at the upper edge of the frequency band or block under test.

d) Set the composite power levels such that the input signal is just below the AGC threshold (see 3.2), but not more than 0.5 dB below. The composite power can be measured using the procedures provided in KDB Publication 971168, but it will be necessary to expand the power integration bandwidth so as to include both of the transmit channels. Alternatively, the composite power can be measured using an average power meter as described in KDB Publication 971168.
e) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation as necessary.

f) Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band (typically 1 % of the EBW or 100 kHz or 1 MHz)

g) Set the VBW = $3 \times RBW$.

h) Set the detector to power averaging (rms) detector.

i) Set the Sweep time = auto-couple.

j) Set the spectrum analyzer start frequency to the upper block edge frequency, and the stop



Report No.: HCT-RF-1809-FC019

frequency to the upper block edge frequency plus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively.

k) Trace average at least 100 traces in power averaging (rms) mode.

I) Use the marker function to find the maximum power level.

m) Capture the spectrum analyzer trace of the power level for inclusion in the test report.

n) Repeat steps k) to m) with the composite input power level set to 3 dB above the AGC threshold.

o) Reset the frequencies of the input signals to the lower edge of the frequency block or band under test.

p) Reset the spectrum analyzer start frequency to the lower block edge frequency minus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively, and the stop frequency to the lower band or block edge frequency.

q) Repeat steps k) to n).

r) Repeat steps a) to q) with the signal generator configured for a single test signal tuned as close as possible to the block edges.

s) Repeat steps a) to r) with the narrowband test signal.

t) Repeat steps a) to s) for all authorized frequency bands or blocks used by the EUT.

3.6.3 Spurious emissions conducted measurements

a) Connect a signal generator to the input of the EUT.

b) Set the signal generator to produce the broadband test signal as previously described (i.e.,

4.1 MHz OBW AWGN).

c) Set the center frequency of the test signal to the lowest available channel within the frequency band or block.

d) Set the EUT input power to a level that is just below the AGC threshold (see 3.2), but not more than 0.5 dB below.

e) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation as necessary.

f) Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band of operation (e.g., reference bandwidth is typically 100 kHz or 1 MHz).

g) Set the VBW \geq 3 × RBW.

h) Set the Sweep time = auto-couple.

i) Set the spectrum analyzer start frequency to the lowest RF 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.

The number of measurement points in each sweep must be \geq (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.2 j) Select the power averaging (rms) detector function.



Report No.: HCT-RF-1809-FC019

k) Trace average at least 10 traces in power averaging (rms) mode.

I) 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.

m) Reset the spectrum 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 spectrum analyzer stop frequency to 10 times the highest frequency of the fundamental emission (see § 2.1057). The number of measurement points in each sweep must be \geq (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.

n) Trace average at least 10 traces in power averaging (rms) mode.

o) 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; also provide tabular data, if required.

p) Repeat steps i) to o) with the input test signals firstly tuned to a middle band/block frequency/channel, and then tuned to a high band/block frequency/channel.

q) Repeat steps b) to p) with the narrowband test signal.

r) Repeat steps b) to q) for all authorized frequency bands/blocks used by the EUT.

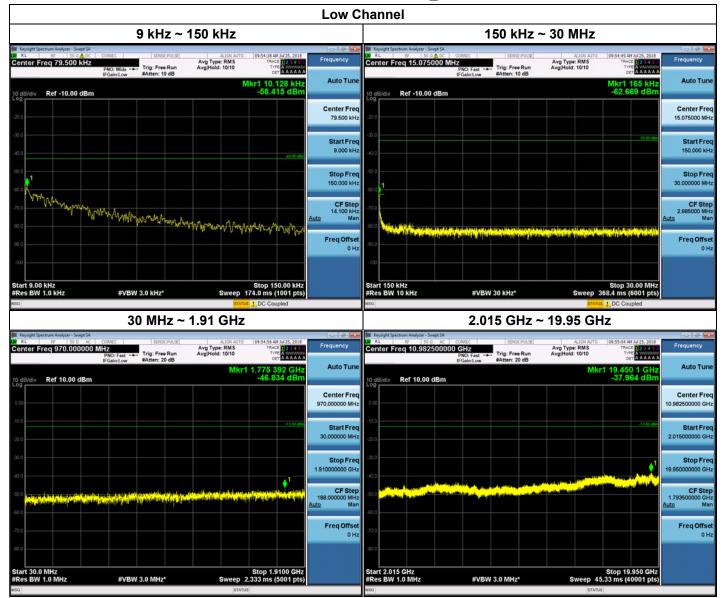
Note:

- In 9 kHz to 150 kHz and 150 kHz to 30 MHz bands, RBW was reduced to 1 % and 10 % of the reference bandwidth for measuring unwanted emission level(typically, 100 kHz if the authorized frequency band is below 1 GHz) and power was integrated. (1 % = +20 dB, 10 % = +10 dB)
- 2) We have done CDMA and 1xEVDO modulation test in technology. Test results are only attached worst cases.



Test Results:

Plot of Unwanted Conducted Emissions for LTE 20 MHz_Downlink





				Middle (Channel			
	9 kHz ~	150 kHz				150 kHz	~ 30 MHz	
Keyüğit Spectrum Analyzer - Swept SA RL 85 50 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CONVEC SENSE-PULSE PNO: Wide ++- IFGain:Low #Atten: 10 dB	ALION AUTO Avg Type: RMS Avg Hold: 10/10	09:57:03 AM Jul 25, 2018 TRACE 1 23 4 5 TYPE A CET A A A A A A Mkr1 9.705 kHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swa RL RF S0 02 Center Freq 15.0750	DC CORREC SENSE:PULSE	Avg Type: RMS Avg Hold: 10/10	14 AM Jul 25, 2018 TRACE 11 2 3 4 5 T THE A A A A A A CET A A A A A A F1 150 kHz Auto T
10 dB/div Ref -10.00 dBm			-56.321 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00	dBm	-6	1.317 dBm Center F 15.075000
-40.0			-4) (0) (Ön	Start Freq 9.000 kHz	-30.0			5100 ere Start F 150.000
-50 0 - 1 -50 0 When				Stop Freq 150.000 kHz	-50 0 -50 0			Stop F 30.000000
WWW Man WW 100	nhamannahm a haifa	where the second	Hank Marian	CF Step 14,100 kHz Auto Man	-70.0	2. sea di min. Allai anna Allai Nethernia a sanna cara a mbhai	tradition (11), at most and and an an and	CF S 2.985000 I <u>Auto</u>
-90.0			and alada	Freq Offset 0 Hz	-100	or minimum manager actions where we	ander eine eine eine der der der der der der der der der de	Freq Of
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	Stop 150.00 kHz 174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*	Sweep 368.4 r	p 30.00 MHz ns (6001 pts) Coupled
	30 MHz ~	1.91 GHz	2 DC Coopied			2.015 GHz -		Coopieu
Keysight Spectrum Analyzer - Swept SA								
Center Freq 970.000000 N	CORREC SENSE:PULSE	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	09:57:21 AM Jul 25, 2018 TRACE 2 3 4 5 6 TYPE A	Frequency	Keysight Spectrum Analyzer - Swe RL	AC CORREC SENSE:PULSE	ALIGN AUTO 09:57 Avg Type: RMS Avg[Hold: 10/10	29 AM Jul 25, 2018 TRACE 12 23 4 5 0 TYPE A A A A A A
	MHz	Avg Type: RMS Avg Hold: 10/10	09:57:21 AM Jul 25, 2018 TRACE 2 3 4 5 6 TYPE A 44 A 4 A 0 21 4 5 6 TYPE A 44 A 4 A 1.766 368 GHz -46.664 dBm		CM RL RF 50 Ω	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	00 MM 5-10F 0018
Center Freq 970.000000 M	MHz	Avg Type: RMS Avg Hold: 10/10		Frequency	00 RL 6€ 500. Center Freq 10.9825	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	29 AM Jul 25, 2018 TRACE 12 3 4 5 0 TYPE A AAAAAA 462 2 GHz Auto Ti
Center Freq 970.000000 M	MHz	Avg Type: RMS Avg Hold: 10/10		Frequency Auto Tune Center Freq	RL 8F 30 m Center Freq 10.9825 10.9825 10 dB/div Ref 10.00 d	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	29 44 32 52 2018 TRACE 02 24 5 2018 Frequency 001 AAAAAA 462 2 GHz 7.895 dBm Center F
Center Freq 970.000000 M	MHz	Avg Type: RMS Avg Hold: 10/10	11.766 368 GHz -46.664 dBm	Frequency Auto Tune Center Freq 970.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.910000000 GHz	OW RL #F 50 gr Center Freq 10.9825 10.9825 10 dB/div Ref 10.00 d .00	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	23 44 JUS 25 2018 The Average 23 act 2 The Average 2 452 2 GHz 7,895 CBm Center F 10 98250000 -336 fc Start F
Center Freq 970.000000 M	MHz	Avg Type: RMS Avg)Hold: 10/10 Mkr1	11.766 368 GHz -46.664 dBm	Frequency Auto Tune Center Freq 970.000000 MHz Start Freq 30.000000 MHz Stop Freq	Office RL PP 5000 Center Freq 10,9825 10,9825 10 dB/div Ref 10,00 d 10,9825	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	234 W bits 2018 Tree 23 as 4 Tree 23 as 4 462 2 GHz 7,895 dBm -1350 fc 10 96250000 -1350 fc 10 962500000 Start F 2.01500000
Center Freq 970.000000 M	MLF2: PRO: Fast	Avg Type: RMS Avg)Hold: 10/10 Mkr1	11.766 368 GHz -46.664 dBm	Frequency Auto Tune Center Freq 970.000000 MHz Start Freq 30.000000 MHz 1.91000000 GHz 1.91000000 GHz 1.91000000 GHz 1.91000000 MHz	Original P Social Center Freq 10.9825 Ref 10.900 d 10 dB/div Ref 10.00 d 0 000	AC CORREC SENSE:PULSE 000000 CHZ PN0: Fast	Avg Type: RMS Avg Hold: 10/10 Mkc1 19	29 44 Jb 25, 2018 Frequency 100 cm 22 stdp Auto Ti 452 2 GHz Auto Ti 452 2 GHz Start F 10 se250000 Start F 10 se250000 19 se30000 10 se250000 19 se300000 10 se250000 19 se300000 11 se250 cm F 1 se300000



