FCC RADIO TEST REPORT

Applicant.....	: ICE Cobotics (Guangdong) Company Limited
Address.....	: Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong Province, P.R. China
Manufacturer.....	: ICE Cobotics (Guangdong) Company Limited
Address.....	: Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong Province, P.R. China
Factory.....	: ICE Cobotics (Guangdong) Company Limited
Address.....	: Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong Province, P.R. China
Product Name.....	: 4G Modem
Brand Name.....	: ICE COBOTICS
Model No.	: ICE400160-MODEM
FCC ID.....	: 2AWHZ-ICE400160
Measurement Standard.....	: 47 CFR FCC Part 2 / Part 22(H) / Part 24(E) / Part 27 (C)
Receipt Date of Samples....	: November 31, 2021
Date of Tested.....	: December 01, 2021 to May 11, 2022
Date of Report.....	: May 11 2022

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.

Prepared by

Jenny Liu / Project Engineer

Approved by

Iori Fan / Authorized Signatory

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Table of Contents

Revision History

Report Number	Description	Issued Date
NTC2111312FV00	Initial Issue	2022-05-11

1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§2.1046	Conducted Output Power	PASS	Reporting Only
§22.913 (a) (5)	Effective Radiated Power (ERP) (Band 5 / 26)	PASS	---
§27.50 (b) (10) §27.50 (c) (10)	Effective Radiated Power (ERP) (Band 12 / 13)	PASS	---
§24.232 (c) §27.50 (h) (2)	Equivalent Isotropic Radiated Power (EIRP) (Band 2 / 7 / 25 / 41)	PASS	---
§27.50 (d) (4)	Equivalent Isotropic Radiated Power (EIRP) (Band 4)	PASS	---
§24.232 (d)	Peak-to-Average Ratio	PASS	---
§2.1047	Modulation Characteristics	N/A	---
§2.1049	Occupied Bandwidth	PASS	Reporting Only
§2.1051 §22.917 (a) §24.238 (a) §27.53 (c) (2) (4) §27.53 (g) §27.53 (h) §27.53 (m)	Band Edge (Band 2 / 4 / 5 / 7 / 12 / 13 / 25 / 26 / 41)	PASS	---
§2.1051 §22.917 (a) §24.238 (a) §27.53 (c) (2) §27.53 (g) §27.53 (h) §27.53 (m)	Spurious Emission at Antenna Terminal (Band 2 / 4 / 5 / 7 / 12 / 13 / 25 / 26 / 41)	PASS	---

§2.1053 §22.917 (a) §24.238 (a) §27.53 (c) (2) §27.53 (f) §27.53 (g) §27.53 (h) §27.53 (m)	Field Strength of Spurious Radiation (Band 2 / 4 / 5 / 7 / 12 / 13 / 25 / 26 / 41)	PASS	---
§2.1055 §22.355 §24.235 §27.54	Frequency Stability (Band 2 / 4 / 5 / 7 / 12 / 13 / 25 / 26 / 41)	PASS	---

2. General Description of EUT

Product Information	
Product Name:	4G Modem
Main Model Name:	ICE400160-MODEM
Additional Model Name:	N/A
Model Difference:	N/A
S/N:	40016021500002
Brand Name:	ICE COBOTICS
Hardware Version:	V4.3
Software Version:	V1.0.10
IMEI:	8601950534005061
Rating:	DC 12-48V / 200mA (Typical DC 12V)
Typical Arrangement:	Tabletop
I/O Port:	Refer to the user manual
Accessories Information	
Adapter:	N/A
Cable:	N/A
Other:	N/A
Additional Information	
Note:	N/A
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Frequency Range:	**TX:** LTE Band 2: 1850.7 ~ 1909.3 MHz LTE Band 4: 1710.7 ~ 1754.3 MHz LTE Band 5: 824.7 ~ 848.3 MHz LTE Band 7: 2502.5 ~ 2567.5 MHz LTE Band 12: 699.7 ~ 715.3 MHz LTE Band 13: 779.5 ~ 784.5 MHz LTE Band 25: 1850.7 ~ 1914.3 MHz LTE Band 26: 824.7 ~ 848.3 MHz LTE Band 41: 2498.5 ~ 2687.5 MHz **RX:** LTE Band 2: 1930.7 ~ 1989.3 MHz LTE Band 4: 2110.7 ~ 2154.3 MHz LTE Band 5: 869.7 ~ 893.3 MHz LTE Band 7: 2622.5 ~ 2687.5 MHz LTE Band 12: 729.7 ~ 745.3 MHz LTE Band 13: 748.5 ~ 753.5 MHz LTE Band 25: 1930.7 ~ 1994.3 MHz LTE Band 26: 869.7 ~ 893.3 MHz LTE Band 41: 2498.5 ~ 2687.5 MHz
Modulation Type:	QPSK / 16QAM
Antenna Type:	External / PIFA
Antenna Gain:	LTE Band 2: 2.81 dBi LTE Band 4: 3.89 dBi LTE Band 5: 0.22 dBi LTE Band 7: 1.70 dBi LTE Band 12: -1.38 dBi LTE Band 13: -1.18 dBi LTE Band 25: 2.81 dBi LTE Band 26: 0.22 dBi LTE Band 41: 1.70 dBi

Bandwidth	LTE Band 2: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz / 15 MHz / 20 MHz LTE Band 4: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz / 15 MHz / 20 MHz LTE Band 5: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz LTE Band 7: 5 MHz / 10 MHz / 15 MHz / 20 MHz LTE Band 12: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz LTE Band 13: 5 MHz / 10 MHz LTE Band 25: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz / 15 MHz / 20 MHz LTE Band 26: 1.4 MHz / 3 MHz / 5 MHz / 10 MHz / 15 MHz LTE Band 41: 5 MHz / 10 MHz / 15 MHz / 20 MHz
Max. ERP/EIRP:	LTE Band 2: 26.84 dBm LTE Band 4: 28.09 dBm LTE Band 5: 23.24 dBm LTE Band 7: 25.58 dBm LTE Band 12: 21.28 dBm LTE Band 13: 21.29 dBm LTE Band 25: 27.66 dBm LTE Band 26: 22.87 dBm LTE Band 41: 24.53 dBm
Remark:	N/A

