

TEST REPORT

Application No.: SZCR2209003394AT
Applicant: Askey Computer Corp
Address of Applicant: 10F, No. 119, JIANKANG RD. ZHONGHE DIST. NEW TAIPEI CITY, 23585 Taiwan
Manufacturer: Askey Computer Corp
Address of Manufacturer: 10F, No. 119, JIANKANG RD. ZHONGHE DIST. NEW TAIPEI CITY, 23585 Taiwan
Factory: Askey Technology (Jiangsu) Ltd.
Address of Factory: No. 1388, Jiao Tong Road, WuJiang Economic-Technological Development Area, Jiangsu Province, P.R.C.

Equipment Under Test (EUT):
EUT Name: 5G USB Dongle
Model No.: NDQ1300-SA
Trade Mark: ASKEY, Dynalink
FCC ID: H8NNDQ1300-1
Standard(s) : 47 CFR Part 2
47 CFR Part 96
47 CFR Part 27

Date of Receipt: 2022-09-30
Date of Test: 2023-05-10 to 2023-07-03
Date of Issue: 2023-07-11

Test Result:	Pass
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
EMC Laboratory Manager



Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023-07-11		Original

Authorized for issue by:			
		<i>Benson Wang</i>	
		Benson Wang/Project Engineer	
		<i>Eric Fu</i>	
		Eric Fu/Reviewer	



2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Output Power Data & Maximum Power Spectral Density	§2.1046 §96.41(b) §27.50(j) §27.50(k)	EIRP≤ 23dBm/10MHz (n48) EIRP≤ 1W n77(3450-3550MHz & 3700-3980); n78(3450-3550MHz & 3700-3800)	PASS
Peak-Average Ratio	§96.41(g) §27.50(j) §27.50(k)	≤13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051 §96.41(e) §27.53(l) §27.53(n)	Refer to clause 6.4	PASS
Spurious emissions at antenna terminals	§2.1051 §96.41(e) §27.53(l) §27.53(n)	Refer to clause 6.5	PASS
Field strength of spurious radiation	§2.1051 §96.41(e) §27.53(l) §27.53(n)	Refer to clause 6.6	PASS
Frequency stability	§2.1055 §27.54	≤ ±2.5ppm.	PASS



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3 Contents

	Page
1 Cover Page	1
2 Test Summary.....	3
3 Contents	4
4 General Information.....	6
4.1 Details of E.U.T.	6
4.2 Test Frequency	7
4.3 Test Environment	10
4.4 Description of Support Units.....	10
4.5 Measurement Uncertainty	10
4.6 Test Location	11
4.7 Test Facility.....	11
4.8 Deviation from Standards.....	11
4.9 Abnormalities from Standard Conditions.....	11
5 Equipment List	12
6 Radio Spectrum Matter Test Results.....	14
6.1 Effective (Isotropic) Radiated Output Power & Maximum Power Spectral Density	14
6.1.1 E.U.T. Operation	14
6.1.2 Test Setup Diagram	14
6.1.3 Measurement Data.....	14
6.2 Peak-Average Ratio	15
6.2.1 E.U.T. Operation	15
6.2.2 Test Setup Diagram	15
6.2.3 Measurement Data.....	15
6.3 Bandwidth.....	16
6.3.1 E.U.T. Operation	16
6.3.2 Test Setup Diagram	16
6.3.3 Measurement Data.....	16
6.4 Band Edge Compliance.....	17
6.4.1 E.U.T. Operation	17
6.4.2 Test Setup Diagram	17
6.4.3 Measurement Data.....	18
6.5 Spurious emissions at antenna terminals.....	18
6.5.1 E.U.T. Operation	18
6.5.2 Test Setup Diagram	19
6.5.3 Measurement Data.....	19
6.6 Field strength of spurious radiation	20
6.6.1 E.U.T. Operation	20
6.6.2 Test Setup Diagram	21
6.6.3 Measurement Procedure and Data.....	22
6.7 Frequency stability	27



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SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR220900339402

Page: 5 of 29

6.7.1	E.U.T. Operation	27
6.7.2	Test Setup Diagram	27
6.7.3	Measurement Data.....	27
6.8	Modulation Characteristics	28
6.8.1	E.U.T. Operation	28
6.8.2	Test Setup Diagram	28
6.8.3	Measurement Data.....	28
7	Test Setup Photo	29
8	EUT Constructional Details (EUT Photos).....	29



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SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch, EMC Laboratory.

