

Test Report No:
2610463R-RFUSV22S-B

TEST REPORT

FCC Rules&Regulations

Product Name	Telematics Module
Brand Name	Quanta Computer Inc.
Model No.	QV28NRW
FCC ID	HFS-QV28NRW
Applicant's Name / Address	Quanta Computer Inc. No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City, 33377, Taiwan
Manufacturer's Name	Quanta Computer Inc.
Test Method Requested, Standard	FCC CFR Title 47 Part 22 FCC CFR Title 47 Part 24 FCC CFR Title 47 Part 27 ANSI/TIA-603-E-2016 ANSI C63.26-2015
Verdict Summary	IN COMPLIANCE
Documented By Jinn Chen	<i>Jinn Chen</i>
Approved By Will Chen	<i>Will Chen</i>
Date of Receipt	2025/11/25
Date of Issue	2026/06/18
Report Version	V1.0

INDEX

	page
Competences and Guarantees.....	4
General Conditions.....	4
Revision History.....	5
Summary of Test Result.....	6
Comments and Remarks.....	6
1. General Information.....	7
1.1. EUT Description	7
1.2. EUT Information	8
1.3. Testing Location Information	8
1.4. Measurement Uncertainty	9
1.5. List of Test Equipment.....	10
2. Test Configuration of EUT	11
2.1. Test Condition.....	11
2.2. Measurement Configuration.....	11
2.3. Tested System Details.....	12
2.4. Configuration of Tested System	12
2.5. EUT Operating Procedures.....	13
3. RF Output Power.....	14
3.1. Test Setup	14
3.2. Test Procedure	14
3.3. Test Result of RF Output Power.....	14
4. Occupied Bandwidth	15
4.1. Test Setup	15
4.2. Test Procedures	15
4.3. Test Result of Occupied Bandwidth	15
5. Peak to Average Power Ratio	16
5.1. Test Setup	16
5.2. Test Procedure	16
5.3. Test Result of Peak to Average Power Ratio	16
6. Spurious Emission.....	17
6.1. Test Setup	17
6.2. Test Procedure	18
6.3. Test Methodology and Reference Procedures.....	18
6.4. Test Result of Spurious Emission.....	18
7. Conducted Band Edge	19
7.1. Test Setup	19

7.2.	Test Procedure	19
7.3.	Test Result of Conducted Band Edge	19
8.	Frequency Stability	20
8.1.	Test Setup	20
8.2.	Test Procedures	20
8.3.	Test Result of Frequency Stability	20
Appendix A. Test Result of RF Output Power		
Appendix B. Test Result of Occupied Bandwidth		
Appendix C. Test Result of Peak to Average Power Ratio		
Appendix D. Test Result of Spurious Emission		
Appendix E. Test Result of Conducted Band Edge		
Appendix F. Test Result of Frequency Stability		
Appendix G. Test Setup Photograph		

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	2026/06/18

Summary of Test Result

Report Clause	Test Items	Band	Ref Std. Clause	Limit	Result (PASS/FAIL)	Remark
3	RF Output Power	2	§2.1033 §2.1046 §24.232	< 2 Watts EIRP	PASS	-
		4	§2.1033 §2.1046 §27.50	< 1 Watts EIRP	PASS	-
		5	§2.1033 §2.1046 §22.913	< 7 Watts ERP	PASS	-
4	Occupied Bandwidth	2, 4, 5	§2.1049	N/A	PASS	-
5	Peak to Average Power Ratio	2	§24.232	≤ 13 dB	PASS	-
		4	§27.50	≤ 13 dB	PASS	-
		5	§22.913	≤ 13 dB	PASS	-
6	Spurious Emission	2	§2.1053 §24.238	< -13 dBm	PASS	-
		4	§27.53	< -13 dBm	PASS	-
		5	§22.917	< -13 dBm	PASS	-
7	Conducted Band Edge	2	§24.238	< -13 dBm	PASS	-
		4	§2.1053 §27.53	< -13 dBm	PASS	-
		5	§2.1053 §22.917	< -13 dBm	PASS	-
8	Frequency Stability	2	§2.1055 §24.235	± 2.5 ppm	PASS	-
		4	§2.1055 §27.54	± 2.5 ppm	PASS	-
		5	§2.1055 §22.355	± 2.5 ppm	PASS	-

Comments and Explanations

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

Uplink Frequency Range (MHz)	WCDMA Band 2: 1850~1910 WCDMA Band 4: 1710~1755 WCDMA Band 5: 824~849
Downlink Frequency Range (MHz)	WCDMA Band 2: 1930~1990 WCDMA Band 4: 2110~2155 WCDMA Band 5: 869~894
Function	RMC / HSDPA / DC-HSDPA / HSUPA
IMEI No.	356137370001060