3. Type of Emission

Band	BW (MHz)	Emission Designator (99% OBW)	
		QPSK	16QAM
LTE Band 2	1.4	1M11G7D	1M10W7D
	3	2M71G7D	2M71W7D
	5	4M49G7D	4M49W7D
	10	8M98G7D	8M97W7D
	15	13M5G7D	13M4W7D
	20	17M9G7D	17M9W7D
LTE Band 4	1.4	1M11G7D	1M11W7D
	3	2M71G7D	2M71W7D
	5	4M48G7D	4M49W7D
	10	8M97G7D	8M98W7D
	15	13M4G7D	13M4W7D
	20	17M9G7D	17M9W7D
LTE Band 5	1.4	1M11G7D	1M11W7D
	3	2M71G7D	2M71W7D
	5	4M49G7D	4M48W7D
	10	9M04G7D	9M04W7D
LTE Band 7	5	4M49G7D	4M48W7D
	10	8M95G7D	8M95W7D
	15	13M4G7D	13M5W7D
	20	17M9G7D	17M9W7D

Band	BW (MHz)	Emission Designator (99% OBW)	
		QPSK	16QAM
LTE Band 12	1.4	1M11G7D	1M11W7D
	3	2M71G7D	2M71W7D
	5	4M47G7D	4M48W7D
	10	9M05G7D	9M03W7D
LTE Band 13	5	4M48G7D	4M48W7D
	10	9M06G7D	9M07W7D
LTE Band 25	1.4	1M11G7D	1M10W7D
	3	2M69G7D	2M69W7D
	5	4M49G7D	4M48W7D
	10	9M01G7D	9M01W7D
	15	13M5G7D	13M4W7D
	20	17M9G7D	17M8W7D
LTE Band 26	1.4	1M10G7D	1M10W7D
	3	2M69G7D	2M69W7D
	5	4M48G7D	4M48W7D
	10	9M04G7D	9M03W7D
	15	13M5G7D	13M4W7D
LTE Band 41	5	4M49G7D	4M47W7D
	10	9M06G7D	9M05W7D
	15	13M5G7D	13M5W7D
	20	17M9G7D	17M9W7D

4. Test Channels and Modes Detail

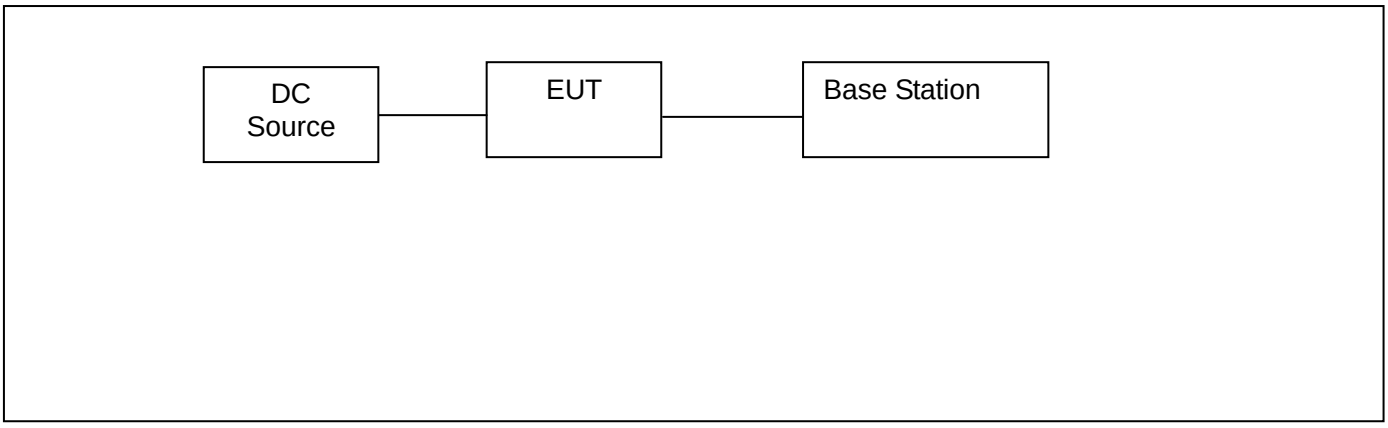
LTE Bands	Bandwidth	Channel		Frequency (MHz)	Modulation	Remark
Band 2	1.4 MHz	Low	18607	1850.7	QPSK 16QAM	---
		Mid	18900	1880.0		
		High	19193	1909.3		
	3.0 MHz	Low	18615	1851.5		
		Mid	18900	1880.0		
		High	19185	1908.5		
	5 MHz	Low	18625	1852.5		
		Mid	18900	1880.0		
		High	19175	1907.5		
	10 MHz	Low	18650	1855.0		
		Mid	18900	1880.0		
		High	19150	1905.0		
	15 MHz	Low	18675	1857.5		
		Mid	18900	1880.0		
		High	19125	1902.5		
	20 MHz	Low	18700	1860.0		
		Mid	18900	1880.0		
		High	19100	1900.0		
Band 5	1.4 MHz	Low	20407	824.7	QPSK 16QAM	
		Mid	20525	836.5		
		High	20643	848.3		
	3 MHz	Low	20415	825.5		
		Mid	20525	836.5		
		High	20635	847.5		
	5 MHz	Low	20425	826.5		
		Mid	20525	836.5		
		High	20625	846.5		
	10 MHz	Low	20450	829.0		
		Mid	20525	836.5		
		High	20600	844.0		