				High Ch	annel					
	9 kHz ~	150 kHz				15	50 kHz ~	30 MHz		
	PNO: Wide + Trig: Free Run #Gein:Low #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	09:58:53 AM 34/25, 2018 TRACE 12 24 51 TYPE A AAAAA cet AAAAAA kr1 9.987 kHz -57,759 dBm	Frequency Auto Tune	enter Freq 15.075	DC CORREC 000 MHZ PNO: Fast IFGain:Low	SENSE PULSE Trig: Free Run #Atten: 10 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	09:59:03 AM Jul 25, 2018 TRACE 12 3 4 9 TYPE DET AAAAAA Mkr1 155 kHz -61.416 dBm	Frequency Auto Tune
10 dB/div Ref -10.00 dBm			-07.709 UBII	Center Freq 79.500 kHz	0 dB/div Ref -10.00	dBm				Center Freq 15.075000 MHz
-40.0			-43 00 c6m	Start Freq 9.000 kHz	0.0				-33.00 æ	Start Freq 150.000 kHz
-50 0 -50 0 M				Stop Freq 150.000 kHz	00 00					Stop Freq 30.000000 MHz
-70 0	Mannahanan	proceeding	www.map.w	CF Step 14,100 kHz to Man	00	a de la fair ann ar Martine (a M	an addal ad an d			CF Step 2.985000 MHz uto Man
-100				Freq Offset 0 Hz	0.0	d. () al naiste Hilling yn de fan Henrys.	aner of a second		instantes and a second second	Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep 174	Stop 150.00 kHz I.0 ms (1001 pts)	s #	tart 150 kHz Res BW 10 kHz	#VBW 3	0 kHz*		Stop 30.00 MHz 8.4 ms (6001 pts)	
MSG	30 MHz ~		DC Coupled		G	2.01	5 GHz ~	19.95 GH	LDC Coupled	
Keysight Spectrum Analyzer - Swept SA WR RL	CORREC SENSE:PULSE PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	09:59:10 AM Jul 25, 2018 TRACE 2 3 4 5 6 TYPE A 4 A A A A		RL RF 50 G RL RF 50 G Center Freq 10.982	2 AC CORREC 500000 GHz PNO: East	SENSE:PULSE	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	09:59:18 AM Jul 25, 2018 TRACE 1 2 3 4 5 6 TYPE A A A A A A	Frequency
10 dB/div Ref 10.00 dBm	Posinicow written 2000	Mkr1 1	.884 056 GHz -46.926 dBm	Auto Tune 1	dB/div Ref 10.00			Mkr1	18.556 0 GHz -37.608 dBm	Auto Tune
0.00				Center Freq 970.000000 MHz						Center Freq 10.982500000 GHz
-10.0			-13.00 @94	Start Freq 30.000000 MHz	0.0				-13.00 dBm	Start Freq 2.015000000 GHz
	<u> - Constant a substant a s</u>			Stop Freq	0.0				∮ ¹	Stop Freq 19.950000000 GHz
-40.0				1.91000000 GHz	0.0				New Address	
	en e	n ng ting ting ting galaki		CF Step 188.00000 MHz						CF Step 1.793500000 GHz <u>uto</u> Man
		na na ni isi ga ili supukt		CF Step 188.00000 MHz						1.793500000 GHz



				Low C	hannel				
	9 kHz ~	150 kHz				150 kHz ~	~ 30 MHz		
III Keydight Spectrum Analyzer - Swept SA III RL № So Q∆OC Center Freq 79.500 kHz	CORREC SENSE PULSE PNO: Wide Trig: Free Run IFGain:Low #Atten: 10 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11:40:52 AM Jul 25, 2018 TRACE 1 2 3 4 5 TYPE A DET A A A A A A Akr1 11,397 kHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swep RL RF 50 20 Center Freq 15.07500	e SA DC CORREC SENSE PULZE DO MHZ PRO: Fast	Avg Type: RMS Avg Hold: 10/10	11:49:02 AM Jul 25, 2018 TRACE 12 3 4 8 TYPE A A A A A A Mkr1 150 kHz	requency Auto Tune
10 dB/div Ref -10.00 dBm			-58.471 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 d	Bm		-61.614 dBm	Center Freq 5.075000 MHz
-40.0			-43,00 (5%	Start Freq 9.000 kHz	-30.0			-3100 atm	Start Freq 150.000 kHz
-000 p1				Stop Freq 150.000 kHz	-50.0 -60.0			3	Stop Freq 0.000000 MHz CF Step
-70.0	when when with a	Manavasanad	Margunathanastra	CF Step 14.100 kHz Auto Man Freq Offset 0 Hz	-70 0 -00 0 -00 0 -00 0	yester and popy participants and a popy and a popy participants and a popy participants and a popy participants	stadill standar pitas filmen dan a	Auto	Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz* 30 MHz ~ 1	STATU	Stop 150.00 kHz 174.0 ms (1001 pts) 2 DC Coupled		Start 150 kHz #Res BW 10 kHz	#vbw 30 kHz*	STATUS	Stop 30.00 MHz 8.4 ms (6001 pts) <u>1. DC Coupled</u>	
Keysight Spectrum Analyzer - Swept SA			_	- 0	Keysight Spectrum Analyzer - Swep	e SA			- ¢ 💌
Image: Non-State Ref Sorg Ac Center Freq 979.375000 M 10 dB/div Ref 10.00 dBm	CORREC SENSE.PULSE IF Z PNO: Fast →→ IF Gein:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11:49:09 AM Jul 25, 2018 TRACE 12:34 5 6 TYPE A OET A AAAAA kr1 1.928 8 GHz -35.815 dBm	Frequency Auto Tune	10 dB/div Ref 10.00 dE	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10	11:49:18 AM Jul 23, 2018 TMAGE 12:34:36 TYPE A XAAAAA 19:469 7 GHz -38:306 dBm	requency Auto Tune
0.00				Center Freq 979.375000 MHz	0.00				Center Freq 73125000 GHz
-10.0			12.00		-10.0				
-10.0			-13 00 eBm	Start Freq 30.000000 MHz Stop Freq	-10.0			1.99	Start Freq 96250000 GHz Stop Freq
-10.0 		n fan fulli witswig oaniepel		30.000000 MHz Stop Freq 1.928750000 GHz CF Step 189.875000 MHz	-100 -200 -300 -400 -500 -500 -500 -500 -500 -500 -5			1.95	96250000 GHz Stop Freq 50000000 GHz CF Step 95375000 GHz
-10.0 -20.0 -30.0 -4	n Martine Constanting of the Solid	n tan fullente gin energed t		30.000000 MHz Stop Freq 1.928750000 GHz CF Step	-100 -200 -300 -400 -400 -400 -400 -400 -400 -4			1995 1995 1.75 Auto	96250000 GHz Stop Freq 50000000 GHz CF Step

