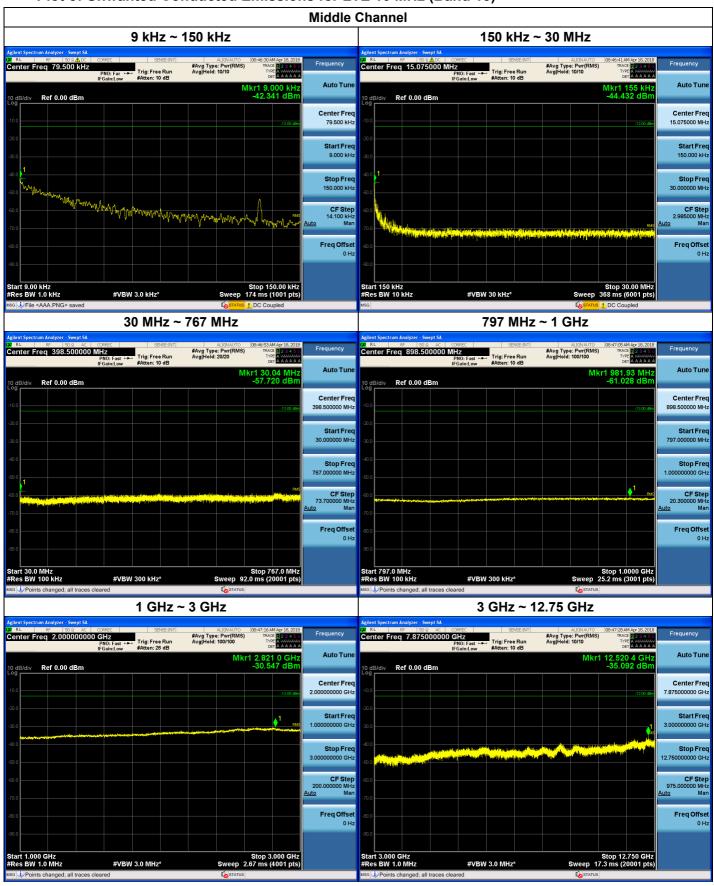
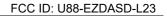