LTE Bands	Bandwidth	Channel		Frequency (MHz)	Modulation	Remark
Band 4	1.4 MHz	Low	19957	1710.7	QPSK 16QAM	---
		Mid	20175	1732.5		
		High	20393	1754.3		
	3 MHz	Low	19965	1711.5		
		Mid	20175	1732.5		
		High	20385	1753.5		
	5 MHz	Low	19975	1712.5		
		Mid	20175	1732.5		
		High	20375	1752.5		
	10 MHz	Low	20000	1715.0		
		Mid	20175	1732.5		
		High	20350	1750.0		
	15 MHz	Low	20025	1717.5		
		Mid	20175	1732.5		
		High	20325	1747.5		
	20 MHz	Low	20050	1720.0		
		Mid	20175	1732.5		
		High	20300	1745.0		
Band 7	5 MHz	Low	20775	2502.5	QPSK 16QAM	
		Mid	21100	2535.0		
		High	21425	2567.5		
	10 MHz	Low	20800	2505.0		
		Mid	21100	2535.0		
		High	21400	2565.0		
	15 MHz	Low	20825	2507.5		
		Mid	21100	2535.0		
		High	21375	2562.5		
	20 MHz	Low	20850	2510.0		
		Mid	21100	2535.0		
		High	21350	2560.0		

LTE Bands	Bandwidth	Channel		Frequency (MHz)	Modulation	Remark
Band 12	1.4 MHz	Low	23017	699.7	QPSK 16QAM	---
		Mid	23095	707.5		
		High	23173	715.3		
	3 MHz	Low	23025	700.5		
		Mid	23095	707.5		
		High	23165	714.5		
	5 MHz	Low	23035	701.5		
		Mid	23095	707.5		
		High	23155	713.5		
	10 MHz	Low	23060	704.0		
		Mid	23095	707.5		
		High	23130	711.0		
Band 13	5 MHz	Low	23205	779.5	QPSK 16QAM	
		Mid	23230	782.0		
		High	23255	784.5		
	10 MHz	Low	---	---		
		Mid	23230	782.0		
		High	---	---		
Band 26	1.4 MHz	Low	26797	824.7	QPSK 16QAM	---
		Mid	26915	836.5		
		High	27033	848.3		
	3 MHz	Low	26805	825.5		
		Mid	26915	836.5		
		High	27025	847.5		
	5 MHz	Low	26815	826.5		
		Mid	26915	836.5		
		High	27015	846.5		
	10 MHz	Low	26840	829.0		
		Mid	26915	836.5		
		High	26990	844.0		
	15 MHz	Low	26865	831.5		
		Mid	26915	836.5		
		High	26965	841.5		

LTE Bands	Bandwidth	Channel		Frequency (MHz)	Modulation	Remark
Band 25	1.4 MHz	Low	26047	1850.7	QPSK 16QAM	---
		Mid	26340	1880.0		
		High	26683	1914.3		
	3 MHz	Low	26055	1851.5		
		Mid	26340	1880.0		
		High	26675	1913.5		
	5 MHz	Low	26065	1852.5		
		Mid	26340	1880.0		
		High	26665	1912.5		
	10 MHz	Low	26090	1855.0		
		Mid	26340	1880.0		
		High	26640	1910.0		
	15 MHz	Low	26115	1857.5		
		Mid	26340	1880.0		
		High	26615	1907.5		
	20 MHz	Low	26140	1860.0		
		Mid	26340	1880.0		
		High	26590	1905.0		
Band 41	5 MHz	Low	39675	2495.5	QPSK 16QAM	
		Mid	40620	2593.0		
		High	41565	2687.5		
	10 MHz	Low	39700	2501.0		
		Mid	40620	2593.0		
		High	41540	2685.0		
	15 MHz	Low	39725	2503.5		
		Mid	40620	2593.0		
		High	41515	2682.5		
	20 MHz	Low	39750	2506.0		
		Mid	40620	2593.0		
		High	41490	2680.0		
Note: All modes and data rates and positions were considered and investigated respectively by performing full tests, and only the worst data were recorded and reported.						

5. Configuration of EUT



6. Modification of EUT

No modifications are made to the EUT during all test items.

7. Description of Support Device

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1	Base Station	Rohde & Schwarz	CMW 500	149004	---	Provided by the Lab
2	DC Source	Maynuo	MY8811	N/A	---	Provided by the Lab

8. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 Listed by CNAS, August 13, 2018 The Certificate Registration Number is L5795. The Laboratory has been assessed and proved to be in compliance with ISO17025 Listed by A2LA, November 01, 2017 The Certificate Registration Number is 4429.01 Listed by FCC, November 06, 2017 Test Firm Registration Number is 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number is 46405-9743A The CAB identifier number is CN0015
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

9. Applicable Standards and References

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Test Standards:

47 CFR Part 2, 22(H), 24(E), 27(C)

ANSI C63.26-2015

References Test Guidance:

FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

10. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

11. Test Environment Detail

Air Pressure:	98 ~ 102 kPa		
Relative Humidity:	30~75%		
Condition	**Temperature (℃)**	**Voltage (V)**	**Note**
Normal	20~25	12V / 48V	N.T. / N.V.
Extreme	-30	10.8	L.T. / L.V.
		52.8	L.T. / H.V.
	50	10.8	H.T. / L.V.
		52.8	H.T. / H.V.

Where

N.T. = Normal Temperature

L.T. = Low Temperature

H.T. = High Temperature

N.V.= Normal Voltage

L.V. = Low Voltage

H.V. = High Voltage

Note: For normal voltage, only the worst case was recorded.

12. Test Conditions

No.	Test Item	Test Conditions	Tested by	Remarks
1.	Conducted Output Power	N.V. / N.T.	Sean Yuan	See note 1
2.	Effective Radiated Power (ERP)	N.V. / N.T.	Sean Yuan	See note 1
3.	Equivalent Isotropic Radiated Power (EIRP)	N.V. / N.T.	Sean Yuan	See note 1
4.	Peak-to-Average Ratio	N.V. / N.T.	Sean Yuan	See note 1
5.	Modulation Characteristics	N.V. / N.T.	Sean Yuan	See note 1
6.	Occupied Bandwidth	N.V. / N.T.	Sean Yuan	See note 1
7.	Band Edge	N.V. / N.T.	Sean Yuan	See note 1
8.	Spurious Emission at Antenna Terminal	N.V. / N.T.	Sean Yuan	See note 1
9.	Field Strength of Spurious Radiation	N.V. / N.T.	Sean Yuan	See note 1
10.	Frequency Stability vs. Temperature & Voltage	N.V. / N.T. L.V. / L.T. H.V. / L.T. L.V. / H.T. H.V. / H.T.	Sean Yuan	See note 1

Note:

1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: 15~35℃, 30~70%, 86~106kPa.