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

4 General Information

4.1 Details of E.U.T.

Power supply:	Powered by Type-c port				
Cable:	Type-c cable: 8cm unshielded/shielded				
SA Frequency Band:	NR Band	Uplink (MHz)		Downlink (MHz)	
	77	3450-3550		3450-3550	
		3700-3980		3700-3980	
	78	3450-3550		3450-3550	
3700-3800		3700-3800			
48	3550-3700		3550-3700		
3GPP Release Version:	15				
SA UL MIMO Information:	n77, n78, n48				
Type of Modulation:	n77, n78: DFT-s-OFDM: QPSK\64QAM\256 QAM CP-OFDM: QPSK\64QAM\256 QAM				
	n48: DFT-s-OFDM: π /2-BPSK/QPSK\64QAM\256 QAM CP-OFDM: QPSK\64QAM\256 QAM				
EUT type:	End User Device				
SCS Information:	30KHz				
Power Class	Class 3				
Antenna Function:	Band	ANT2	ANT3	ANT4	ANT5
	n77	TRX	RX	RX	TRX
	n78	TRX	RX	RX	TRX
	n48	TRX	RX	RX	TRX
MIMO Information:	DL: 4*4 UL: 2*2 ANT 2 only operate in the MIMO ANT 5 can operate in SISO and MIMO.				
	Antenna Type: PIFA				
Antenna Gain:	ANT2: n77/n78: 2.99dBi; n48: 0.5dBi ANT 5: n77/n78: 3.82dBi; n48: 0.5dBi (Provided by manufacturer)				

Note:

(1)The antenna gain value is provided by the customer. The test lab will not be responsible for wrong test result due to incorrect information about antenna gain values.



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4.2 Test Frequency

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
n48	10	3555.0	3624.99	3694.98
	20	3560.01	3624.99	3690.0
	40	3570.0	3624.99	3679.98

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
N77a	20	3710.01	3840	3969.99
	30	3715.02	3840	3964.98
	40	3720	3840	3960
	60	3730.02	3840	3949.98
	80	3740.01	3840	3939.99
	100	3750	3840	3930



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Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
n78a	20	3710.01	3750	3789.99
	30	3715.02	3750	3784.98
	40	3720	3750	3780
	50	3725.01	3750	3774.99
	60	3730.02	3750	3769.98
	70	3735	3750	3765
	80	3740.01	3750	3759.99
	90	3745.02	3750	3754.98
	100	3750	3750	3750

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
n77E	20	3460.02	3500.01	3540
	30	3465	3500.01	3534.99
	40	3470.01	3500.01	3529.98
	60	3480	3500.01	3519.99
	80	3490.02	3500.01	3510



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	100	3500.01	3500.01	3499.98
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Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
n78E	20	3460.02	3500.01	3540
	30	3465	3500.01	3534.99
	40	3470.01	3500.01	3529.98
	50	3725.02	3500.01	3525
	60	3480	3500.01	3519.99
	70	3485.01	3500.01	3514.98
	80	3490.02	3500.01	3510
	90	3495	3500.01	3504.99
	100	3500.01	3500.01	3499.98

Remark: All test items were performed Pre-scan test in n77E and n78E and found and only recorded the worst data of n78E in the report.



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4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1020Pa	
Temperature:	TL	-30°C
	TN	+20°C
	TH	+50°C
Voltage:	VL	AC 102 V
	VN	AC 120 V
	VH	AC 138V

NOTE: VL= lower extreme test voltage
 VN= nominal voltage
 VH= upper extreme test voltage
 TL= lower extreme test temperature
 TN= normal temperature
 TH= upper extreme test temperature

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 5.4 \times 10^{-8}$
2	Duty cycle	$\pm 0.3\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF conducted power	$\pm 0.8\text{dB}$
5	RF power density	$\pm 0.4\text{dB}$
6	Conducted Spurious emissions	$\pm 2.7\text{dB}$
7	Radiated Spurious emission test	$\pm 3.1\text{dB}$ (Below 1GHz)
		$\pm 4.4\text{dB}$ (Above 1GHz)
8	Temperature test	$\pm 1^\circ\text{C}$
9	Humidity test	$\pm 3\%$
10	Supply voltages	$\pm 1.5\%$
11	Time	$\pm 3\%$