Plot of Unwanted Conducted Emissions for CDMA_Downlink



				Middle	Channel				
	9 kHz ~	150 kHz					~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA RL 85 S0 DA DC Center Freq 79.500 kHz		ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11:56:27 AM Jul 25, 2018 TRACE D 2 3 4 9 TYPE AAAAAAA OKR1 9.705 KHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swep RL RF 50 Q d Center Freq 15.07500	DC CORREC SENSE:PULSE	Avg Type: RMS Avg Hold: 10/10	11:56:37 AM Jul 25, 2018 TRACE 1 2 3 4 5 TYPE A DET A A A A A A Mkr1 150 kHz	Frequency Auto Tune
10 dB/div Ref -10.00 dBm			-59.166 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 d	Bm		-60.083 dBm	Center Freq 15.075000 MHz
-40.0			-43.00 (5%	Start Freq 9.000 kHz	-40.0			-33 (0) e()=	Start Freq 150.000 kHz
400 1 400 BA (max)				Stop Freq 150.000 kHz	400 400				Stop Freq 30.000000 MHz
-70.0 -80.0	ver and a second	Mananan	MARIA MAN M. 111	CF Step 14.100 kHz Auto Man	-70.0 -80.0	entities i de stracser particulation allocations	data set da	Auto	CF Step 2.985000 MHz to Man
-50.0			, or the capa Anton.	Freq Offset 0 Hz	-50.0 -100		an a sai an fhith ag par a brin.		Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	Stop 150.00 kHz 174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*	Sweep 368	Stop 30.00 MHz 3.4 ms (6001 pts)	
MSG	30 MHz ~ 1	.9288 GH	DC Coupled		MSG	1 996 CH-		DC Coupled	
Keysight Spectrum Analyzer - Swept SA						1.990 GHZ /	~ 19.95 GHz	2	
Center Freq 979.375000	CORREC SENSE:PULSE MHZ PNO: East +++ Trig: Free Run	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	11:56:45 AM 3ul 25, 2018	Frequency	Keysight Spectrum Analyzer - Swep RL RF 50 Ω Center Freq 10.97312	ASA AC CORREC SENSE:PULSE 25000 GHZ		11-66-62 AM 5-J 26 2018	Frequency
	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10			CM RL RF 50 Ω	a SA AC CORREC SENSE.PULSE 25000 GHZ PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10		
02 RL PF 50 92 AC Center Freq 979.375000	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10	11:56:45 AM Jul 25, 2018 TRACE 23 3 5 C TYPE N WWW DET A A A A A kr1 1.927 2 GHz	Frequency	RL RF 50 Ω Center Freq 10.97312	a SA AC CORREC SENSE.PULSE 25000 GHZ PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11:56:53 AM Jul 25, 2018 TMACE 10 2 3 4 3 6 TWIE AAAAAA OCT AAAAAA 16,594 9 GHz -38.037 dBm	Frequency
08 RL RF 50 Ω AC Center Freq 979.375000	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10	11:56:45 AM Jul 25, 2018 TRACE 23 3 5 C TYPE N WWW DET A A A A A kr1 1.927 2 GHz	Frequency Auto Tune Center Freq	RL RF 50 Ω Center Freq 10.97312	a SA AC CORREC SENSE.PULSE 25000 GHZ PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11:56:33 AV 34 25, 2018 TRACE 12:34:48 TYPE 2:34:48 TYPE 2:34:48 TYPE 2:34:48 TRACE 12:34:48 TRACE 12:34 TRACE 12:34	Frequency Auto Tune Center Freq
02 RL RF 50 Ω AC Center Freq 979.375000	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10	11:50:53.44 Jul 25, 2016 TARCE 2: 3: 4: TYPE A WARD of T A AAAAA kr1 1.927 2 GHz -44.426 dBm	Frequency Auto Tune Center Freq 979.375000 MHz Start Freq	RL RF 50 Ω Center Freq 10.97312	a SA AC CORREC SENSE.PULSE 25000 GHZ PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	11.59.53 AV 54 25, 2018 TR-CE 12.3 4 5 0 TR-CE	Frequency Auto Tune Center Freq 973125000 GHz Start Freq
Will Light Mp 190 mL AC Center Freq 979.375000 100 dB/dlv Ref 10.00 dBm 100	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10	113645 AM Jul 25, 2018 Trace IP2 3 4 5 6 Tree AMAAAAA kr1 1,927 2 GHz -44,426 dBm	Frequency Auto Tune Center Freq 979.375000 MHz Start Freq 30.000000 MHz Stop Freq	RL RF 50 Ω Center Freq 10.97312	a SA AC CORREC SENSE.PULSE 25000 GHZ PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 20 dB	ALION AUTO Avg Type: RMS Avg/Hold: 1010 MKr1	11.55.53 AV 54 25, 2018 TR-CE 12.34 54 7 TR-CE	Frequency Auto Tune Center Freq .973125000 GHz Start Freq .996250000 GHz Stop Freq .950000000 GHz
MRL MP NO AC Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq 979.375000 Image: Center Freq979.375000 Image: Cent	HIT2 PRO: Fast	Avg Type: RMS Avg Hold: 10/10	113645 AM Jul 25, 2018 Trace IP2 3 4 5 6 Tree AMAAAAA kr1 1,927 2 GHz -44,426 dBm	Frequency Auto Tune Center Freq 979.375000 MHz Start Freq 30.000000 MHz 1.928750000 GHz 1.928750000 GHz 19.928750000 Hz	RL RF 50 Ω Center Freq 10.97312	AC CORREC SENGLAULSE SOOD GHZ PNO: Fast	ALION AUTO Avg Type: RMS Avg/Hold: 1010 MKr1	11.55.53 AV 3/25, 2018 TRACE 12.24 & W Trie 4 AAAAAA 16, 594 9 GHz -38.037 dBm -17.00 dM 10 -17.00 dM 11 12 13 14 15 15 15 15 15 15 15 15 15 15	Frequency Auto Tune Center Freq .973125000 GHz Start Freq .996250000 GHz Stop Freq .9500000 GHz .795375000 GHz



1				High C	hannel			
	9 kHz ~	150 kHz				150 kHz ~	- 30 MHz	
Keysight Spectrum Analyzer - Swept SA RL 87 S9 260 ADC Center Freq 79.500 KHz	CORREC SENSE-PULSE PND: Wide IFGain:Low #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	12:05:02 PM Jul 25, 2018 TRACE 12:23:43 TYPE A DET A A A A A A Kr1 9.705 kHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swept SA RL RE Se 0.0,00 Center Freq 15.075000	CORREC SENSE:PULSE	Avg Type: RMS TRA Avg/Hold: 10/10 Tr C MKr1	MJU25,2018 Frequency TRAAAAAA 160 KHZ Auto Tune
10 dB/div Ref -10.00 dBm			-58.049 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 dBn	n	-61.4	Center Freq 15.075000 MHz
-30.0			-41.00 dBm	Start Freq 9.000 kHz	-40.0			Start Freq 150.000 kHz
-80 0 1 -80 0 1				Stop Freq 150.000 kHz	40.0			Stop Freq 30.000000 MHz
-70.0	www.www.www.	mt Mary Mandrida	Tututo la otro A	CF Step 14,100 kHz uto Man	-70.0	oddýchů vytežna proklaza vosta a podlažavatýca		CF Step 2.985000 MHz <u>Auto</u> Man
-90.0			Annand Co. A. A. A.	Freq Offset 0 Hz	-50.0		n yan ang kanang ka	Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep 174	Stop 150.00 kHz I.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*	Sweep 368.4 ms	
NEG	30 MHz ~ 1		DC Coupled		M3G	1.996 GHz ~	• 19.95 GHz	upiea
Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 979.375000 N	CORREC SENSE:PULSE	ALIGN AUTO :: Avg Type: RMS Avg[Hold: 10/10	12:05:19 PM Jul 25, 2018 TRACE 1 2 3 4 5 0 TYPE A WWWWW DET A A A A A A	Frequency	Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC Center Freq 10.9731250	CORREC SENSE:PULSE	ALIGN AUTO 12:05:28 F Avg Type: RMS TRA	MJul 25, 2018 CC 12 3 4 5 0 Frequency MT AAAAAA
					Conton Freq Ference 1200	PNO: Fast Trig: Free Run	Avg Hold: 10/10	A A A A A A A
10 dB/div Ref 10.00 dBm	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Mkr	1 1.926 5 GHz -43.031 dBm	Auto Tune	10 dB/div Ref 10.00 dBm	IFGain:Low #Atten: 20 dB	Mkr1 1.99	
10 dB/div Ref 10.00 dBm	IFGain:Low #Atten: 20 dB	Mkr	1 1.926 5 GHz	Auto Tune Center Freq 979.375000 MHz		IFGain:Low #Atten: 20 dB	Mkr1 1.99	6 3 GHz Auto Tune
10 dB/div Ref 10.00 dBm	IFGainLow #Atten: 20 dB	Mkr	1 1.926 5 GHz	Center Freq		IFGain:Low #Atten: 20 dB	Mkr1 1.99	6 3 GHz 777 dBm Center Freq
10 48/4iv Ref 10.00 dBm	IFGainLow #Atten: 20 dB	Mkr	1 1.926 5 GHz -43.031 dBm	Center Freq 979.375000 MHz Start Freq		IFGain:Low #Atten: 20 dB	Mkr1 1.99	6 3 GHz 77 dBm Center Freq 10.973125000 GHz 310000 Start Freq
	IF GainLow BAtten: 20 dB		1 1.926 5 GHz -43.031 dBm -13 00 db -13 00 db -13 00 db -14 00 db	Center Freq 979.375000 MHz Start Freq 30.000000 MHz Stop Freq		IFGaint.ov #Atten: 20 dB	Mkr1 1.99	6 3 GHz 777 dBm Center Freq 10.973125000 GHz 1.996250000 GHz Start Freq 1.996250000 GHz
-100	JFGaint.cw BAtten: 20 dB		1 1.926 5 GHz -43.031 dBm -13 00 db -13 00 db -13 00 db -14 00 db	Center Freq 979.375000 MHz Start Freq 30.000000 MHz 1.928750000 GHz 1.928750000 GHz 189.875000 MHz		IFGaint.ov #Atten: 20 dB	Mkri 1.99 -14.8	Auto Tune Auto Tune Center Freq D.973125000 GHz Start Freq D.96550000 GHz Stop Freq D.96500000 GHz CF Step 1.795375000 GHz