			High C	hanne	I						
9 kHz ~	150 kHz			150 kHz ~ 30 MHz							
Ident Spectrum Analyzer - Swept SA RL RF 50 Ω ΔDC CORREC SENSE:INT Sense: TEAC 70 E00 LL1	ALIGNAUTO #Avg Type: Pwr(RMS)	08:04:23 AM Apr 18, 2018	Frequency		Analyzer - Swept RF 50 ₽ ▲	DC CORREC	SENS	E:INT	ALIGNAUT #Avg Type: Pwr(RN	0 08:04:34 AM Apr 1 AS) TRACE 12 TYPE AU	18, 2018 Frequency
enter Freq 79.500 kHz PNO: Far Trig: Free Run IFGain:Low #Atten: 10 dB	Avg Hold: 10/10	DET A A A A A	Auto Toma	Center Fre	q 15.07500	PNO: Fast + IFGain:Low	Trig: Free F #Atten: 10 d	Run i	Avg Hold: 10/10	DET A A	
dB/div Ref 0.00 dBm	M	kr1 10.269 kHz -43.460 dBm	Auto rune	10 dB/div	Ref 0.00 dBr	n				Mkr1 150 -46.496 c	KI12
			Center Freq 79,500 kHz	.10.0							Center
		-13.00 dBm	79.500 KHZ	-20.0						-13	15.075000
10			Start Freq 9.000 kHz	-30.0							Start F 150.000
1.0 1				-40.0							
10 Min wh			Stop Freq 150.000 kHz	-50.0							Stop F 30.000000
10		Δ	CF Step	-60.0							CFS
20	mound	My manun	14.100 kHz <u>Auto</u> Man	-70.0	ala paradita ja sipta	ana na sana ka na kana na kana ka	anna Maine Marine an		de al a place de la desta desta desta de		2.985000 <u>Auto</u>
			Freq Offset	-80.0	to the deploy liter for		and the second	Harija secto, da da	finan haardel inder harde	and a training a state of the	Freq Of
			0 Hz	-90.0							
art 9.00 kHz		Stop 150.00 kHz		Start 150 kH	lz					Stop 30.00	MHz
Res BW 1.0 kHz #VBW 3.0 kHz*		174 ms (1001 pts)		#Res BW 10	kHz changed; all tra		W 30 kHz*			p 368 ms (6001	1 pts)
30 MHz ~							726 M	Hz ~	1 GHz		
ilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC CORREC SENSE:INT	ALIGNAUTO	08:04:45 AM Apr 18, 2018	-		Analyzer - Swept RF 50 Q	SA AC CORREC	SENS	E:INT	ALIGNAUT	0 08:04:58 AM Apr 1	
enter Freq 359.000000 MHz PN0: Fast Trig: Free Run IFGain:Low #Atten: 10 dB	#Avg Type: Pwr(RMS) Avg Hold: 20/20	TRACE 1 2 3 4 5 0 TYPE A CALL A A A A A	Frequency	Center Fre	q 863.000	DOO MHZ PNO: Fast + IFGain:Low	Trig: Free F #Atten: 10 d	Run i	#Avg Type: Pwr(RM Avg Hold: 100/100	AS) TRACE 1 2 TYPE A W DET A A	
dB/div Ref 0.00 dBm	Mkr1	517.972 8 MHz -58.452 dBm	Auto Tune	10 dB/div	Ref 0.00 dBr				Ν	/lkr1 783.17 -60.575 c	MHz Auto T IBm
^g			Center Freq	Log							Center
30			359.000000 MHz	-10.0							863.00000
			Start Freq 30.000000 MHz	-20.0							Start F 726.000000
10			30.000000 MH2	-40.0							728.000000
20			Stop Freq 688.000000 MHz	-40.0							Stop F 1.000000000
	↓ 1	5MS	CF Step	-60.0	•	1					RMS CF S
	i liste an a fata a shi ka a na shi ka a shi k	nia mata da mandra mana para kata da bia	65.800000 MHz <u>Auto</u> Man	-70.0							27.400000 Auto
			Freq Offset	-80.0							FreqOf
			0 Hz	-90.0							
art 30.0 MHz		Stop 688.0 MHz		Start 726.0	MHz					Stop 1.0000	GHZ
Res BW 100 kHz #VBW 300 kHz*	Sweep 87	1.3 ms (20001 pts		#Res BW 10	00 kHz		W 300 kHz*		Sweep	34.0 ms (3001	
1 GHz ~						3	3 GHz	~ 12.	.75 GHz		
ilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC CORREC SENSE:INT	ALIGNAUTO	08:05:09 AM Apr 18, 2018		IX/ RL	Analyzer - Swept RF 50 Q	AC CORREC	SENS	E:INT	ALIGNAUT	0 08:05:21 AM Apr 1	18, 2018
enter Freq 2.00000000 GHz PN0: Fast Trig: Free Run IFGain:Low #Atten: 26 dB	#Avg Type: Pwr(RMS) Avg Hold: 100/100	TRACE 1 2 3 4 5 0 TYPE A UNIT A A A A A		Center Fre	q 7.875000	PN0: Fast + IFGain:Low	Trig: Free F #Atten: 10 d	Run i 18	#Avg Type: Pwr(RM Avg Hold: 10/10	AS) TRACE 1 2 TYPE A H DET A A	AAAA
dB/div Ref 0.00 dBm	Mk	r1 2.679 5 GHz -30.430 dBm	Auto Tune	10 dB/div	Ref 0.00 dBr				MI	(r1 12.532 6) -35.853 c	GHz Auto T dBm
9			Center Freq	-10.0							Center
		-13.00 dBm	2.000000000 GHz	-20.0						-18	7.87500000
0.0		1 голя	Start Freq 1.000000000 GHz	-30.0							Start F 3.000000000
and a second				-40.0						and the second secon	
			Stop Freq 3.000000000 GHz	-50.0					w ^a wan	and an or he had to be a first of the second se	12.75000000
			CF Step	-60.0							CFS
			200.000000 MHz <u>Auto</u> Man	-70.0							975.000000 <u>Auto</u>
0.0			Freq Offset	-80.0							Freq Of
			0 Hz	-90.0							
0.0											
art 1.000 GHz		Stop 3.000 GHz		Start 3.000	GH7					Stop 12.750	IGH7



Plot of Unwanted Conducted Emissions for LTE 10 MHz (Band 13)