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4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None



5 Equipment List

RF test system					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Shielding Room	SAEMC	MSR733	SEM001-09	2022-05-14	2025-05-13
MXA Signal Analyzer	KEYSIGHT	N9020B	SEM004-17	2023-03-20	2024-03-14
Mobile Communications DC Source	Agilent	66319D	SEM011-12	2023-05-06	2024-05-05
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-04-06	2024-04-05
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-04-06	2024-04-05
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2023-04-06	2024-04-05
Universal Radio Communication Tester	Anritsu	MT8000A	SEM010-10	2023-03-22	2024-03-21
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-04-06	2024-04-05
Coaxial Cable	SGS	N/A	SEM031-01	2022-07-08	2023-07-07

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2022-04-02	2025-04-01
EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2023-04-06	2024-04-05
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2021-09-17	2023-09-16
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2022-07-24	2024-07-23
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2022-08-10	2024-08-09
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	SEM003-32	2021-09-26	2024-09-25
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2022-09-15	2023-09-14
Microwave System Amplifier(0.5-26.5GHz)	Agilent	83017A	SEM005-25	2022-09-21	2023-09-20
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023-03-21	2024-03-20



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SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR220900339402

Page: 13 of 29

Substitution Antenna	Schwarzbeck	VULB9168	SEM003-18	2022-08-07	2025-08-06
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2022-07-12	2023-07-11
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-06	2022-07-08	2023-07-07

RE in Chamber					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2021-11-30	2023-11-29
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2022-10-20	2023-10-19
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2021-09-17	2023-09-16
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2023-06-25	2024-06-24
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023-03-20	2024-03-19
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2022-07-12	2023-07-11
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2022-07-08	2023-07-07

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2022-09-04	2023-09-03
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2022-09-04	2023-09-03
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2023-03-20	2024-03-19



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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
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6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Output Power & Maximum Power Spectral Density

Test Requirement: §2.1046, §96.41(b), §27.50(j), §27.50(k)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: EIRP≤23dBm/10MHz (n48)
 EIRP≤1W n77(3450-3550MHz & 3700-3980); n78(3450-3550MHz & 3700-3800)
 PSD: N/A (n48)

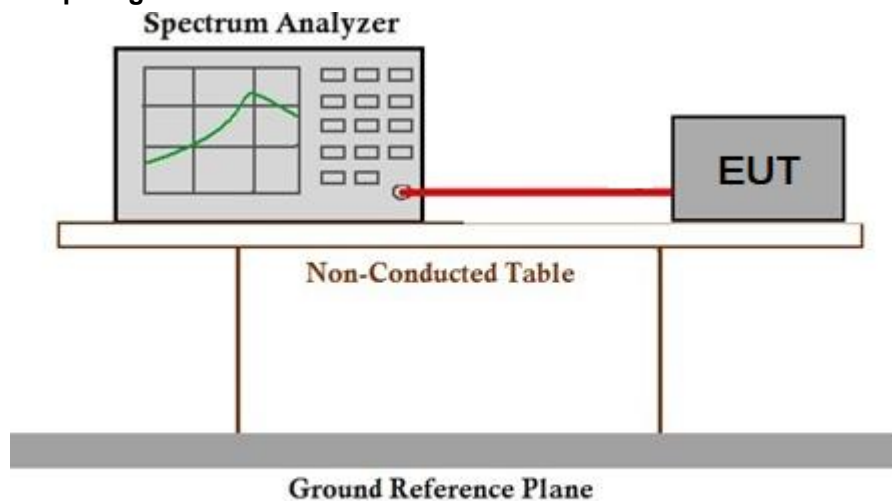
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar

Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix for Effective (Isotropic) Radiated Output Power Data.