Plot of Unwanted Conducted Emissions for LTE 20 MHz_Uplink

			Low C	hannel			
	9 kHz ~ 1	l50 kHz			150 kHz ~	- 30 MHz	
Kaylight Spectrum Analyzer - Swept SA RL PF 50 R CC Center Freq 79,500 kHz	CORREC SENSE:PULSE	Avg Type: RMS TR Avg Hold: 10/10 T	Arce D2 4 3 Arce D2 4 3 VPE A A A A A A 141 KHz Auto Tune	Keysight Spectrum Analyzer - Swept 5 RL RF S0 0 Ab 0 Center Freq 15.075000	C CORREC SENSE:PULSE	Align Auto 1114246 AM Jul 26, 2018 Avg Type: RMS Avg Hold: 10/10 0ct AAAAAA Mkr1 155 kHz	Frequency Auto Tune
10 dB/div Ref -10.00 dBm			Center Freq 79.500 kHz		m	-59.583 dBm	Center Freq 15.075000 MHz
-40.0			43.00.42				Start Freq 150.000 kHz
-60.0			Stop Free 150.000 kHz				Stop Freq 30.000000 MHz
70.0	Montenant	WANNAMMANNAMANNA	CF Step 14.100 kHz Auto Mar	and Martin and In	jaking Kilatatan makamatan dar darat	alieren in basin gibi yakaran arkal alibi, generari ar ada arramentaina a	CF Step 2.985000 MHz Auto Man
-90.0.			Freq Offset 0 Hz	. eo o	tin birdet er stetne generaliset en de service en service en service en service en service en service en servi	in an de i statum makel processie (processie) (franziskam, po	Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Stop 1 Sweep 174.0 ms		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*	Stop 30.00 MHz Sweep 368.4 ms (6001 pts)	
	30 MHz ~ ′				1.935 GHz ~	19.15 GHz	
Keysight Spectrum Analyzer - Swept SA							
02 RL RF 50 Ω AC Center Freq 930.000000	CORREC SENSE:PULSE	Avg Type: RMS TR Avg Hold: 10/10 T	AM 3/26, 2018 ACE 234 5 5 VPE AAAAAA	Bill Keysight Spectrum Analyzer - Swept 5 00 RL RF S0 Ω A Center Freq 10.542500	C CORREC SENSE:PULSE	ALIGN AUTO 11:43:02 AM 3xl 26, 2018 Avg Type: RMS TRACE 023 4 Avg[Hold: 10/10 Trife Det A A A A	Frequency
	CORREC SENSE:PULSE DIMEZ PNO: Fast IFGein:Low #Atten: 20 dB	Avg Type: RMS TR Avg Hold: 10/10 T Mkr1 1.620	AM 3d 26, 2016 Frequency A A AAAAA 24 GHz 335 dBm	M RL pp Soc = A Center Freq 10.542500 Interference Interference	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS TRACE 1 2 3 4 5 0	Frequency Auto Tune
Center Freq 930.000000	CORREC SENSE:PULSE DIMEZ PNO: Fast IFGein:Low #Atten: 20 dB	Avg Type: RMS TR Avg Hold: 10/10 T Mkr1 1.620	AM 54 26, 2018 ACE 10 23 4 5 6 VPE A AAAAAA Deet A AAAAAA S 24 GHz Auto Tune	OF RL RF 39.0 A Center Freq 10.542500 A <th>C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB</th> <th>Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz</th> <th>Frequency</th>	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency
Center Freq 930.000000	CORREC SENSE:PULSE DIMEZ PNO: Fast IFGein:Low #Atten: 20 dB	Avg Type: RMS TR Avg Hold: 10/10 T Mkr1 1.620	AM Jul 20, 2018 REF 12 2 4 6 5 Ver A 2 3 4 5 Ver	OF RL IP 190 J Center Freq 10.542500	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency Auto Tune Center Freq
Center Freq 930.000000	CORREC SENSE:PULSE DIMEZ PNO: Fast IFGein:Low #Atten: 20 dB	Avg Type: RMS TR Avg Hold: 10/10 T Mkr1 1.620	44 147 2 2013 67 12 2 4 2 2 17 32 2 4 GH2 33 5 dBm 33 5 dBm 33 2 6 GH2 43 10 2 4 3 17 33 2 6 GH2 43 10 2 6 17 5 3 0 000000 MH2 30 000000 MH2 30 000000 MH2 30 000000 MH2 30 000000 GH2 30 000000 GH2	OF RL IP 150 J Center Freq 10.542500 10	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency Auto Tune Center Freq 10.542500000 GHz 19.35000000 GHz 19.15000000 GHz
Center Freq 930.000000	CORREC SENSE:PULSE DIMEZ PNO: Fast IFGein:Low #Atten: 20 dB	Avg1Ypa: RMS 77% Avg1Heid: 10/10 T Mkr1 1.628 -46.	A Market 2019 Frequency Frequency Frequency Frequency Frequency Center Freq 930.00000 MHz 30.00000 MHz 30.00000 MHz Stop Freq	OF RL MP 1500 A Center Freq 10.542500 10	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency Auto Tune Center Freq 10.542500000 GHz Start Freq Stop Freq
Center Freq 930.000000	COREC SENSE PUSE PRO:Fast IFGainLow Atten: 20 dB	Avg1Ypa: RMS 77% Avg1Heid: 10/10 T Mkr1 1.628 -46.	Add and a constraint of the constraint of t	Or AL SP 150 A Center Freq 10.542500	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency Auto Tune Center Freq 10.54250000 GHz Start Freq 19.15000000 GHz Stop Freq 19.15000000 GHz
Center Freq 930.000000	COREC SENSE PUSE PRO:Fast IFGainLow Atten: 20 dB	Avg Type: RMS 700 Avg Hold: 1010 T Mkr1 1.52 -46.1	Al Marka 2019 Frequency Frequency Frequency Frequency Auto Tune Center Freq 335 dBm Center Freq 330,00000 MHz Stor Freq 18,000000 MHz 180,00000 MHz 180,000000 MHz 180,00000 MHz 180,000000 MHz 180,00000 MHz 180,0000000 MHz 180,0000000000000 MHz 180,000000000000000000000000	Or AL SP 150 A Center Freq 10.542500	C CORREC SENSE FULSE PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Hold: 10/10 Mkr1 18.574 6 GHz	Frequency Auto Tune Center Freq 10.54250000 GHz Start Freq 19.3500000 GHz 19.15000000 GHz 1.72150000 GHz Auto Tune Freq 1.72150000 GHz Man Freq Offset 0 Hz



				Middle (Channel				
	9 kHz ~	150 kHz				150 kHz	~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA RL 87 50 QA DC Center Freq 79.500 KHz	CORREC SENSE-PULSE PNO: Wide +++ IFGain:Low #Atten: 10 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	11:47:56 AM Jul 26, 2018 TRACE 0 20:49 TYPE 0 20:49 OFT A A A A A A Mkr1 9.564 kHz	Frequency Auto Tune	Keyight Spectrum Analyzet - Swep RL R So R.d Center Freq 15.07500	DO MHZ PNO: Fast IFGain:Low Trig: Free Run #Atten: 10 dB	Avg Type: RMS Avg Hold: 10/10	11:48:07 AM Jul 26, 2018 TRACE 12 2 3 4 3 TYPE 2 3 4 3 OFT A A A A A A Mkr1 150 kHz	Frequency Auto Tune
10 dB/div Ref -10.00 dBm			-58.125 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 d	Bm		-60.969 dBm	Center Freq 15.075000 MHz
-40.0			-43.00 (694	Start Freq 9.000 kHz	-40.0				Start Freq 150.000 kHz
40 0 40 0				Stop Freq 150.000 kHz	-50 0 -50 0				Stop Freq 30.000000 MHz
-70.0 WWWWWWWWWW	MWWWWWWWWWWW	www.www.	Anna Allana santi	CF Step 14.100 kHz Auto Man	-70.0		harme the bad so shows he	A	CF Step 2.985000 MHz uto Man
-90.0				Freq Offset 0 Hz	-50.0 -100	a na an	and the distribution of the second	d) box y fal an stillig at	Freq Offset 0 Hz
Start 9.00 kHz			Stop 150.00 kHz		Start 150 kHz			Stop 30.00 MHz	
#Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	174.0 ms (1001 pts)		#Res BW 10 kHz	#VBW 30 kHz*		58.4 ms (6001 pts)	
Mes BW TO KHZ	#VBW 3.0 kHz* 30 MHz ~	STAT	174.0 ms (1001 pts)		#Res BW 10 kHz	#VBW 30 kHz* 1.935 GHz	STATUS	8.4 ms (6001 pts)	
#RCS BW 1.0 KH2 ING ING Koylight Spectrum Analyzer - Swept SA ING RL RF 50.0 AC Center Freq 930.000000 N	30 MHz ~	1.83 GHz	174.0 ms (1001 pts)	Frequency	Koysiyi Spectrum Analyzer - Sorg Koysiyi Spectrum Analyzer - Sorg Center Freq 10.54250	1.935 GHz	STATUS	58.4 ms (6001 pts)	Frequency
MSG ∭ Keysight Spectrum Analyzer - Swept SA ∭ RL № S0 Ω AC	30 MHz ~	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts)		#Res BW 10 kHz	1.935 GHz	~ 19.15 GH ALION AUTO Avg Type: RMS Avg Hold: 10/10	58.4 ms (6001 pts) DC Coupled T 11:48:22 AM Jul 26, 2018 TRACE 12 24 4501	
860 10 Keyight Spectrum Analyzer - Swept SA 20 RL 979 50 0 AC Center Freq 930.000000 N	30 MHz ~	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts) (1001 pts) (11:48:14 AM Jul 26, 2018 TRACE 12 3 4 5 6 TACC 12 3 4 5 6 0 6 7 4 A A A A A A	Frequency	#Res BW 10 kHz MSO 	1.935 GHz	~ 19.15 GH ALION AUTO Avg Type: RMS Avg Hold: 10/10	88.4 ms (6001 pts) € DC Coupled Z 11.48.22 AM № 25, 2018 TRACE 22.4 5 C TRACE 22.4 5 C TRACE 22.4 5 C TRACE 22.4 5 C TRACE 23.4 5 C TRACE 24.4 5 C TRACE	Frequency
MSG Engelget Spectrum Analyzer - Senget SA 21 RL - RF - SS 0 0 - SC Center Freq 930,000000 N	30 MHz ~	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts) (1001 pts) (11:48:14 AM Jul 26, 2018 TRACE 12 3 4 5 6 TACC 12 3 4 5 6 0 6 7 4 A A A A A A	Frequency Auto Tune Center Freq	#Res BW 10 kHz MSO 	1.935 GHz	~ 19.15 GH ALION AUTO Avg Type: RMS Avg Hold: 10/10	88.4 ms (6001 pts) € DC Coupled Z 11.48.22 AM № 25, 2018 TRACE 22.4 5 C TRACE 22.4 5 C TRACE 22.4 5 C TRACE 22.4 5 C TRACE 23.4 5 C TRACE 24.4 5 C TRACE	Frequency Auto Tune Center Freq
MSG ■ Keynjet Spectrum Analyzer - Senget SA M RL RF SS 0,000000 N Center Freq 930,000000 N	30 MHz ~	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts) DC Coupled 11:48:14 40 74 26, 2019 Trace 23 44 response 23 44 response 23 44 response 24	Frequency Auto Tune Center Freq 930.00000 MHz Start Freq	#Res BW 10 kHz MSO 	1.935 GHz	~ 19.15 GH ALION AUTO Avg Type: RMS Avg Hold: 10/10	88.4 ms (6001 pts) ■ DC Coupled Z 11.45.22 4M M 26, 7018 Trunce 0.23.45 M 11.85.74 6 GHz -37.611 dBm 1310 der	Frequency Auto Tune Center Freq 10.542500000 GHz Start Freq 1.935000000 GHz
MSS Mass Spectrum Analyzer - Swept SA. Spectrum Analyzer	30 MHz ~	ALIGN AUTO ALIGN AUTO Avg Types RMS Avg[Heid: 10/10	174.0 ms (1001 pts) DC Coupled 13:48:14 AM M 76: 2018 TRACE 12:24 TRACE 12:24	Frequency Auto Tune Center Freq 930.000000 MHz Start Freq 30.000000 MHz Stop Freq	#Res BW 10 kHz MSO 	1.935 GHz	~ 19.15 GH ALION AUTO Avg Type: RMS Avg Hold: 10/10	88.4 ms (6001 pts) ■ DC Coupled Z 11.49.22 M M 75, 7019 Track D Basedon Track D Based	Frequency Auto Tune Center Freq 10.542500000 GHz Start Freq 1.935000000 GHz Stop Freq
Itso Itso III. Revisit Spectrum Analyzer - Swept SA. Itso III. Revis Spectrum Analyzer - Swept SA.<	30 MHz ~	ALIGN AUTO ALIGN AUTO Avg Types RMS Avg[Heid: 10/10	174.0 ms (1001 pts) DC Coupled 13:48:14 AM M 76: 2018 TRACE 12:24 TRACE 12:24	Frequency Auto Tune Center Freq 30.000000 MHz Start Freq 30.000000 MHz 1.83000000 GHz 1.83000000 GHz 180.000000 MHz	#Res BW 10 kHz MSO 	1.935 GHz	~ 19.15 GH Aug Type: RMS Avg[Hold: 10/10	88.4 ms (6001 pts) ■ DC Coupled Z 11.49.22 M M 75, 7019 Track D Basedon Track D Based	Frequency Auto Tune Center Freq 10.54250000 GHz 1.93500000 GHz 91.150000 GHz 1.72150000 GHz 1.72150000 GHz



