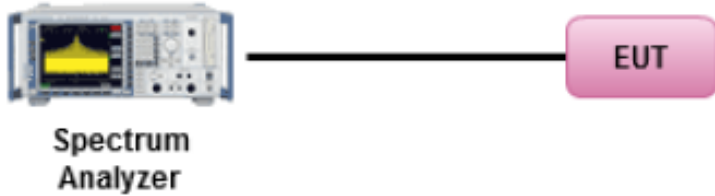


## 10.7 Frequency Stability

### Requirement(s):

Spec	Item	Requirement	Applicable
47 CFR 2.1055, 47 CFR	-	The frequency stability of the transmitter shall be maintained within $\pm 0.0001$ percent ( $\pm 1$ ppm) of the center frequency over a temperature variation of $-30^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of $20^{\circ}\text{C}$ .	<input checked="" type="checkbox"/>
47 CFR 2.1055, 47 CFR 24.135(a),	-	The frequency stability of the transmitter shall be maintained within $\pm 0.0001$ percent ( $\pm 1$ ppm) of the center frequency over a temperature variation of $-30^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of $20^{\circ}\text{C}$ .	<input checked="" type="checkbox"/>
47 CFR 2.1055, 47 CFR 27.54	-	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.	<input checked="" type="checkbox"/>
Test Setup			
Test Procedure	<p>The carrier frequency of the transmitter is measured at room temperature (<math>20^{\circ}\text{C}</math> to provide a reference).</p> <ol style="list-style-type: none"> <li>1. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.</li> <li>2. Frequency measurements are made at <math>10^{\circ}\text{C}</math> intervals ranging from <math>-30^{\circ}\text{C}</math> to <math>+50^{\circ}\text{C}</math>. A period of at least one half hour is provided to allow stabilization of the equipment at each temperature level.</li> </ol>		
Test Date	04/30/2015 10/26/2015 – 11/02/2015	Environmental condition	Temperature $23^{\circ}\text{C}$ Relative Humidity 48% Atmospheric Pressure 1008mbar
Remark	NONE		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test Data for LTE Band 4:

Voltage (%)	Power (VDC)	Temp. (°)	Frequency (KHz)	Frequency Error (Hz)	Deviation (ppm)
100%	48	20 (ref)	2132000.006	0	0.000
100%		0	2132000.008	2	0.001
100%		10	2132000.025	19	0.009
100%		30	2132000.024	18	0.008
100%		40	2132000.018	12	0.006
115%	55.2	20	2132000.019	13	0.006
85%	40.8	20	2132000.024	18	0.008
















Test Data for LTE Band 2:


Voltage (%)	Power (VDC)	Temp. (°)	Frequency (KHz)	Frequency Error (Hz)	Deviation (ppm)
100%	48	20 (ref)	1960000.016	0	0.000
100%		0	1960000.022	6	0.003
100%		10	1960000.023	7	0.004
100%		30	1960000.018	2	0.001
100%		40	1960000.026	10	0.005
115%	55.2	20	1960000.026	10	0.005
85%	40.8	20	1960000.025	9	0.005

## Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
<b>Radiated Emissions</b>						
EMI Test Receiver	ESIB 40	100179	06/03/2015	1 Year	06/03/2016	<input checked="" type="checkbox"/>
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/15/2015	1 Year	08/15/2016	<input checked="" type="checkbox"/>
Horn Antenna (1-18GHz)	3115	10SL0059	08/25/2015	1 Year	08/25/2016	<input checked="" type="checkbox"/>
Horn Antenna (18-40 GHz)	AH-840	101013	08/28/2015	1 Year	08/28/2016	<input checked="" type="checkbox"/>
Pre-Amplifier	LPA-6-30	11140711	02/19/2015	1 Year	02/19/2016	<input checked="" type="checkbox"/>
Microwave Preamplifier (18-40 GHz)	PA-840	181251	02/19/2015	1 Year	02/19/2016	<input checked="" type="checkbox"/>
3 Meters SAC	3M	N/A	08/08/2015	1 Year	08/08/2016	<input checked="" type="checkbox"/>
10 Meters SAC	10M	N/A	09/05/2015	1 Year	09/05/2016	<input checked="" type="checkbox"/>
<b>RF Conducted Measurement</b>						
Spectrum Analyzer	N9010A	MY51440112	08/20/2015	1 Year	08/20/2016	<input checked="" type="checkbox"/>
EMI Test Receiver	ESIB 40	100179	06/03/2015	1 Year	06/03/2016	<input checked="" type="checkbox"/>
Agilent Signal Generator	MXG N5182A	MY47071065	04/06/2015	1 Year	04/06/2016	<input checked="" type="checkbox"/>

## Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		<b>Radio &amp; Telecommunications Terminal Equipment:</b> EN45001 – EN ISO/IEC 17025
		<b>Electromagnetic Compatibility:</b> EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
HongKong OFCA		(Phase II) OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		<b>Radio:</b> Scope A – All Radio Standard Specification in Category I
		<b>Telecom:</b> CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		<p><b>Radio</b> : A1. Terminal equipment for purpose of calling</p> <p><b>Telecom</b> : B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p>
Korea CAB Accreditation		<p><b>EMI</b>: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI <b>EMS</b>: KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS</p> <p><b>Radio</b>: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68</p> <p><b>Telecom</b>: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4</p>
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		<p>R-3083: Radiation 3 meter site</p> <p>C-3421: Main Ports Conducted Interference Measurement</p> <p>T-1597: Telecommunication Ports Conducted Interference Measurement</p>
Australia CAB Recognition		<p><b>EMC</b>: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4</p> <p><b>Radiocommunications</b>: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771</p> <p><b>Telecommunications</b>: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1</p>
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2