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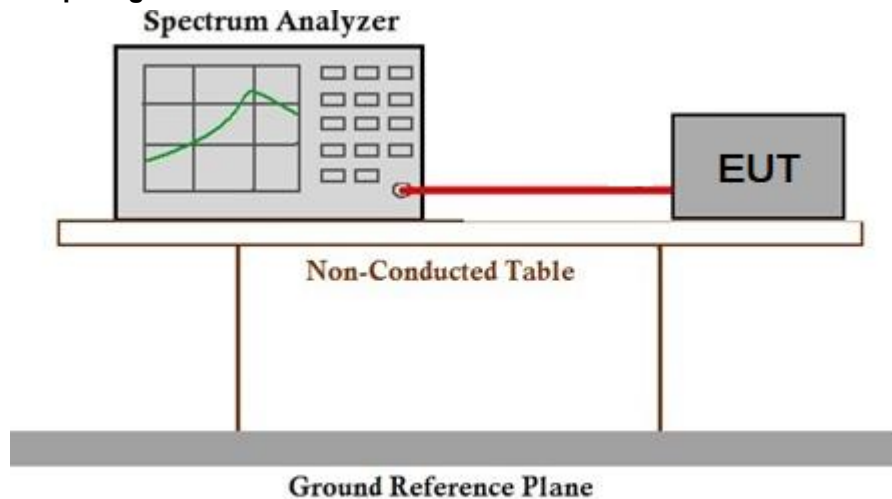
6.2 Peak-Average Ratio

Test Requirement: §96.41(g), §27.50(j), §27.50(k)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: ≤13dB

6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix for Peak-Average Ratio.



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6.3 Bandwidth

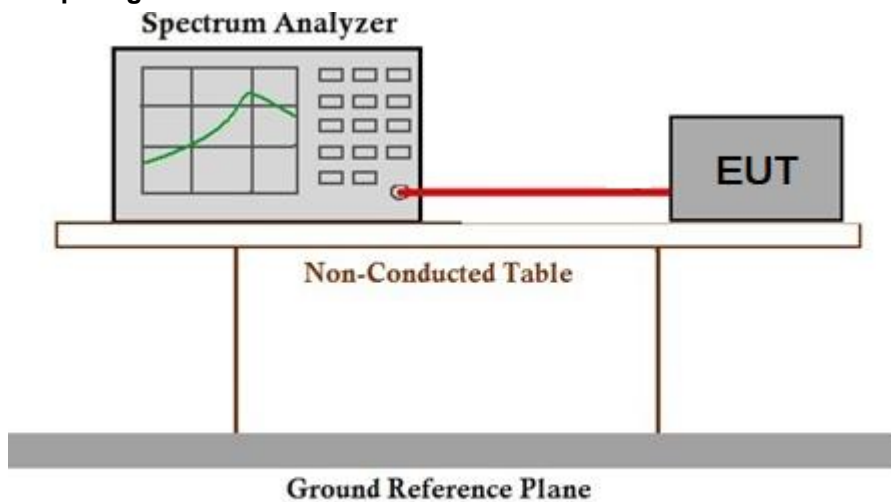
Test Requirement: §2.1049(h)
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: OBW: No limit
EBW: No limit

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix for Bandwidth.

6.4 Band Edge Compliance

Test Requirement: §2.1051, §96.41(e), §27.53(l), §27.53(n)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: **For n48:**

- 1) The conducted power of any CBSD emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed -25 dBm/MHz.
- 2) The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

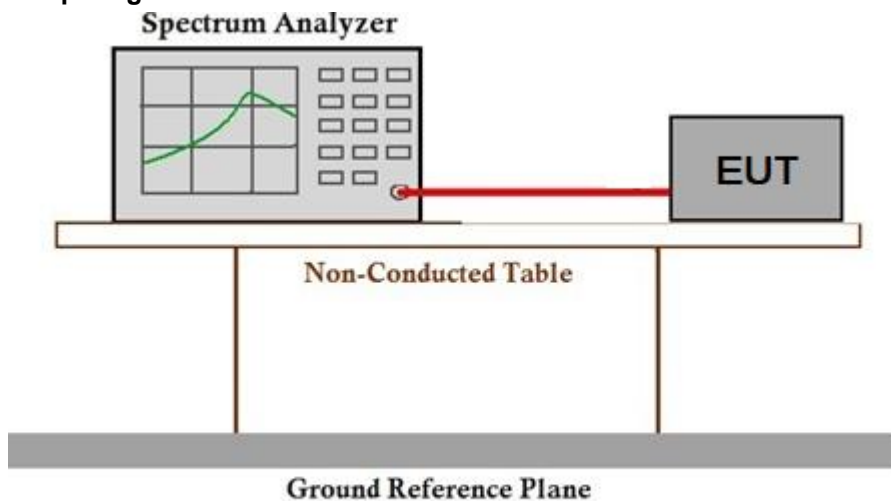
For n77(3450-3550MHz & 3700-3980); n78(3450-3550MHz & 3700-3800):

- 3) ≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.