13. Sample Calculations

For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.

Offset = RF cable loss + attenuator factor

For example:

RF Cable loss = 3.0 dB

Attenuator factor = 24.0 dB

Offset = 3.0 + 24.0 dB = 27.0 dB

14. Measurement Uncertainty

No.	Test Item	Uncertainty	Remarks
1.	Radio Frequency	±1.0 x 10-6	---
2.	Conducted RF Power	± 0.9dB	---
3.	Conducted Spurious emissions	± 1.2dB	---
5.	Radiated Emissions (30MHz- 1GHz)	±4.68dB	---
6.	Radiated Emissions (1Hz - 40 GHz)	±5.12dB	---
7.	Temperature	±0.5℃	---
8.	Humidity	±2%	---
9.	DC Voltages	±1%	---

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

15. Test Items and Results

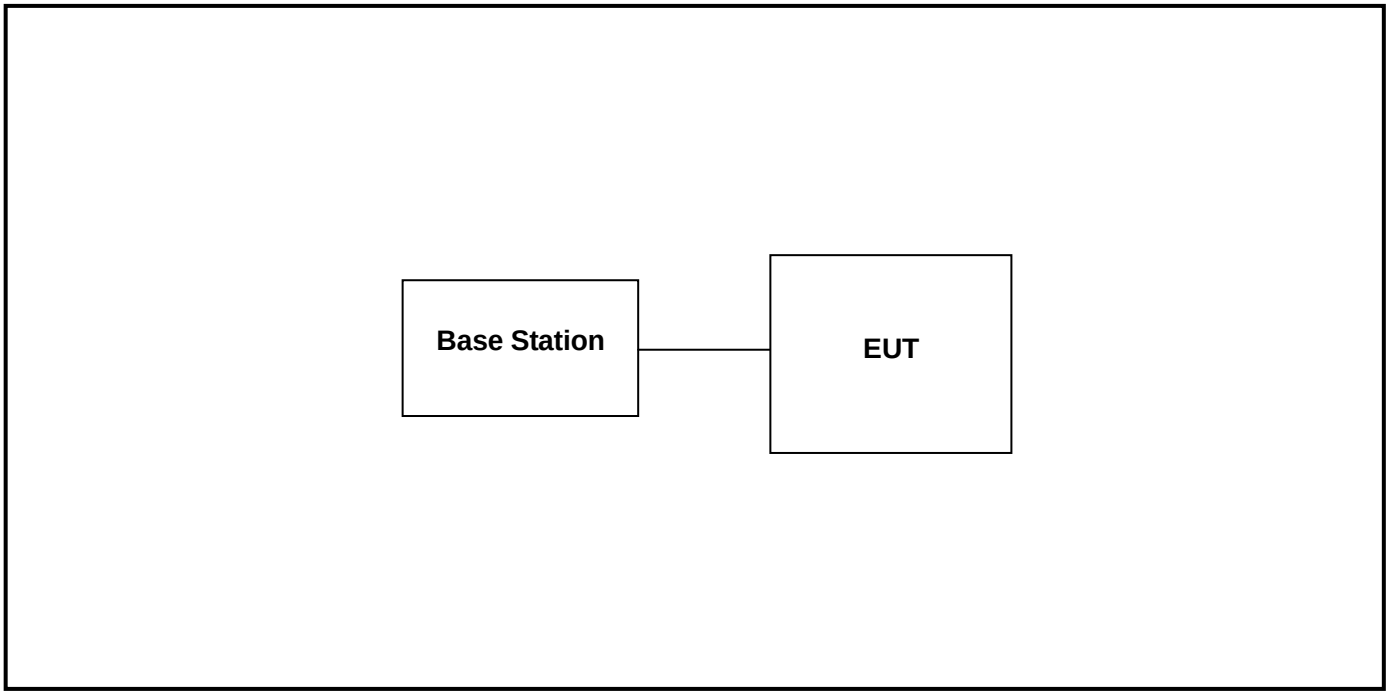
15.1 Conducted Output Power and ERP/EIRP Measurement

LIMIT

According to the requirements of FCC PART 22 and 24, the limits are as follows:

Rules	Items	Limits
§2.1046	Conducted Output Power	N/A
§22.913 (a) (5)	ERP	< 7 W
§27.50 (b) (10) §27.50 (c) (10)	ERP	< 3 W
§24.232 (c) §27.50 (h) (2)	EIRP	< 2 W
§27.50 (d) (4)	EIRP	< 1 W

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. A base station simulator was used to establish communication with the EUT.

b. Set the parameters to enforce EUT transmitting at the maximum power.

c. Select lowest, middle and highest channels for each band and different modulation.

d. Record the measured power in the radio frequency on the transmitter output terminals.

According to KDB 412172 D01 Power Approach,

EIRP = PT + GT – LC, ERP = EIRP – 2.15

where,

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

TEST RESULTS

PASS

Please refer to the Appendix I (in separate documents) of the report.