763 MHz ~ 775 MHz					793 MHz ~ 805 MHz									
Agilent Spectrum Analyzer - Swept SA					Agilent Spectrum									
ον RL RF 50Ω AC Start Freq 763.000000 MH		#Avg Type: Pwr(RMS) Avg Hold: 10/10	09:42:59 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A VIALANA DET A A A A A A	Frequency	Start Freq	RF 50 Ω 793.0000		C :Far ↔→ Trig n:Low #Att	SENSE:INT Free Run en: 20 dB	#Avg Type Avg Hold:	: Pwr(RMS)	09:43:11 AM / TRACE TYPE DET	Apr 18, 2018 1 2 3 4 5 6 A 4 4 4 4 4 4	Frequency
10 dB/div Ref 0.00 dBm		Mkr	1 774.868 MHz -52.005 dBm	Auto Tune	10 dB/div	Ref 0.00 dB					Mkr1	1 793.68 -62.47		Auto Tune
-10.0				Center Freq 769.000000 MHz	-10.0									Center Freq 799.000000 MHz
-20.0				Start Freq 763.000000 MHz	-20.0									Start Freq 793.000000 MHz
-40.0			-46.00 (%)-	Stop Freq 775.000000 MHz	-40.0								-46.00 dBm	Stop Freq 805.000000 MHz
-60.0 	talfartanaa findajasi miyati panidinad	ran shallonton barn nadishka londayin	gradigat was also live to be	CF Step 1.200000 MHz <u>Auto</u> Man	-60.0	n paramatan ana ang ang ang ang ang ang ang ang a	halaan ahaan ah	unin uninerterni	nun an	เป็นไข้เหลียไก่งา _{ต่า} นให้เจา	ahuunamahaa	maturandulapu	RMS whymruni ywn	CF Step 1.200000 MHz <u>Auto</u> Man
-80.0				Freq Offset 0 Hz	-80.0									Freq Offset 0 Hz
Start 763.000 MHz			Stop 775.000 MHz		Start 793.00						s	top 805.0 383 ms (10	00 MHz	
#Res BW 6.2 kHz	#VBW 20 kHz*	Sweep	383 ms (1001 pts)		#Res BW 6.			#VBW 20 k	Hz*		Sweep 3	383 ms (10	001 pts)	
4.10		~									~			
	1.559 GHz	~1.61 GHz	2				1.55	59 GH	z ~1.6	1 GHz	2 (700) Hz)		
Agilent Spectrum Analyzer - Swept SA				-	Agilent Spectrum		pt SA			1 GHz				
M RL RF 50 Ω AC Start Freq 1.559000000 G			09:43:22 AM Apr 18, 2018	Frequency	Agilent Spectrum (X) RL Start Freq		pt SA AC CORREC 000 GHz PNO:	C Fast +⇒→ Tris	z ~1.6 SENSE:INT g: Free Run ten: 10 dB		ALIGNAUTO	09:45:46 AM / TRACE	Apr 18, 2018 1 2 3 4 5 6 A WWWWWW A A A A A A	Frequency
Start Freq 1.559000000 G	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE 4 044444	Frequency		RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE	123456 A A A A A A A 3 GHz	Frequency Auto Tune
00 RL RF 50.2 AC Start Freq 1.559000000 G	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A WAMAN DET A A A A A A 1.564 304 GHz	Frequency	Start Freq	RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE TYPE DET 1.564 76	123456 A A A A A A A 3 GHz	
W RL RF 50.2 AC Start Freq 1.559000000 G	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A WAMAN DET A A A A A A 1.564 304 GHz	Auto Tune Center Freq	XI RL Start Freq 10 dB/div	RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE TYPE DET 1.564 76	123456 A A A A A A A 3 GHz	Auto Tune Center Freq
00 R.L PF 50.2 A.C 1 Start Freq 1.559000000 G 10 dB/div Ref -20.00 dBm	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A WAMAN DET A A A A A A 1.564 304 GHz	Auto Tune Center Freq 1.584500000 GHz Start Freq	10 dB/div	RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE TYPE DET 1.564 76	23450 33 GHz 4 dBm	Auto Tune Center Freq 1.58450000 GHz Start Freq