				High C	hannel				
	9 kHz ~	150 kHz				150 kHz -	~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA RL 36 So DA DC Center Freq 79.500 kHz	PNO: Wide Trig: Pree Run IFGain:Low #Atten: 10 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	12:36:28 PM Jul 26, 2018 TRACE 0 20:49 TYPE 0 20:49 CET A A A A A Mkr1 9:705 kHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swept RL	OC CORREC SENSE PULSE PNO: Fast →→ IFGain:Low #Atten: 10 dB	Avg Type: RMS Avg[Hold: 10/10	Mkr1 160 kHz	Frequency Auto Tune
10 dB/div Ref -10.00 dBm			-58.704 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 dB	3m			Center Freq 15.075000 MHz
-40.0			-43 00 dBm	Start Freq 9.000 kHz	-40.0			-33.00 :@=	Start Freq 150.000 kHz
-50 0 1 -60 0 Manuel				Stop Freq 150.000 kHz	-50 0 -50 0			3	Stop Freq 10.000000 MHz
-70 0 -80 0	non valan walan walan	Mayama	nt a mandra a sa	CF Step 14.100 kHz Auto Man	-70.0	A Marithian Antonio Ant		Auto	CF Step 2.985000 MHz Man
-50.0			A C LUI I C I M WANT	Freq Offset 0 Hz	-50.0 -100				Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	Stop 150.00 kHz 174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*		Stop 30.00 MHz 3.4 ms (6001 pts)	
M00									
	30 MHz ~	1.83 GHz	us 1_DC Coupled		MSG	1.935 GHz ~		DC Coupled	
Keysight Spectrum Analyzer - Swept SA RL RF 50 D AC Center Freq 930.000000	CORREC SENSE:PULSE MHZ PNO: Fast Trig: Free Run	1.83 GHz ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	-	Frequency	MSG Keysight Spectrum Analyzer - Swept RL FF S0 Ω Center Freq 10.54250	SA AC CORREC SENSE:PULSE 0000 GHz PNO: Fast +++	- 19.15 GHz	17-24-52 541 14 26 2018	Frequency
CM RL RF 50 Ω AC	CORREC SENSE-PULSE MHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:45 PM Jul 26, 2018 TRACE 23:44 9 6	Frequency	CM RL RE 50 Ω	SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:53 PMJul 26, 2018 TRACE 12 242, 1940 P	Frequency
00 RL FF 30 Q AC Center Freq 930.000000	CORREC SENSE-PULSE MHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:45 PMJul 26, 2018 TRACE 12:23:43: 6 TRACE 12:23:43: 6 TRACE 12:23:43: 6 TRACE 12:34:35 OUT A AAAAA VT1 1.756 56 GHZ	Frequency	RL № 50Ω Center Freq 10.54250	SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:53 PM Jul 26; 2018 TRACE (D.2.3, 2018) TRACE (D.2.3, 2018) T	Frequency Auto Tune Center Freq
00 RL FF 30 Q AC Center Freq 930.000000	CORREC SENSE-PULSE MHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:45 PMJul 26, 2018 TRACE 12:23:43: 6 TRACE 12:23:43: 6 TRACE 12:23:43: 6 TRACE 12:34:35 OUT A AAAAA VT1 1.756 56 GHZ	Frequency Auto Tune Center Freq	Image: Non-State Ref Sog Sog Center Freq Sog Sog <th>SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB</th> <th>ALIGN AUTO Avg Type: RMS Avg Hold: 10/10</th> <th>123633 (M) / 35 2010 Trace Descent of the control of the control</th> <th>Frequency Auto Tune</th>	SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	123633 (M) / 35 2010 Trace Descent of the control	Frequency Auto Tune
09 RL RF 50Ω AC Center Freq 930.000000	CORREC SENSE-PULSE MHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12:36:45 FM Jul 26, 2018 TRACE 12:36:50 TYPE / AAAAAA (r1 1.756 56 GHz -46.885 dBm	Frequency Auto Tune Center Freq 930.00000 MHz Start Freq	Image: Non-State Ref Sog Sog Center Freq Sog Sog <th>SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB</th> <th>ALIGN AUTO Avg Type: RMS Avg Hold: 10/10</th> <th>12.36-33 PH.M 25, 2019 THEOR [] D 2 4 3 - 2 THEOR [] D 2 4 - 2 THEOR []</th> <th>Auto Tune Auto Tune Center Freq 42500000 GHz Start Freq 35000000 GHz</th>	SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	12.36-33 PH.M 25, 2019 THEOR [] D 2 4 3 - 2 THEOR [] D 2 4 - 2 THEOR []	Auto Tune Auto Tune Center Freq 42500000 GHz Start Freq 35000000 GHz
ON RL MP 30.0 AC Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.000000 Image: Center Freq 930.000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 100 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 1000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 1000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 Image: Center Freq 930.0000000 1000 Image: Center Freq 930.0000000 Image: Center Freq 930.00000000 Image: Center Freq 930.0000000 1000 Image: Center Freq	CORREC SENSE-PULSE MHZ PNO: Fast IFGain:Low #Atten: 20 dB	ALION AUTO Avg Type: RMS Avg/Hold: 1010	12:36-45 PH Jul 26, 2018 TRACE D 23 4554 Cet T 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Frequency Auto Tune Center Freq 930.000000 MHz Start Freq 30.000000 MHz Stop Freq	Image: Non-State Ref Sog Sog Center Freq Sog Sog <th>SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB</th> <th>Avg Type: RMS Avg Type: RMS AvgType: RMS MKM</th> <th>12.36.33 PH.M 25, 2019 TRACE [12.34.33 PH.M 25, 2019 TRACE [12.34.34 PH.M 25, 2019 TRACE [12.34 PH.M 25, 2019</th> <th>Frequency Auto Tune Center Freq 42500000 GHz Start Freq 35000000 GHz Stop Freq</th>	SA AC CORREC SENSE-PULSE ODODO GHZ PNO: Fast IFGain:Low #Atten: 20 dB	Avg Type: RMS Avg Type: RMS AvgType: RMS MKM	12.36.33 PH.M 25, 2019 TRACE [12.34.33 PH.M 25, 2019 TRACE [12.34.34 PH.M 25, 2019 TRACE [12.34 PH.M 25, 2019	Frequency Auto Tune Center Freq 42500000 GHz Start Freq 35000000 GHz Stop Freq
Image: Non-State No-State	CONNEC Strids Pruse PNO: Fast	ALION AUTO Avg Type: RMS Avg/Hold: 1010	12:36-45 PH Jul 26, 2018 TRACE D 23 4554 Cet T 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Frequency Auto Tune Center Freq 930.000000 MHz Start Freq 30.000000 MHz Stop Freq 1.830000000 GHz 0 CF Step 180.000000 MHz	Image: Non-State Ref Sog Sog Center Freq Sog Sog <th>SA AC CONFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain.Low MAtten: 20 dB</th> <th>Avg Type: RMS Avg Type: RMS AvgType: RMS MKM</th> <th>12.36.33 PH.M 25, 2019 The C D D D B B B The C D D D B B The C D D D B B The C D D D B B B The C D D D D D D D B The C D D D D D D D D The C D D D D The C D D D D D D D The C D D D D D D D The C D D D D D D D D The C D D D D D D D D D The C D D D D D D D D D D D D The C D D D D D D D D D D D D D D D D D D</th> <th>Trequency Auto Tune Center Freq 42500000 GHz Start Freq 50000000 GHz Stop Freq 5000000 GHz CF Step 21500000 GHz</th>	SA AC CONFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain.Low MAtten: 20 dB	Avg Type: RMS Avg Type: RMS AvgType: RMS MKM	12.36.33 PH.M 25, 2019 The C D D D B B B The C D D D B B The C D D D B B The C D D D B B B The C D D D D D D D B The C D D D D D D D D The C D D D D The C D D D D D D D The C D D D D D D D The C D D D D D D D D The C D D D D D D D D D The C D D D D D D D D D D D D The C D D D D D D D D D D D D D D D D D D	Trequency Auto Tune Center Freq 42500000 GHz Start Freq 50000000 GHz Stop Freq 5000000 GHz CF Step 21500000 GHz
Image: Non-Action of the second sec	CONNEC Strids Pruse PNO: Fast	ALION AUTO Avg Type: RMS Avg/Hold: 1010	12:36-45 PH Jul 26, 2018 TRACE D 23 4554 Cet T 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Frequency Auto Tune Center Freq 930.000000 MHz Start Freq 30.000000 MHz 1.830000000 HHz 1.830000000 HHz 1.830000000 HHz 2005 Ftep 100.000000 MHz Auto Man Freq Offset 0 Hz	Image: Non-State Ref Sog Sog Center Freq Sog Sog <td>SA AC CONFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain.Low MAtten: 20 dB</td> <td>Augure and a second sec</td> <td>12.36.33 PH.M 25, 2019 The C D D D B B B The C D D D B B The C D D D B B The C D D D B B B The C D D D D D D D B The C D D D D D D D D The C D D D D The C D D D D D D D The C D D D D D D D The C D D D D D D D D The C D D D D D D D D D The C D D D D D D D D D D D D The C D D D D D D D D D D D D D D D D D D</td> <td>Trequency Auto Tune Center Freq 42500000 GHz Start Freq 5000000 GHz Stop Freq 21500000 GHz Man Freq Offset</td>	SA AC CONFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain.Low MAtten: 20 dB	Augure and a second sec	12.36.33 PH.M 25, 2019 The C D D D B B B The C D D D B B The C D D D B B The C D D D B B B The C D D D D D D D B The C D D D D D D D D The C D D D D The C D D D D D D D The C D D D D D D D The C D D D D D D D D The C D D D D D D D D D The C D D D D D D D D D D D D The C D D D D D D D D D D D D D D D D D D	Trequency Auto Tune Center Freq 42500000 GHz Start Freq 5000000 GHz Stop Freq 21500000 GHz Man Freq Offset