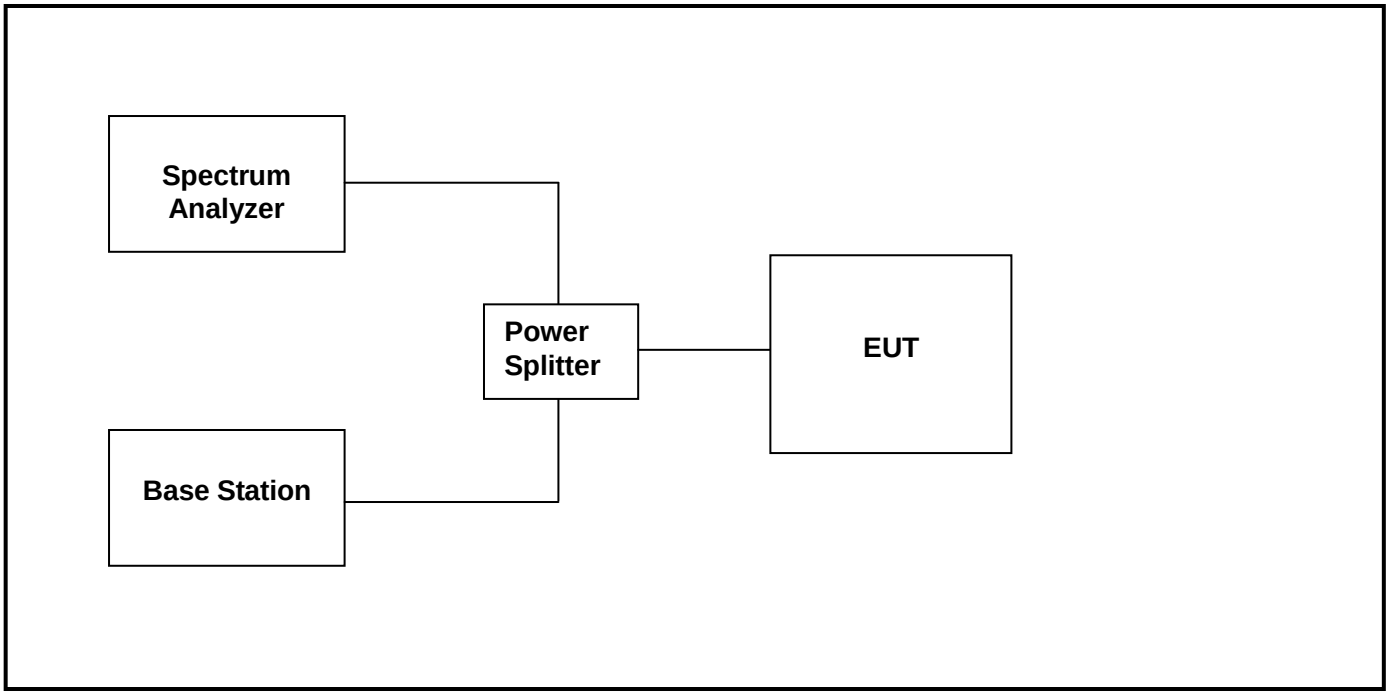
15.2 Peak-to-Average Ratio Measurement

LIMIT

According to the requirements of FCC PART 24, the limit is as follows:

Rules	Items	Limits
§24.232 (d)	Peak-to-average	<13 dB

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. Connect the EUT to spectrum analyzer and base station via a power splitter.

b. Set test equipment and EUT according to ANSI C63.26 Section 5.2.3.4.

c. Set the spectrum analyzer to CCDF option.

d. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

e. Record the deviation as peak-to-average ratio.

TEST RESULTS

PASS

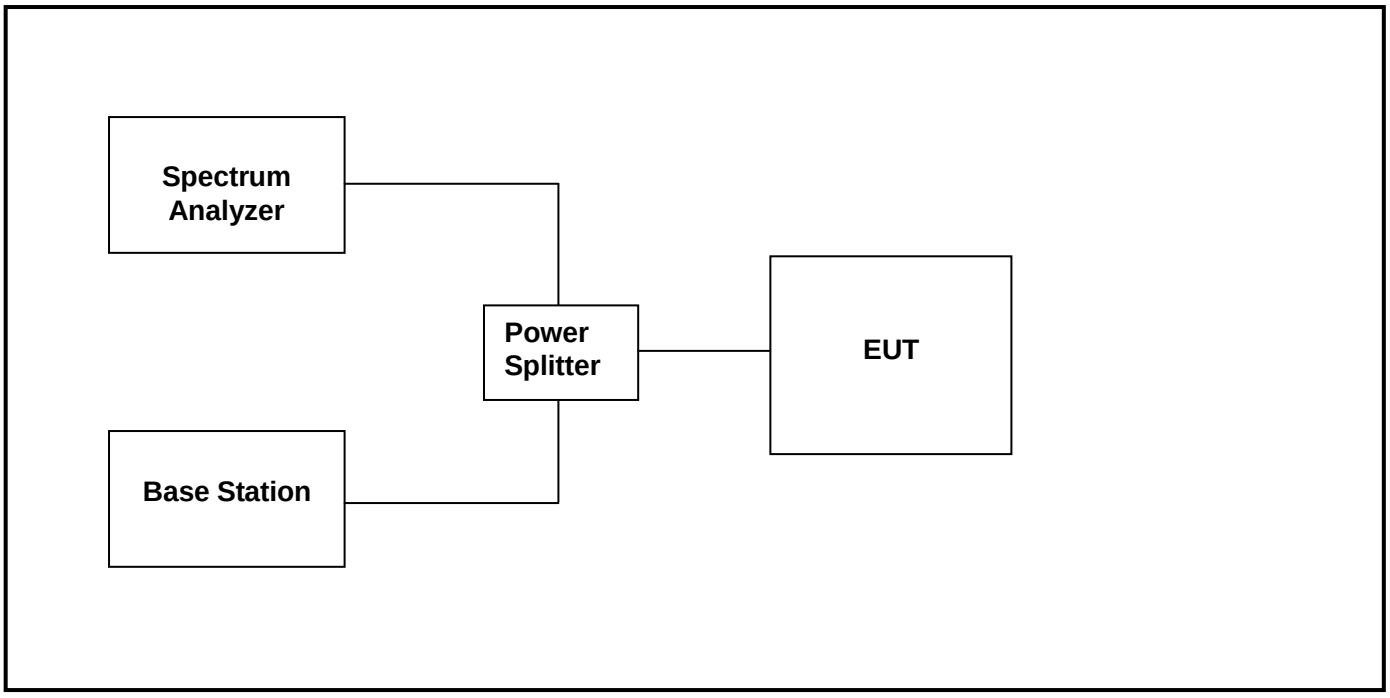
Please refer to the Appendix I (in separate documents) of the report.