6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix for Spurious emissions at antenna terminals & Band Edge.

6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051 ,§96.41(e), §27.53(l), §27.53(n)
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: **For n48:**

- 1) The conducted power of any CBSD emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed -25 dBm/MHz.
- 2) The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

For n77(3450-3550MHz & 3700-3980); n78(3450-3550MHz & 3700-3800):
3) ≤ -13 dBm

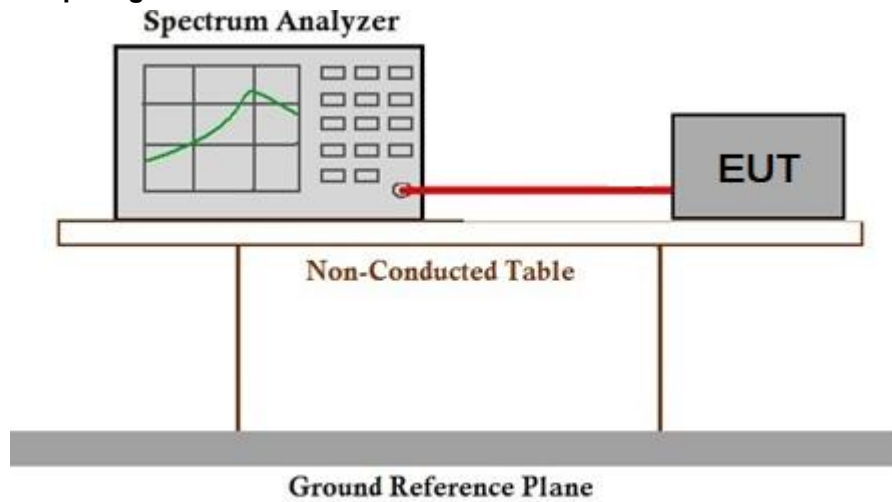
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.



6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix for Spurious emissions at antenna terminals & Band Edge.



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6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §96.41(e), §27.53(l), §27.53(n)
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: **For n48:**

- 1) Emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the emission shall not exceed -25 dBm/MHz.
- 2) Emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

For n77(3450-3550MHz & 3700-3980); n78(3450-3550MHz & 3700-3800):

- 3) ≤ -13dBm

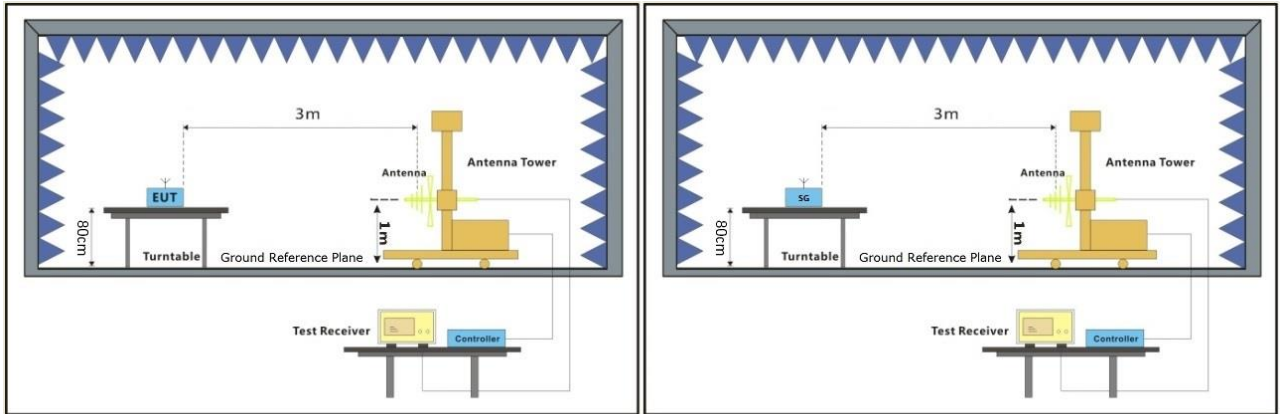
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 18.5 °C Humidity: 39.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