Antenna Port	Supported Bands
MIMO 1	GSM: 850 / 1900 WCDMA: B2 / B4 / B5 LTE: B2 / B4 / B5 / B7 / B12 / B17 / B25 / B26 / B38 / B41 / B42 5GNR: n7 / n41 / n77 / n78
MIMO 2	LTE: B42 5GNR: n77 / n78
MIMO 3	Only RX
MIMO 4	Only RX
Internal BUA (Backup Antenna)	GSM: 850 / 1900 WCDMA: B2 / B4 / B5 LTE: B2 / B4 / B5 / B7 / B25 / B26 / B38 / B41 5GNR: n7 / n41

Note: Since the Internal BUA uses the same antenna port as MIMO 1, only radiated testing was evaluated.

Antenna Information				
Item.	Brand Name	Model No.	Type	Gain (dBi)
1	molex	5A7F528 (MIMO 1)	PIFA	1.60 dBi for WCDMA B2 2.80 dBi for WCDMA B4 -2.60 dBi for WCDMA B5
2	AMO	BMW ICON SF (Internal BUA)	PIFA	2.99 dBi for WCDMA B2 2.72 dBi for WCDMA B4 2.09 dBi for WCDMA B5

Note: Only the higher gain antenna was tested and recorded in this report.

Maximum Output Power					
Mode	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
WCDMA B2	1852.4 - 1907.6	4M15F9W	RMC	0.236	23.73
WCDMA B4	1712.4 - 1752.6	4M16F9W	RMC	0.244	23.87
WCDMA B5	826.4 - 846.6	4M16F9W	RMC	0.239	23.79

1.2. EUT Information

EUT Power Type	From DC power supply
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1.3. Testing Location Information

USA	FCC Designation Number: TW0033 / FCC Registration Number: 647365
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No. 85, Wenlin St., Linkou Dist., New Taipei City 244017, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual	Test Date	Tested by
Conducted Emission	Temperature (°C)	15~35 °C	23.8 °C	2026/5/29	Joe Wang
	Humidity (%RH)	20~75 %	61 %		
Radiated Emission	Temperature (°C)	15~35 °C	22.3~23.5°C	2026/05/21 ~	Rock Liang Ashton Chiu
	Humidity (%RH)	20~75 %	56.7~59.4 %	2026/05/22	

1.4. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system but are based on the results of the compliance measurement.

Test Item	Uncertainty
RF Output Power	± 1.31 dB
Occupied Bandwidth	± 1580.61 Hz
Peak to Average Power Ratio	± 2.13 dB
Conducted Band Edge	± 2.13 dB
Spurious Emission at Antenna Port	± 2.13 dB
Radiated Spurious Emissions	± 4.72 dB for 30MHz~180MHz ± 2.99 dB for 180MHz~1GHz ± 2.98 dB for 1GHz~18GHz ± 3.02 dB for 18GHz~40GHz
Frequency Stability	± 0.54 ppm

1.5. List of Test Equipment

Conducted / HY-SR04

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510357	2026/04/27	2027/04/26
Temperature & Humidity Test Chamber	KSON	THS-D4T-100	A0606	2026/02/24	2027/02/23
DC Power Supply	GWInstek	SPD-3606	GEQ820915	2025/07/08	2026/07/07
DC Power Supply	Agilent	E3646A	MY53020023	2025/10/27	2026/10/26
Radio Communication Analyzer	Anritsu	MT8821C	6262044740	2025/06/23	2026/06/22

Radiated / HY-CB03

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2025/08/14	2027/08/13
Horn Antenna	Com-Power	AH-840	101100	2025/10/07	2027/10/06
Horn Antenna	RF SPIN	DRH18-E	210508A18ES	2024/05/30	2026/05/29
Pre-Amplifier	SGH	SGH0301-9	20211007-11	2026/01/10	2027/01/09
Pre-Amplifier	SGH	PRAMP118	20200701	2026/01/10	2027/01/09
Pre-Amplifier	EMCI	EMC184045SE	980369	2026/01/10	2027/01/09
Coaxial Cable	EMCI	EMC102-KM-KM-600	160311	2026/01/10	2027/01/09
Coaxial Cable	SGH	HC360-2.92M/2.92M-7.0M	202108-1	2026/01/10	2027/01/09
EMI Test Receiver	R&S	ESR3	102793	2025/12/01	2026/11/30
Spectrum Analyzer	R&S	FSV3044	101114	2026/04/08	2027/04/07
Coaxial Cable	SGH	SGH18	2021005-1	2026/01/10	2027/01/09
Coaxial Cable	SGH	SGH18	202108-4	2026/01/10	2027/01/09
Coaxial Cable	SGH	HA800	GD20110223-1	2026/01/10	2027/01/09
Coaxial Cable	SGH	HA800	GD20110222-8	2026/01/10	2027/01/09
Radio Communication Analyzer	Anritsu	MT8821C	6262044740	2025/06/23	2026/06/22
DC Power Supply	KEYSIGHT	E36234A	MY59001234	2025/10/27	2026/10/26