15.3 Occupied Bandwidth Measurement

LIMIT

According to the requirements of FCC PART 2, section 1047, there are no limits specified.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. Connect the EUT to spectrum analyzer and base station via a power splitter.

b. Set the center frequency of the spectrum analyzer to the nominal EUT channel center frequency. The span range of the spectrum analyzer was set to between two and five times the anticipated OBW.

c. Set the RBW of the spectrum analyzer to 1-5% of the anticipated OBW, and set the VBW at least 3 times the RBW.

d. Set the detector of the spectrum analyzer to peak, and the trace mode to max hold,

e. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)

f. Determine the “-26 dB down amplitude” as equal to (Reference Value - X).

g. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step e. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.

h. Use the 99 % power bandwidth function of the spectrum analyzer to measure the 99 % power bandwidth.

i. Record the measured 99 % and - 26 dB bandwidth.

TEST RESULTS

PASS

Please refer to the Appendix I (in separate documents) of the report.

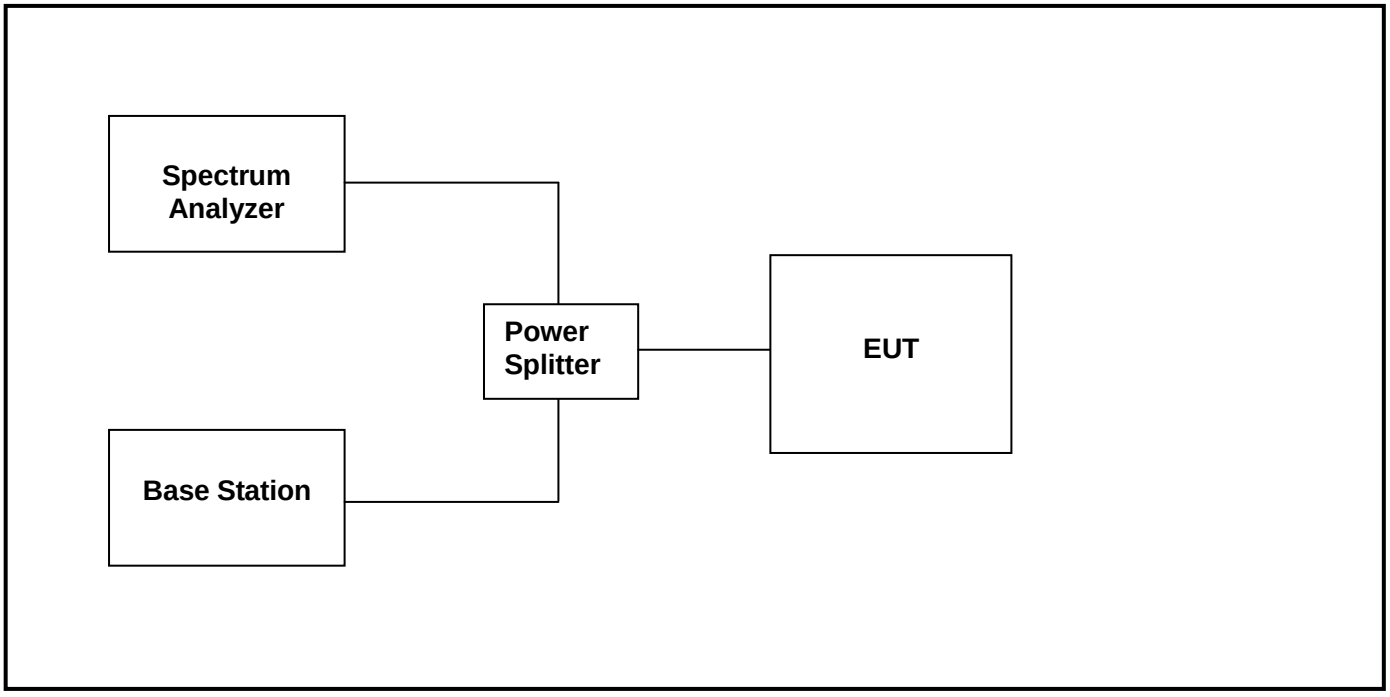
15.4 Band Edge Measurement

LIMIT

According to the requirements of §22.917 (a), §24.238 (a), §27.53 (c) (2) (4) and §27.53 (g) the power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

According to the requirements of §27.53 (m) (4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. Connect the EUT to spectrum analyzer and base station via a power splitter.

b. Set the test equipment and EUT according to ANSI C63.26 section 5.7.

c. Record the band edges of low and high channels for the highest RF powers measured.

TEST RESULTS

PASS

Please refer to the Appendix I (in separate documents) of the report.