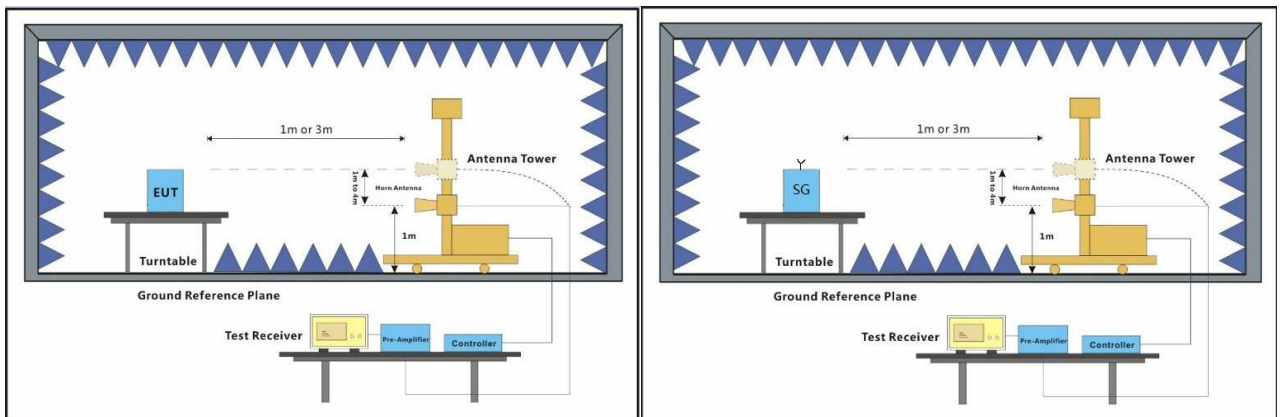


6.6.2 Test Setup Diagram



EUT

Substiute Antenna+Signal Generator



EUT

Substiute Antenna+Signal Generator



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6.6.3 Measurement Procedure and Data

Test Procedure:

- (1) On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



N48-Low channel, Modulation: $\pi/2$ -BPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
6601.02	-45.18	-40	-5.18	-48.73	7.7	11.25	Horizontal	Pass
9901.53	-43.08	-40	-3.08	-45.11	11.49	13.52	Horizontal	Pass
13202.04	-35.01	-40	4.99	-36.12	12.49	13.6	Horizontal	Pass
6601.02	-45.48	-40	-5.48	-49.03	7.7	11.25	Vertical	Pass
9901.53	-43.19	-40	-3.19	-45.22	11.49	13.52	Vertical	Pass
13202.04	-43.01	-40	-3.01	-44.12	12.49	13.6	Vertical	Pass

N48-Middle channel, Modulation: $\pi/2$ -BPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7491	-43.09	-40	-3.09	-46.63	8.19	11.73	Horizontal	Pass
11236.5	-35.53	-40	4.47	-37.82	11.36	13.65	Horizontal	Pass
14982	-32.17	-40	7.83	-35.07	11.4	14.3	Horizontal	Pass
7491	-43.22	-40	-3.22	-46.76	8.19	11.73	Vertical	Pass
11236.5	-35.94	-40	4.06	-38.23	11.36	13.65	Vertical	Pass
14982	-31.91	-40	8.09	-34.81	11.4	14.3	Vertical	Pass

N48-High channel, Modulation: $\pi/2$ -BPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
8380.98	-43.45	-40	-3.45	-46.7	9.43	12.68	Horizontal	Pass
12571.47	-35.94	-40	4.06	-36.93	12.45	13.44	Horizontal	Pass
16761.96	-29.38	-40	10.62	-28.19	14.69	13.5	Horizontal	Pass
8380.98	-44.56	-40	-4.56	-47.81	9.43	12.68	Vertical	Pass
12571.47	-34.97	-40	5.03	-35.96	12.45	13.44	Vertical	Pass
16761.96	-29.67	-40	10.33	-28.48	14.69	13.5	Vertical	Pass

Note: All modes have been tested and we found $\pi/2$ -BPSK test mode has the worst test result. Only record the worst test result.