00 R.L PF 50.2 A.C 1 Start Freq 1.559000000 G 10 dB/div Ref -20.00 dBm	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A WAMAN DET A A A A A A 1.564 304 GHz	Auto Tune Center Freq 1.584500000 GHz Start Freq 1.559000000 GHz Stop Freq	10 dB/div -30 0 -50 0	RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE TYPE DET 1.564 76	123430 A A A A A A 3 GHz 4 dBm -5000 dBe	Auto Tune Center Freq 1.584500000 GHz Start Freq 1.559000000 GHz Stop Freq
00 RL RF 100 AC 1 Start Freq 1.559000000 G 10 dB/div Ref -20.00 dBm	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold: 100/100	09:43:22 AM Apr 18, 2018 TRACE 1 2 3 4 5 0 TYPE A WAMAN DET A A A A A A 1.564 304 GHz	Start Freq 1.584500000 GHz 1.559000000 GHz 1.51000000 GHz 1.51000000 GHz 1.510000000 GHz 1.510000000 GHz 5.000000 GHz	00 R.L. Start Freq 10 dB/div 10 dB/div 40.0	RF 50 Ω 1.559000	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO E: Pwr(RMS) 1/1	09:45:46 AM / TRACE TYPE DET 1.564 76	123430 A A A A A A 3 GHz 4 dBm -5000 dBe	Auto Tune Center Freq 1.58450000 GHz Start Freq 1.65900000 GHz Stop Freq 1.610000000 GHz 5.100000 GHz
Image: New York of the second secon	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	ALIONAUTO Ravg Type: Pwr(RMS Avg Hold: 100/100 Mkr1	00-43-22-04 Apr 18, 2010 TRACE 1 25 4 5 C TYPE A WARKAR 0 T A A A A A 1.564 304 GHz -49,811 dBm -40.00 (BRE -40.00	Start Freq 1.584500000 GHz 1.559000000 GHz Start Freq 1.610000000 GHz 5.100000 GHz CF Step 5.100000 MHz Man Freq Offset 0 Hz	Off R.L. Start Freq 10 dB/div 1 -0.0	Ref -20.00 o	pt SA AC CORREC 000 GHz PNO: IFGain	C Fast +⇒→ Tris	SENSE:INT	#Avg Type	ALIGNAUTO :: Pvrr(RMS) 111 Mkr1 ·	09:45:46 AM TRACE Ver Cert 1.564 76 -81.222	12340 3 GHz 4 dBm -000 dBe	Auto Tune Center Freq 1.584500000 GHz Start Freq 1.659000000 GHz Stop Freq 1.61000000 GHz 6.100000 MHz 6.100000 MHz Man Freq Offset
0 RL RF 100 AG 1 Start Freq 1.559000000 G 10 dB/dlv Ref -20.00 dBm	CORREC SENSE:INT HZ PNO: Fast +++ Trig: Free Run	AUGNAUTO Avg Type: Pwr(RMS Avg]Hold: 100100 Mkr1	00:43:22:04 Apr 18, 2018 TRACE 11 3:4 5:6 TYPE A VAAAA 1.564 304 GHz -49.811 dBm -40:00 dBe -40:00 dBe -40:	Start Freq 1.584500000 GHz 1.559000000 GHz Start Freq 1.610000000 GHz Stop Freq 1.610000000 GHz Stop Freq 1.610000000 GHz Stop Freq 1.61000000 GHz GF Step S.100000 MHz Auto Man Freq Offset 0 Hz	00 R.L. Start Freq 10 dB/div 10 dB/div 40.0	Ref -20.00 o	pt SA AC CORREC OOD CH2 PNO: IFGain IBM CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC PNO: IFGain CORREC IFGain CORREC IFGain CORREC IFGain CORREC IFGAIN IF	C Fast +⇒→ Tris	SEME INT	#Avg Type	ALIGNAUTO :: Pvrr(RMS) 1/1 Mkr1 ·	09:45:46 AM / TRACE TYPE DET 1.564 76	12 34 3 0 3 GHz 4 dBm 	Auto Tune Center Freq 1.584500000 GHz Start Freq 1.659000000 GHz Stop Freq 1.61000000 GHz 6.100000 MHz 6.100000 MHz Man Freq Offset