15.5 Spurious Emissions at Antenna Terminal Measurement

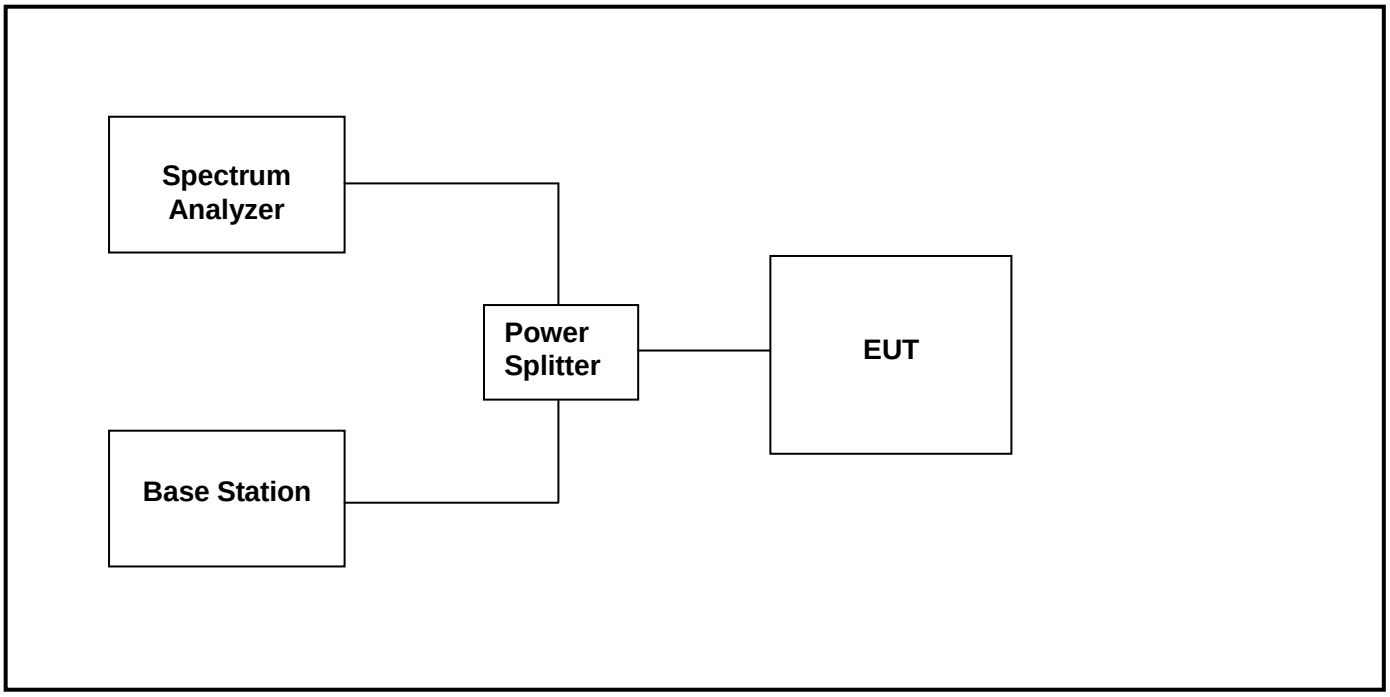
LIMIT

According to the requirements of §22.917 (a), §24.238 (a), §27.53 (c) (2) and §27.53 (g), the power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

According to the requirements of §27.53 (m) (4), the power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. Connect the EUT to spectrum analyzer and base station via a power splitter.

b. Set the test equipment and EUT according to ANSI C63.26 section 5.7.

c. The middle channel for the highest RF power within the transmitting frequency was measured.

d. The conducted spurious emission for the whole frequency range was taken.

e. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

f. Record the conducted spurious emission measured.

TEST RESULTS

PASS

Please refer to the Appendix I (in separate documents) of the report.

15.6 Field Strength of Spurious Radiation Measurement

LIMIT

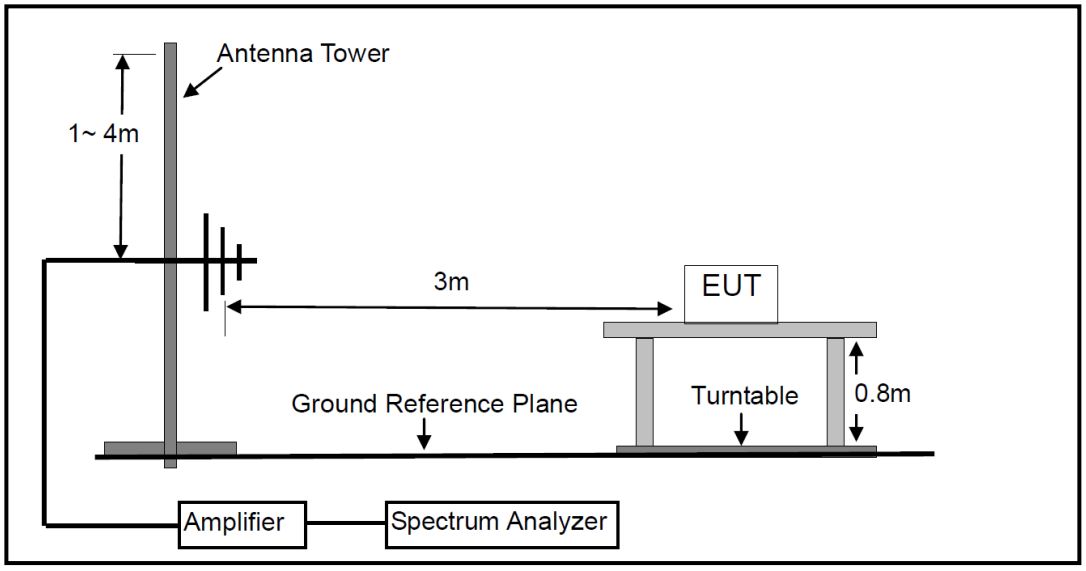
According to the requirements of §22.917 (a) , §24.238 (a), §27.53 (c) (2), §27.53 (g) and §27.53 (h), the power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

According to the requirements of §27.53 (m) (4), the power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

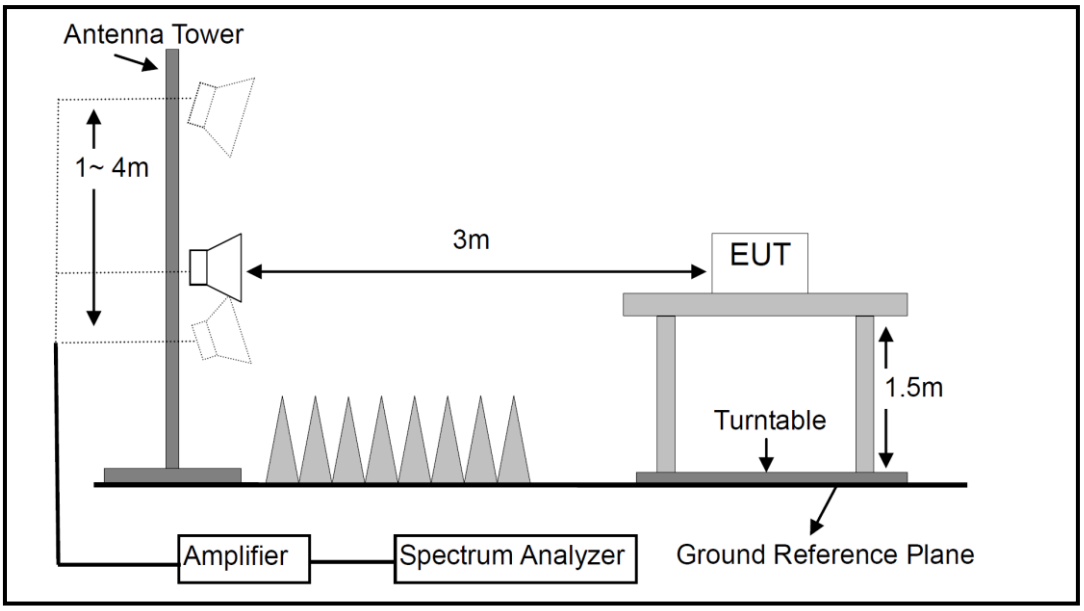
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