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N77a-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
6605.04	-45.03	-13	-32.03	-48.58	7.7	11.25	Horizontal	Pass
9907.56	-41.23	-13	-28.23	-43.26	11.49	13.52	Horizontal	Pass
13210.08	-35.55	-13	-22.55	-36.66	12.49	13.6	Horizontal	Pass
6605.04	-44.85	-13	-31.85	-48.4	7.7	11.25	Vertical	Pass
9907.56	-40.84	-13	-27.84	-42.87	11.49	13.52	Vertical	Pass
13210.08	-35.25	-13	-22.25	-36.36	12.49	13.6	Vertical	Pass

N77a-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7455	-40.59	-13	-27.59	-44.13	8.19	11.73	Horizontal	Pass
11182.5	-36.18	-13	-23.18	-38.47	11.36	13.65	Horizontal	Pass
14910	-31.91	-13	-18.91	-34.81	11.4	14.3	Horizontal	Pass
7455	-40.28	-13	-27.28	-43.82	8.19	11.73	Vertical	Pass
11182.5	-35.75	-13	-22.75	-38.04	11.36	13.65	Vertical	Pass
14910	-31.23	-13	-18.23	-34.13	11.4	14.3	Vertical	Pass

N77a-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
8304.96	-40.66	-13	-27.66	-43.91	9.43	12.68	Horizontal	Pass
12457.44	-35.79	-13	-22.79	-37.59	11.6	13.4	Horizontal	Pass
16609.92	-29.23	-13	-16.23	-28.04	14.69	13.5	Horizontal	Pass
8304.96	-40.45	-13	-27.45	-43.7	9.43	12.68	Vertical	Pass
12457.44	-35.53	-13	-22.53	-37.33	11.6	13.4	Vertical	Pass
16609.92	-28.89	-13	-15.89	-27.7	14.69	13.5	Vertical	Pass



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N78a-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
6610.02	-45.22	-13	-32.22	-48.77	7.7	11.25	Horizontal	Pass
9915.03	-38.73	-13	-25.73	-40.76	11.49	13.52	Horizontal	Pass
13220.04	-35.28	-13	-22.28	-36.39	12.49	13.6	Horizontal	Pass
6610.02	-45.21	-13	-32.21	-48.76	7.7	11.25	Vertical	Pass
9915.03	-38.86	-13	-25.86	-40.89	11.49	13.52	Vertical	Pass
13220.04	-35.13	-13	-22.13	-36.24	12.49	13.6	Vertical	Pass

N78a-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7410	-40.07	-13	-27.07	-43.61	8.19	11.73	Horizontal	Pass
11115	-35.15	-13	-22.15	-37.44	11.36	13.65	Horizontal	Pass
14820	-29.92	-13	-16.92	-32.82	11.4	14.3	Horizontal	Pass
7410	-40.4	-13	-27.4	-43.94	8.19	11.73	Vertical	Pass
11115	-35.53	-13	-22.53	-37.82	11.36	13.65	Vertical	Pass
14820	-28.52	-13	-15.52	-31.42	11.4	14.3	Vertical	Pass

N78a-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
8209.98	-40.84	-13	-27.84	-44.09	9.43	12.68	Horizontal	Pass
12314.97	-35.78	-13	-22.78	-37.58	11.6	13.4	Horizontal	Pass
16419.96	-30.25	-13	-17.25	-30.59	13.52	13.86	Horizontal	Pass
8209.98	-41.11	-13	-28.11	-44.36	9.43	12.68	Vertical	Pass
12314.97	-35.72	-13	-22.72	-37.52	11.6	13.4	Vertical	Pass
16419.96	-30.39	-13	-17.39	-30.73	13.52	13.86	Vertical	Pass



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N78E-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
6601.02	-45.04	-13	-32.04	-48.59	7.7	11.25	Horizontal	Pass
9901.53	-41.17	-13	-28.17	-43.2	11.49	13.52	Horizontal	Pass
13202.04	-33.86	-13	-20.86	-34.97	12.49	13.6	Horizontal	Pass
6601.02	-44.61	-13	-31.61	-48.16	7.7	11.25	Vertical	Pass
9901.53	-40.8	-13	-27.8	-42.83	11.49	13.52	Vertical	Pass
13202.04	-32.71	-13	-19.71	-33.82	12.49	13.6	Vertical	Pass

N78E-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7090.98	-42.38	-13	-29.38	-45.92	8.19	11.73	Horizontal	Pass
10636.47	-37.31	-13	-24.31	-39.73	11.06	13.48	Horizontal	Pass
14181.96	-33.15	-13	-20.15	-36.16	11.48	14.49	Horizontal	Pass
7090.98	-42.26	-13	-29.26	-45.8	8.19	11.73	Vertical	Pass
10636.47	-36.87	-13	-23.87	-39.29	11.06	13.48	Vertical	Pass
14181.96	-33.5	-13	-20.5	-36.51	11.48	14.49	Vertical	Pass