Plot of Band Edge for LTE 10 MHz (Band 12)



Plot of Band Edge for LTE 10 MHz (Band 13)



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

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

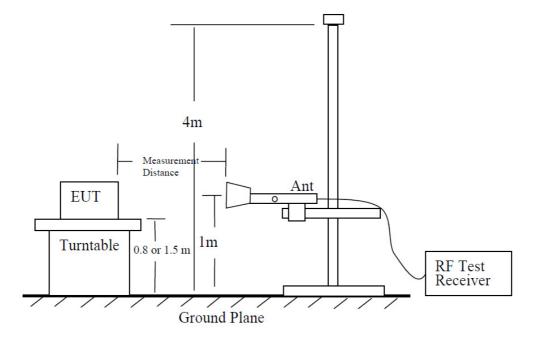
the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

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 Criti	cal Peaks Foun	ıd				

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

10. FREQUENCY STABILITY

FCC Rules

Test Requirements:

§ 2.1055 Measurements required: Frequency stability.

- (a) The frequency stability shall be measured with variation of ambient temperature as follows:
 - (1) From -30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

§ 27.54 Frequency stability.

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Procedures:

The measurement is performed in accordance with Section 5.6.4 and 5.6.5 of ANSI C63.26.

5.6.4 Frequency stability over variations in temperature

a) Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT.

b) If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible.c) Turn on the EUT, and tune it to the center frequency of the operating band.

d) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away).

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

e) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.
f) Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

g) Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber



temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 50 $^{\circ}$ C.

h) While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize.

i) Measure the frequency.

j) Switch off the EUT, but do not switch off the oscillator heater.

k) Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 10 $^{\circ}$ C.

I) Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be -30 °C. When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as f_L and f_H respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of f_L and f_H and the resulting frequencies must remain within the band.

m) Omitted

5.6.5 Frequency stability when varying supply voltage

a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away)

b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument.

d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

e) Measure the frequency.

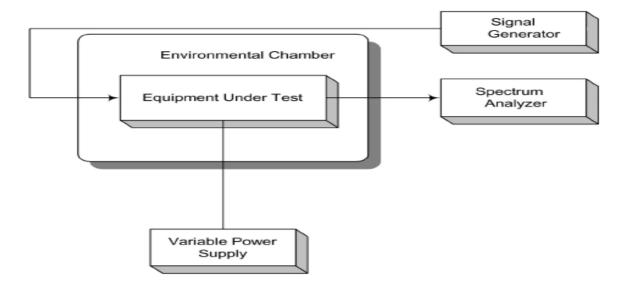
f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.

g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

h) Repeat the frequency measurement.

NOTE—For band-edge compliance, it can be required to make these measurements at the low and high channel of the operating band.

Test Setup:



Note:

1) The results of the frequency stability test shown above the frequency deviation measured values are very small and similar trend for each port, so we are attached only the worst case data.



Test Results:

- Band 12

Reference: voltage = -48 Vdc at 20°C, frequency = 707 MHz

Voltage (%)	Temp.(℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
	+20(Ref)	707 000 000	0.023	0.000	0.00000
	-30	707 000 000	0.164	0.140	0.00020
	-20	707 000 001	0.692	0.669	0.00095
	-10	707 000 000	0.298	0.274	0.00039
100%	0	707 000 000	0.026	0.002	0.00000
	+10	707 000 001	0.959	0.936	0.00132
	+30	706 999 999	-0.949	-0.972	-0.00138
	+40	707 000 000	-0.134	-0.158	-0.00022
	+50	707 000 000	0.369	0.346	0.00049
115%	+20	707 000 001	0.729	0.706	0.00100
85%	+20	707 000 001	0.900	0.877	0.00124

- Band 13

Reference: voltage = -48 Vdc at 20°C, frequency = 782 MHz

Voltage (%)	Temp.(℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
	+20(Ref)	782 000 000	0.068	0.000	0.00000
	-30	781 999 999	-0.565	-0.633	-0.00081
	-20	782 000 001	0.971	0.903	0.00116
	-10	782 000 000	-0.052	-0.120	-0.00015
100%	0	782 000 000	0.208	0.141	0.00018
	+10	782 000 000	0.212	0.144	0.00018
	+30	782 000 001	0.663	0.595	0.00076
	+40	782 000 000	-0.466	-0.534	-0.00068
	+50	782 000 000	-0.389	-0.457	-0.00058
115%	+20	782 000 000	0.445	0.377	0.00048
85%	+20	781 999 999	-0.641	-0.709	-0.00091