1				Low C	hannel				
	9 kHz ~	150 kHz				150 kHz ~	~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA RL PF S9 94 DC Center Freq 79.500 kHz	CORREC SENSE-PULSE PNO: Wide IFGain:Low #Atten: 10 dB	Aug Type: RMS Avg[Hold: 10/10	011:20:35 PM Jul 26, 2018 TRACE 2 3 4 5 TYPE A DET A A A A A A	Frequency	Keysight Spectrum Analyzer - Swept RL NF 50 Q Center Freq 15.07500	DC CORREC SENSE:PULSE	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:20:45 PM Jul 26, 2018 TRACE 2 3 4 5 TYPE A WAYAAAAA DET A A A A A A A	Frequency
10 dB/div Ref -10.00 dBm			Mkr1 9.282 kHz -56.928 dBm	Auto Tune	10 dB/div Ref -10.00 dE	3m		Mkr1 155 kHz -60.119 dBm	Auto Tune
-20.0				Center Freq 79.500 kHz	-20.0				Center Freq 15.075000 MHz
-30.0			-43.00 (Be	Start Freq 9,000 kHz	-0.0.			-33.00 49%	Start Freq 150.000 kHz
.500 1 .500 1				Stop Freq 150.000 kHz	-20 0 -20 0				Stop Freq 30.000000 MHz
-70.0	mananana	mannan	Mo	CF Step 14.100 kHz Auto Man	-70.0	a basharan jala ata ina jaran aran aran aran aran aran aran a			CF Step 2.985000 MHz Auto Man
-100			и чени нация ущи	Freq Offset 0 Hz	-100				Freq Offset 0 Hz
Start 9.00 kHz #Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	Stop 150.00 kHz 174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*	Sweep 3	Stop 30.00 MHz 168.4 ms (6001 pts)	
mill)	30 MHz ~ 1	1.8488 GH			may	1.916 GHz ~	19.15 GH		
Keysight Spectrum Analyzer - Swept SA	CORREC SENSE:PULSE	ALIGN AUTO Avg Type: RMS	01:20:54 PM Jul 26, 2018	Frequency	Keysight Spectrum Analyzer - Swept :	AC CORREC SENSE:PULSE	ALIGN AUTO	01:21:02 PM Jul 26, 2018	Frequency
Center Freq 939.375000	PNO: Fast Trig: Free Run	Avg Hold: 10/10	TYPE A WWWWWW	requency	Center Freq 10.53312	PNO: Fast Trig: Free Run	Avg Type: RMS Avg Hold: 10/10	TRACE 1 2 3 4 5 6 TYPE A WWWWWW	
Center Freq 939.375000 f	MHZ PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	TRACE 2 2 3 4 5 (TYPE A A A A A OUT A A A A A A Ikr1 1.848 8 GHz -40.631 dBm	Auto Tune	Center Freq 10.53312	PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18.550 3 GHz -38.214 dBm	Auto Tune
	MLZ PRO:Fast IFGain:Low #Atten: 20 dB	Avg Hold: 10/10				PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18,550 3 GHz	Auto Tune Center Freq 10.533125000 GHz
	MILZ PRO:Feat IFGainLow #Atten: 20 dB	Avg Hold: 10/10		Auto Tune Center Freq		PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18,550 3 GHz	Center Freq
	HHZ Frast Trig: Free Run IFGainLow SAtten: 20 dB	Avg Hold: 10/10	lkr1 1.848 8 GHz -40.631 dBm	Auto Tune Center Freq 939.375000 MHz Start Freq		PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18.550 3 GHz -38.214 dBm	Center Freq 10.533125000 GHz Start Freq
10 dB/div Ref 10.00 dBm	MHZ: Trig: Free Run PRO: Foat IFGainLow RAtten: 20 dB	AvgiHold: 10/10	Ikr1 1.848 8 GHz -40.631 dBm -1300 66	Auto Tune Center Freq 939-375000 MHz Start Freq 30.000000 MHz Stop Freq		PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18,550 3 GHz -38,214 dBm	Center Freq 10.533125000 GHz Start Freq 1.916250000 GHz Stop Freq
10 dB/div Ref 10.00 dBm	PR0:Faat +=- Trig: Free Run IFGaind.ow #Atten: 20 dB	AvgiHold: 10/10	Ikr1 1.848 8 GHz -40.631 dBm -1300 66	Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz 1.848750000 GHz 181.875000 HHz		PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18,550 3 GHz -38,214 dBm	Center Freq 10.533126000 GHz Start Freq 1.916250000 GHz 19.150000000 GHz CF Step 1.723375000 GHz
10 dB/div Ref 10.00 dBm	PR0:Faat +=- Trig: Free Run IFGaind.ow #Atten: 20 dB	AvgiHold: 10/10	Ikr1 1.848 8 GHz -40.631 dBm -1300 66	Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz Stop Freq 1848750000 GHz 1848750000 GHz 181875000 MHz Auto Man Freq Offset		PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Avg Hold: 10/10	1 18,550 3 GHz -38,214 dBm	Center Freq 10.533125000 GHz 1.916250000 GHz 1.916250000 GHz 19.150000000 GHz 1.723375000 GHz 1.723375000 GHz Man Freq Offset