Note: Test Software Version: e3 230303 dekra V9.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	DC 4.1V

2.2. Measurement Configuration

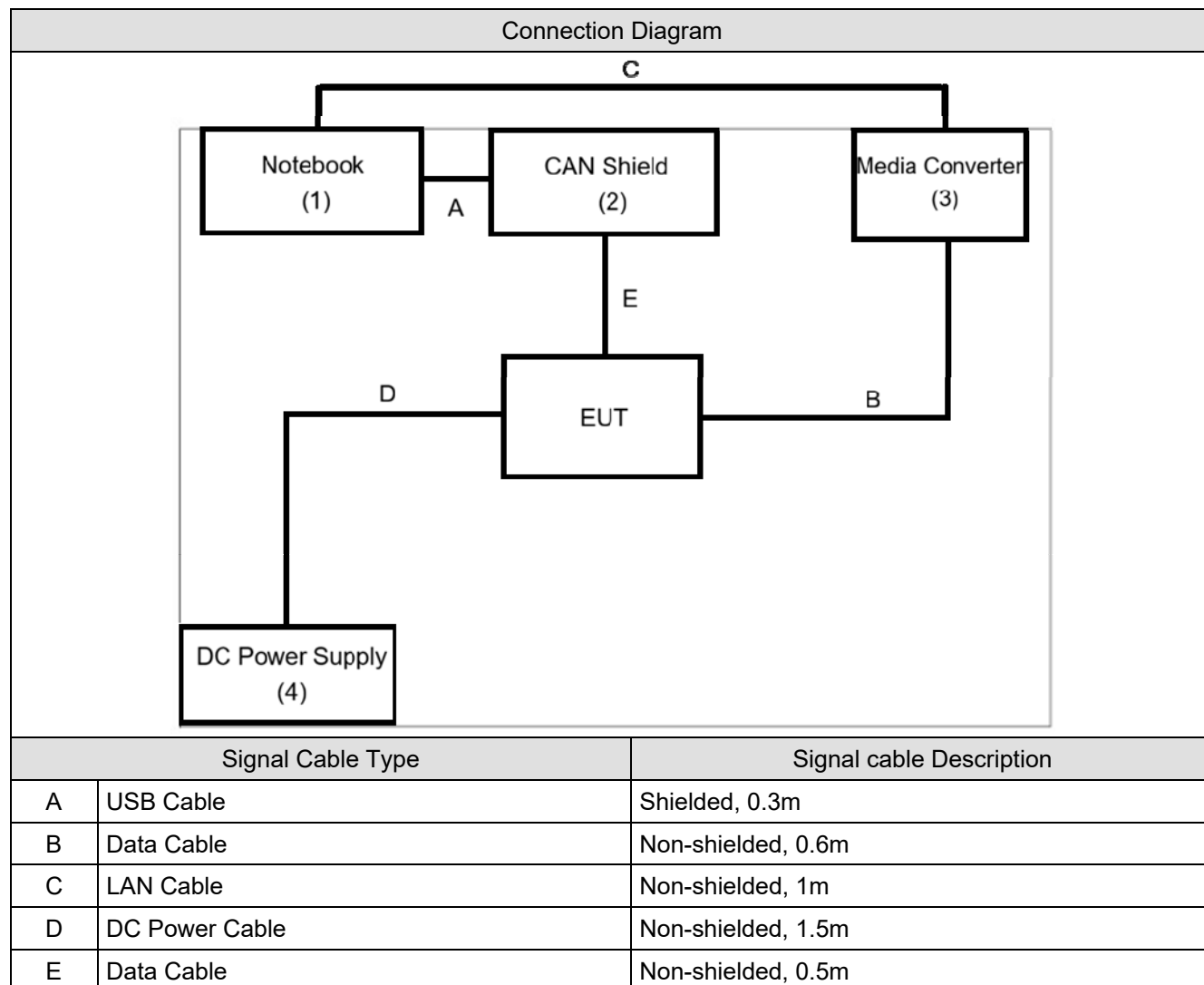
Test Mode	Mode 1: WCDMA B2 Mode 2: WCDMA B4 Mode 3: WCDMA B5
Note: - Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. - The EUT was performed at X axis, Y axis and Z axis position for radiated spurious emission test. The worst case was found at X axis, so the measurement will follow this same test configuration. - The device was tested under all configurations, combinations, and modulations. The worst-case results are presented in the table below.	