BLOCK DIAGRAM OF TEST SETUP

For 30-1000MHz



For Above 1GHz



TEST PROCEDURES

a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.

b. For the radiated emission test above 1GHz:

c. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

d. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

f. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.

g. An antenna was substituted in place of the EUT and was driven by a signal generator.

h. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.

i. Record the output power at antenna port.

j. Repeat above steps f and g for another polarization.

k. Calculate power in dBm by the following formula:

EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP – 2.15

l. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

m. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worst case, and it was recorded in the report.

n. Repeat above procedures until all frequencies measured was complete.

TEST RESULTS

PASS

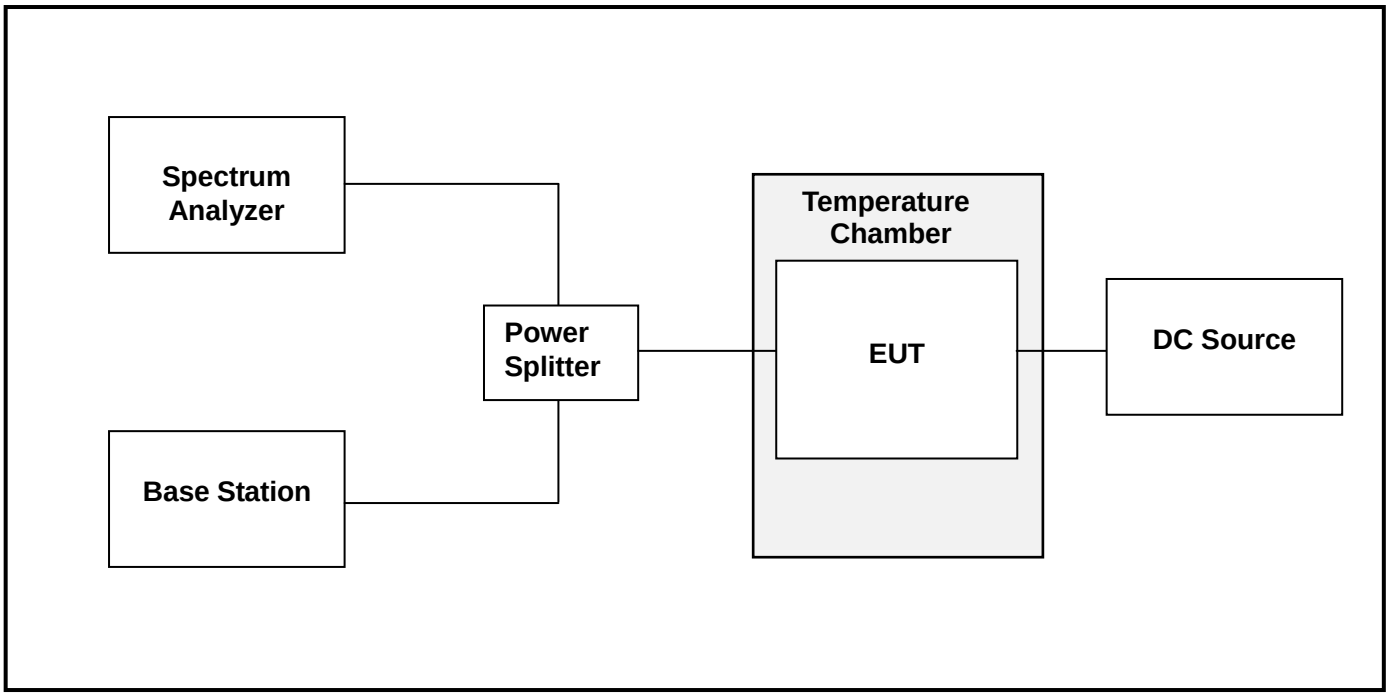
Please refer to the Appendix I (in separate documents) of the report.

15.7 Frequency Stability Measurement

LIMIT

According to the requirements of §22.355 and §24.235, the frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. Place the EUT in the temperature chamber and connect it to spectrum analyzer and base station via a power splitter.

b. Temperature variation:

With power OFF, the temperature was decreased to -30℃ and the EUT was stabilized before testing.

Power was applied and the maximum change in frequency was recorded within one minute.

With Power OFF, the temperature was raised in 10℃ step up to 50℃.

The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

c. Voltage variation:

With temperature 20±5℃，the power supply voltage was varied from 85% to 115% of the nominal value.

d. Record the frequency variation measured.

TEST RESULTS

PASS

Please refer to the Appendix I (in separate documents) of the report.

16. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 13, 2022	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2022	2 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 13, 2022	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 13, 2022	1 Year
5.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101094	Mar. 13, 2022	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA9170	9170-172	Mar. 23, 2022	2 Year
7.	Power Sensor	DARE	RPR3006W	15I00041SNO64	Mar. 13, 2022	1 Year
8.	Communication Tester	Rohde & Schwarz	CMW500	149004	Mar. 13, 2022	1 Year
9.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2022	2 Year
10.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 13, 2022	1 Year
11.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 13, 2022	1 Year
12.	Temperature & Humidity Chamber	WANSHUN	SS-HWHS-80	N/A	Mar. 13, 2022	1 Year
13.	DC Source	Maynuo	MY8811	N/A	Mar. 13, 2022	1 Year
14.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
20.	Chamber	SAEMC	9*7*7m	N/A	Apr. 21, 2021	2 Year
21.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A
22.	Test Software	MWRF	MWRF_V1.0	N/A	N/A	N/A

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.

---End---