Plot of Unwanted Conducted Emissions for CDMA_Uplink



				Middle (Channel				
	9 kHz ~ ′	150 kHz				150 kHz -	~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA RL 85 S0 0 A DC Center Freq 79.500 kHz	CORREC SENSE-PULSE PNO: Wide Trig: Free Run IFGain:Low #Atten: 10 dB	Aug Type: RMS Avg Hold: 10/10	01:24:53 PM Jul 26, 2018 TRACE 23 4 5 TYPE A COLOR DET A A A A A A	Frequency	RL Reysight Spectrum Analyzer - Swept SA	CORREC SENSE-PULSE	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	01:25:03 PM Jul 26, 2018 TRACE 2 2 3 4 5 TYPE A A A A A A DET A A A A A A	Frequency
10 dB/div Ref -10.00 dBm			Mkr1 10.833 kHz -58.889 dBm	Auto Tune	10 dB/div Ref -10.00 dBr	n		Mkr1 160 kHz -62.182 dBm	Auto Tune
-20.0				Center Freq 79.500 kHz	-20.0				Center Freq 15.075000 MHz
-42.0			-43.00 (68)	Start Freq 9.000 kHz	-30.0			-33.00 (0)**	Start Free 150.000 kH
40 0 1 40 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1				Stop Freq 150.000 kHz	60 0 60 0				Stop Fred 30.000000 MH:
-70.0 Mr. M.	m www.mym	North a prime	And to see a late	CF Step 14.100 kHz Auto Man	-70.0			Auto	CF Step 2.985000 MHz 2 Man
-50.0		- with the		Freq Offset 0 Hz	50.0	na je sa doka se konstanta dover se na se na Na je na se na Na je na se na		ini pering ang pering a Pering ang pering ang pe	Freq Offset 0 Hz
Start 9.00 kHz									
#Res BW 1.0 kHz	#VBW 3.0 kHz*	Sweep	Stop 150.00 kHz 174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz	#VBW 30 kHz*		Stop 30.00 MHz i8.4 ms (6001 pts)	
#Res BW 1.0 kHz	#VBW 3.0 kHz* 30 MHz ~ 1	stan	174.0 ms (1001 pts)		Start 150 kHz #Res BW 10 kHz MSG	#VBW 30 KH2* 1.916 GHz ~	STATUS	8.4 ms (6001 pts)	
#Res BW 1.0 kHz MIG Krysight Spectrum Analyzer - Swept SA Rk 8F 50 Q AC	30 MHz ~ 1	.8488 GH	174.0 ms (1001 pts)	Frequency	#Res BW 10 kHz MsG Keysight Spectrum Analyzer - Swept SA Keysight Spectrum Analyzer - Swept S	1.916 GHz ~	- 19.15 GH	18.4 ms (6001 pts) DC Coupled Coupled	Frequency
#Res BW 1.0 kHz MSG MSG Koysight Spectrum Analyzer - Swept SA 20 R. R. PF 150 0. AC Center Freq 939,375000 N	30 MHz ~ 1	ALIGN AUTO AVG Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts)		#Res BW 10 kHz	1.916 GHz ~ const. Stats PASE 000 CH2 PRO: Fast ~~ Trig: Free Run FGainLow Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	8.4 ms (6001 pts)	Frequency
#Res BW 1.0 kHz MIG MIG Knylight Spectrum Analyzer - Swept SA R R. RF 150 Q AC	30 MHz ~ 1	ALIGN AUTO AVG Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts)	Frequency	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 UI 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~ const. Stats PASE 000 CH2 PRO: Fast ~~ Trig: Free Run FGainLow Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	18.4 ms (6001 pts) ▲ DC Coupled 2 01.25:19990/J 56, 3018 Theta D2 3 4 56 Theta D2 3 4 56 18.552 4 CHz -37.598 dBm	Frequency Auto Tune Center Freq
#Res BW 1.0 kHz MIG Keysight Spectrum Analyzer - Swept SA 20 RL RF 150 0. AC Center Freq 939,375000 N	30 MHz ~ 1	ALIGN AUTO AVG Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts)	Frequency Auto Tune Center Freq	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 OII 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~ const. Stats PASE 000 CH2 PRO: Fast ~~ Trig: Free Run FGainLow Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	18.4 ms (6001 pts) ▲ DC Coupled 2 10123:19990/24,2019 10423:19900/24,2019 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900/24,2000 10423:19900 104000 10400 1040000 104000 1040000 104000 1040000 10400	Frequency Auto Tune Center Frec 533125000 GH Start Frec
#Res BW 1.0 kHz MIG MIG Keysight Spectrum Analyzer - Swept SA 27 RL RF 150 0. AC Center Freq 939,375000 N	30 MHz ~ 1	ALIGN AUTO AVG Type: RMS Avg[Hold: 10/10	174.0 ms (1001 pts) DC Coupled Z (01:25:11 PM bd 26, 2019 Trace (1) 23 - 4 Trace (1) 23 - 4 Trac	Frequency Auto Tune Center Freq 939.375000 MHz Start Freq	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 OII 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~ const. Stats PASE DOD CH2 PRO: Fast ~~ Trig: Free Run FGainLow Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	18.4 ms (6001 pts) ▲ DC Coupled 2 01.25:1999()/28.2018 Tree first f	Frequency Auto Tune Center Frec 533125000 GH Start Frec 916250000 GH Stop Frec
#Res BW 1.0 kHz #Koi	30 MHz ~ 1	.8488 GH	174.0 ms (1001 pts) DC Coupled Z (012511 PM/b/26, 2018 TMACC 012-34 TMACC 012-34	Frequency Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz Stop Freq	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 OII 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~ const. Stats PASE DOD CH2 PRO: Fast ~~ Trig: Free Run FGainLow Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	18.4 ms (6001 pts) ▲ DC Coupled 2 (0.125.1999/b/28.2018 The child a state The child a state 11.5.552.4 GHz -37.538 dBm 10. -37.538 dBm 10. -37.5	Frequency Auto Tunc Center Frec 533125000 GH: Start Frec 916250000 GH: Stop Frec 150000000 GH: CF Step 723375000 GH:
#Res BW 1.0 kHz #Koi	30 MHz ~ 1	.8488 GH	174.0 ms (1001 pts) DC Coupled Z (012511 PM/b/26, 2018 TMACC 012-34 TMACC 012-34	Frequency Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz 1.84975000 GHz 1.84975000 GHz 181.875000 MHz	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 OII 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	18.4 ms (6001 pts) ▲ DC Coupled 2 10.2519996/28.2016 10.251996/28.2016 10.25196/28.2016 10	Frequency Auto Tune Center Free Start Free Start Free Stop Free Isocococo GH: CF Step Z23375000 GH: 2 Mar Free Offse
#Res BW 1.0 kHz #KG #KG #KG #KG #KG #KG #KG #K	30 MHz ~ 1	■ ALION AUTO AUGU AUTO Avg Type: RMS Avg[Hold: 10/10 Avg Type: Automatic Avg Type: Automatic Auto	174.0 ms (1001 pts) DC Coupled Z (012511 PM/b/26, 2018 TMACC 012-34 TMACC 012-34	Frequency Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz Stap Freq 1.84875000 GHz 181.875000 GHz 181.875000 MHz Auto Man Freq Offset	#Res BW 10 kHz MIG MIG MI Koysight Spectrum Analyzer - Swept 54 OII 8.4. PP 150 AC Center Freq 10.5331251	1.916 GHz ~	THE STATE	18.4 ms (6001 pts) ▲ DC Coupled 2 10.2519996/28.2016 10.251996/28.2016 10.25196/28.2016 10	Frequency Auto Tune Center Freq Statt Freq 916250000 GHz Stop Freq 150000000 GHz CF Step 723376000 GHz