N78E-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7581	-42.32	-13	-29.32	-46.15	8.43	12.26	Horizontal	Pass
11371.5	-36.75	-13	-23.75	-39.04	11.36	13.65	Horizontal	Pass
15162	-31.09	-13	-18.09	-33.04	12.38	14.33	Horizontal	Pass
7581	-41.48	-13	-28.48	-45.31	8.43	12.26	Vertical	Pass
11371.5	-36.12	-13	-23.12	-38.41	11.36	13.65	Vertical	Pass
15162	-32.2	-13	-19.2	-34.15	12.38	14.33	Vertical	Pass

Note: All modes have been tested and we found QPSK test mode has the worst test result. Only record the worst test result.



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6.7 Frequency stability

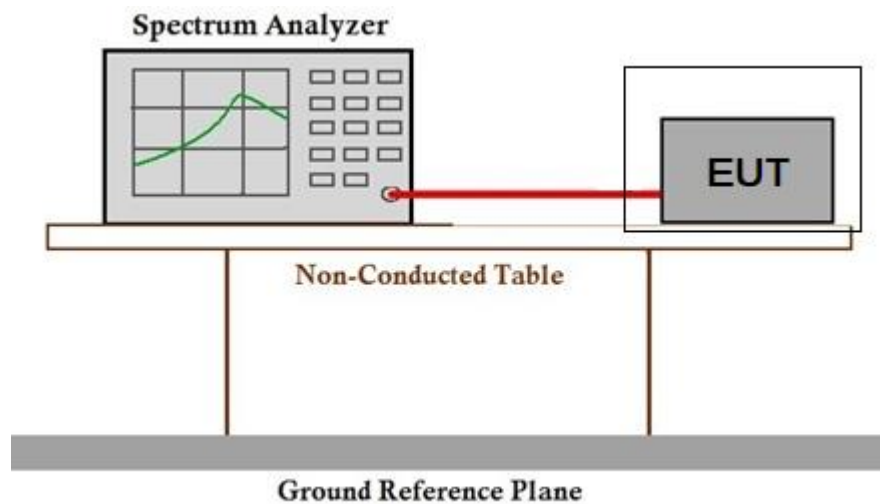
Test Requirement: §2.1055, §27.54
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: $\leq \pm 2.5\text{ppm}$.

6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix for Frequency stability.



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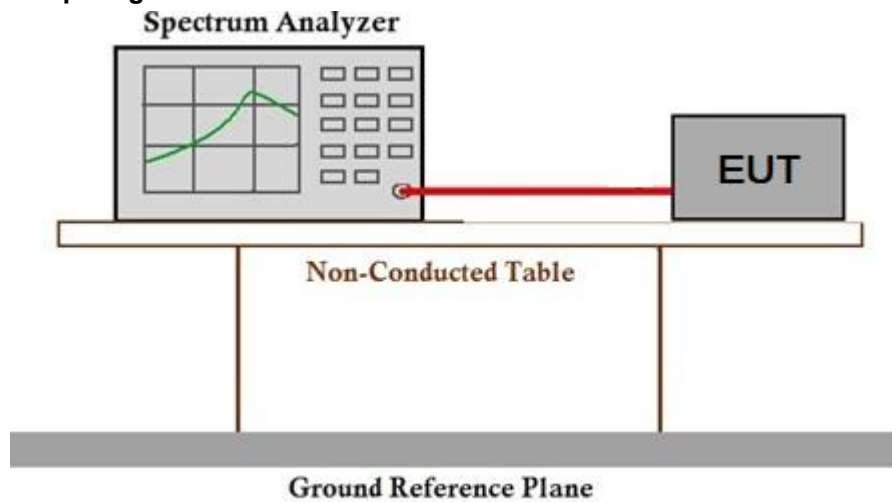
6.8 Modulation Characteristics

Test Requirement: §2.1047
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: Digital modulation

6.8.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Pass, it's a digital modulation device.



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7 Test Setup Photo

Refer to Appendix – Setup Photos for SZCR2209003394AT

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2209003394AT

- End of the Report -



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