				- ingii o	hannel				
	9 kHz ~	150 kHz				150 kHz	~ 30 MHz		
Keysight Spectrum Analyzer - Swept SA R.L. 95 Sp.D. 50 Center Freq 79,500 kHz	CORREC SENSE PULSE PNO: Wide ↔ Trig: Free Run IFGain:Low #Atten: 10 dB	ALIGN AUTO Avg Type: RMS Avg Hold: 10/10	01:30:04 PM Jul 26, 2018 TRACE 1 2:3:4 8 TYPE A CET A A A A A A Mkr1 12.948 kHz	Frequency Auto Tune	Keysight Spectrum Analyzer - Swe RL	DC CORREC SENSE:PULSE	Avg Type: RMS Avg[Hold: 10/10	01:30:15 PM3/J 26, 2018 TRACE 1 2 3 4 5 TYPE A OCT A A A A A A Mkr1 150 kHz	Frequency Auto Tun
10 dB/div Ref -10.00 dBm			-58.938 dBm	Center Freq 79.500 kHz	10 dB/div Ref -10.00 d Log			-61.943 dBm	Center Fre 15.075000 MH
40.0			-43.00 dBm	Start Freq 9.000 kHz	-30.0			-33 00 -@=-	Start Fre 150.000 kH
**************************************				Stop Freq 150.000 kHz CF Step	40 0 1 40 0 1				Stop Fre 30.000000 MH CF Step
80.0 90.0 -100	Manghawana Manya	-alignlong-row	mhrwnyn	14.100 kHz <u>Auto</u> Man Freq Offset 0 Hz	-50 0 -50 0 -50 0	an a		an Bistolog day 10 miles	2.985000 MH <u>Auto</u> Ma Freq Offse 0 H
Start 9.00 kHz #Res BW 1.0 kHz #So	#VBW 3.0 kHz*	STATU	Stop 150.00 kHz 174.0 ms (1001 pts) 2 DC Coupled		Start 150 kHz #Res BW 10 kHz MSG	#VBW 30 kH2*	STATUS	Stop 30.00 MHz 8.4 ms (6001 pts) 1 DC Coupled	
🖡 Keysight Spectrum Analyzer - Swept SA	30 MHz ~ 1	.8488 GH	Z			1 916 (587	~ 19 15 (58)	7	
				- 6 -	Keysight Spectrum Analyzer - Swe			<u> </u>	- 6 -
RL RF 50Ω AC Center Freq 939.375000 M	CORREC SENSE:PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:30:23 PM Jul 26, 2018 TRACE 2345 TYPE A DET A A A A A A		III Keysight Spectrum Analyzer - Swe UI RL RF S0 Ω			01:31:22 PMJul 26, 2018 TRACE 1 2 3 4 9 0 TYPE A DET A A A A A A	Frequency
Center Freq 939.375000 M	Hz	Avg Type: RMS Avg Hold: 10/10	TRACE 1 2 3 4 5 (Keysight Spectrum Analyzer - Swe RL	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:31:22 PM Jul 26, 2018 TRACE 2 3 4 5 6 TYPE A	Frequency
Center Freq 939.375000 M	Hz	Avg Type: RMS Avg Hold: 10/10	trace 12343 (trace 12343) bet Addada kr1 1.841 5 GHz -43.926 dBm	Auto Tune Center Freq 939.375000 MHz	L X RL RF 50 Ω	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:31:22 PMJul 26, 2018 TRACE 12 3 4 5 6 TYPE A MARAAA DET A AAAAAA 1 1.916 3 GHz	Frequency Auto Tun Center Fre 10.533125000 GH
Center Freq 939.375000 M	Hz	Avg Type: RMS Avg Hold: 10/10	TRACE 2 3 4 5 (TYPE 0ET AAAAAA	Auto Tune Center Freq 939 375000 MHz Start Freq 30 000000 MHz	L X RL RF 50 Ω	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:31:22 PMJul 26, 2018 TRACE 12 3 4 5 6 TYPE A MARAAA DET A AAAAAA 1 1.916 3 GHz	Frequency Auto Tun Center Fre 10.533125000 GH Start Fre 1.916250000 GH
2enter Freq 939.375000 M	HZ PRO: Frast Trig: Free Run IFGainLow #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10	13.00 den	Auto Tune Center Freq 939.375000 MHz Start Freq 30.00000 MHz Stop Freq 1.848750000 GHz CF Step	L X RL RF 50 Ω	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:31:22 PMJul 26, 2018 TRACE 12 3 4 5 6 TYPE A MARAAA DET A AAAAAA 1 1.916 3 GHz	Frequency Auto Tur Center Fre 10.533125000 GH Start Fre 19.16250000 GH Stop Fre 19.15000000 GH
Center Freq 939.375000 M	Hz	Avg Type: RMS Avg[Hold: 10/10	13.00 den	Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz Stop Freq 1.848750000 GHz 181.875000 MHz Auto Man Freq Offset	L X RL RF 50 Ω	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 10/10	01:31:22 PMJul 26, 2018 TRACE 12 3 4 5 6 TYPE A MARAAA DET A AAAAAA 1 1.916 3 GHz	Frequency Auto Tun Center Fre 19.533125000 GH Start Fre 19.150000000 GH Stop Fre 19.150000000 GH CF Step 1.723375000 GH Auto Ma
Center Freq 939.375000 M	HZ PRO: Frast Trig: Free Run IFGainLow #Atten: 20 dB	Avg Type: RMS Avg[Hold: 10/10	13.00 den	Auto Tune Center Freq 939.375000 MHz Start Freq 30.000000 MHz Stop Freq 1.848750000 GHz CF Step 181.875000 MHz Auto Man Freq Offset 0 Hz	L X RL RF 50 Ω	AC CORFEC SENSE-PULSE PNO: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	Augn Autro	01:31:22 PMJul 26, 2018 TRACE 12 3 4 5 6 TYPE A MARAAA DET A AAAAAA 1 1.916 3 GHz	Frequency Auto Tun Center Fre 10.533125000 GH Start Fre 1.91625000 GH Stop Fre 19.15000000 GH CF Ste 1.723375000 GH Auto



Plot of Band Edge for LTE 20 MHz_Downlink



Plot of Band Edge for CDMA_Downlink





Left Right ar Freq 1.850000000 GHz PNO: Fast PNO: Fast # Frequence w #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 Frequency Avg Type: RMS Avg[Hold: 100/100 Frequer Center Freg 1.9150 00 GHz ACE 1234 5 C #Atten: 20 dB A Auto Tune Auto Tu 1.850 00 GHz -29.680 dBm 1.915 00 (-34.004 c Ref 10.00 dBm Ref 10.00 dBm Center Fred Center Fre 1.915000000 GH Start Fred 1.83000000 GHz Start Free 1 895 Stop Freq Stop Free 1.87000000 GH 1.935000000 GH CF Step CF Step 4.000000 MHz M Ma Freq Offsel 0 Hz Freq Offsel 0 Ha Stop 1.87000 GHz Sweep 1.000 ms (1001 pts) Start 1.89500 GHz #Res BW 390 kHz Stop 1.93500 GHz Sweep 1.000 ms (1001 pts) 1.83000 GHz BW 390 kHz #VBW 1.2 MHz* #VBW 1.2 MHz*

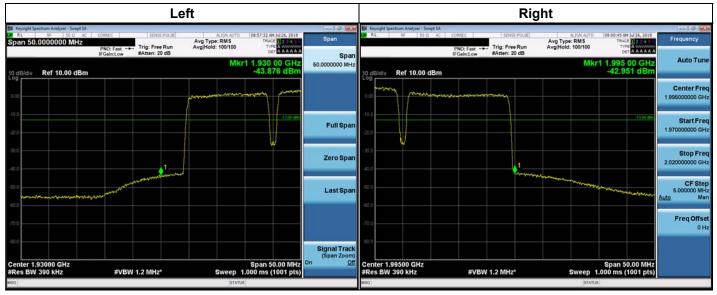
Plot of Band Edge for LTE 20 MHz_Uplink

Plot of Band Edge for CDMA_Uplink

	Le	əft					Rig	ht		
		ALIGN AUTO Avg Type: RMS Avg Hold: 100/100	01:20:22 PM Jul 26, 2018 TRACE 2 2 3 4 5 6 TYPE A DET A A A A A A	Frequency Auto Tune	Keysight Spectrum Analyzer - Swept SA RL	O GHz	sense:Pulse rig: Free Run Atten: 20 dB	ALIGN AUTO Avg Type: RMS Avg[Hold: 100/100	01:29:51 PM Jul 26, 2018 TRACE 1 2 3 4 5 6 TYPE A DET A A A A A A	Frequency Auto Tune
10 dB/div Ref 10.00 dBm		Mkr1 1	.850 000 0 GHz -50.893 dBm	Center Freq	10 dB/div Ref 10.00 dBm			Mkr1 1	.915 000 1 GHz -50.828 dBm	Center Freq
-10.0		\int	-13.00 dBm	1.850000000 GHz	-10.0				-13.00 dBm	1.915000000 GHz
-20.0				Start Freq 1.848750000 GHz	-20.0					Start Freq 1.913750000 GHz
-40.0	1			Stop Freq 1.851250000 GHz	-40.0	hung	1			Stop Freq 1.916250000 GHz
-50 0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			CF Step 250.000 kHz <u>Auto</u> Man	-50.0			······································		CF Step 250.000 kHz <u>Auto</u> Man
-70.0				Freq Offset 0 Hz	-70.0					Freq Offset 0 Hz
Start 1.848750 GHz #Res BW 24 kHz	#VBW 75 kHz*	Sweep 5	Stop 1.851250 GHz .400 ms (1001 pts)		Start 1.913750 GHz #Res BW 24 kHz	#VBW 75	5 kHz*	Sweep 5	top 1.916250 GHz .400 ms (1001 pts)	
MSG		STATUS			MSG			STATUS		



Plot of Intermodulation for LTE 20 MHz_Downlink



Plot of Intermodulation for CDMA_Downlink





Plot of Intermodulation for LTE 20 MHz_Uplink



Plot of Intermodulation for CDMA_Uplink



9. RADIATED EMISSIONS

FCC Rules

Test Requirements:

§ 2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

(b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.

(2) All equipment operating on frequencies higher than 25 MHz.

(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.

(4) Other types of equipment as required, when deemed necessary by the Commission.

Test Procedures:

The measurement is performed in accordance with Section 5.5.3.2 of ANSI C63.26.

a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

b) Each emission under consideration shall be evaluated:

1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable



Report No.: HCT-RF-1809-FC019

detection of the maximum emission amplitude relative to measurement antenna height. 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

3) Return the turntable to the azimuth where the highest emission amplitude level was observed.

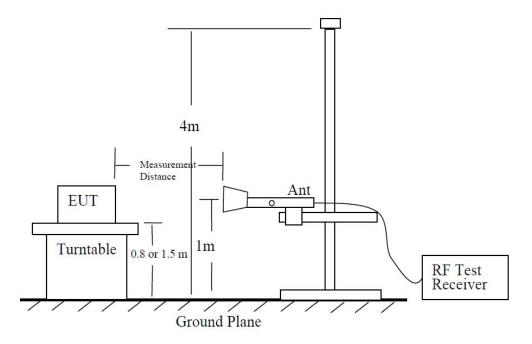
4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

5) Record the measured emission amplitude level and frequency using the appropriate RBW.c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

d) ~ j) Omitted

k) Provide the complete measurement results as a part of the test report.

Test Setup:



Note:

- According to SVSWR requirement in ANSI 63.4 (2014), we performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor (reference distance: 3 m).
- 2) Distance extrapolation factor = 20 log (test distance / specific distance) (dB)
- 3) Position of EUT for testing below 1 GHz test is 80 cm, and above 1 GHz is 1.5 m



Test Result:

Ch.	Frequency (MHz)	Measured Level (dBuV/m)	Measured Power (dBm)	Ant. Factor (dB/m)	C.L (dB)	A.G. (dB)	D.F. (dB)	Pol.	Result (dBm)
No Critical Peaks Found									

* C.L.: Cable Loss / A.G.: Ant. Gain / D.F.: Distance Factor (3.75 m)



10. Annex A_EUT AND TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description		
1	HCT-RF-1809-FC019-P		