Worst Case		
Test Item	Modulation	Test Channel
RF Output Power	RMC / HSDPA / DC-HSDPA / HSUPA	Low, Mid, High
Occupied Bandwidth	RMC	Low, Mid, High
Conducted Band Edge	RMC	Low, High
Peak to Average Power Ratio	RMC	Low, Mid, High
Spurious Emission at Antenna Port	RMC	Low, Mid, High
Radiated Spurious Emissions	RMC	Low, Mid, High
Frequency Stability	RMC	Mid

2.3. Tested System Details

No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	DELL	P62G	CY9FJC2
2	CAN Shield	N/A	N/A	N/A
3	Media Converter	N/A	N/A	N/A
4	DC Power Supply	KEYSIGHT	E36234A	MY59001234

2.4. Configuration of Tested System

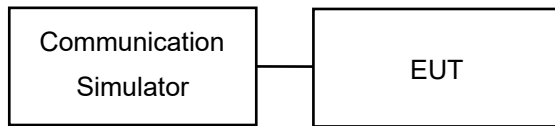


2.5. EUT Operating Procedures

1.	Setup the EUT as shown in Section 2.4.
2.	Setup the EUT connect to the base station.
3.	Setup the parameter (band, channel, frequency).
4.	The EUT will continue receive the signal from WWAN function.
5.	Verify that the EUT works properly.

3. RF Output Power

3.1. Test Setup



3.2. Test Procedure

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum conducted RF output power under transmission mode and specific channel frequency. The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

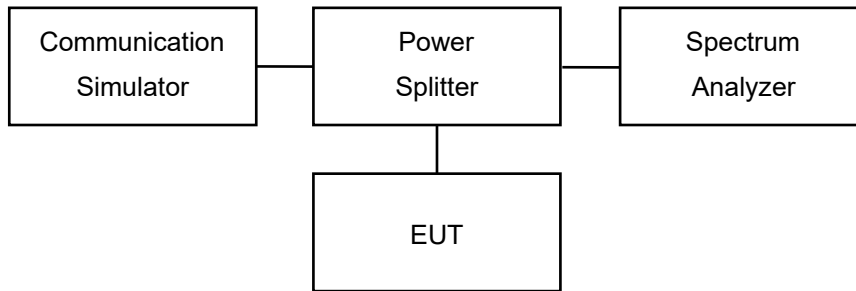
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB

3.3. Test Result of RF Output Power

Refer as Appendix A

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Procedures

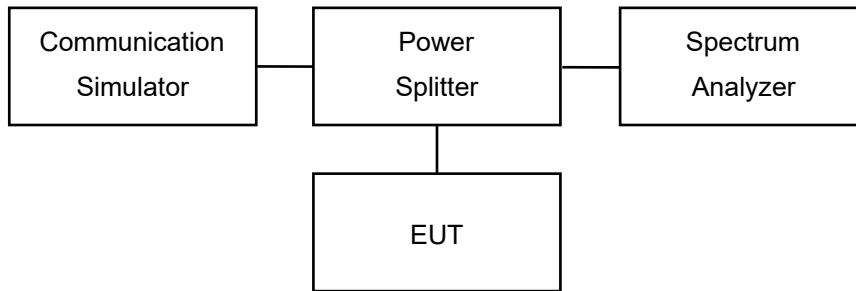
The EUT makes a call to the communication simulator. The 26dB bandwidth and 99% occupied bandwidth measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.

4.3. Test Result of Occupied Bandwidth

Refer as Appendix B

5. Peak to Average Power Ratio

5.1. Test Setup



5.2. Test Procedure

1. The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.
2. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth.
3. Set the number of counts to a value that stabilizes the measured CCDF curve.
4. Record the maximum PAPR level associated with a probability of 0.1 %.

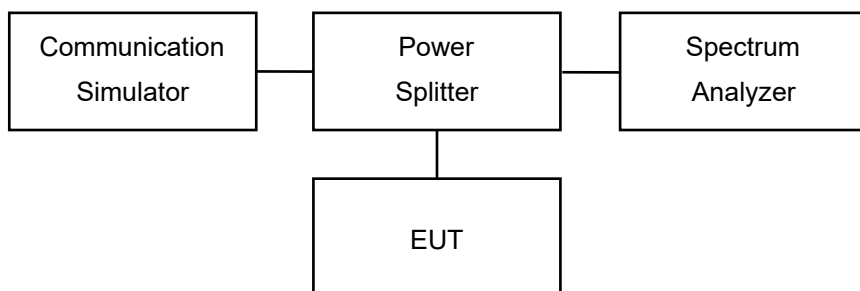
5.3. Test Result of Peak to Average Power Ratio

Refer as Appendix C

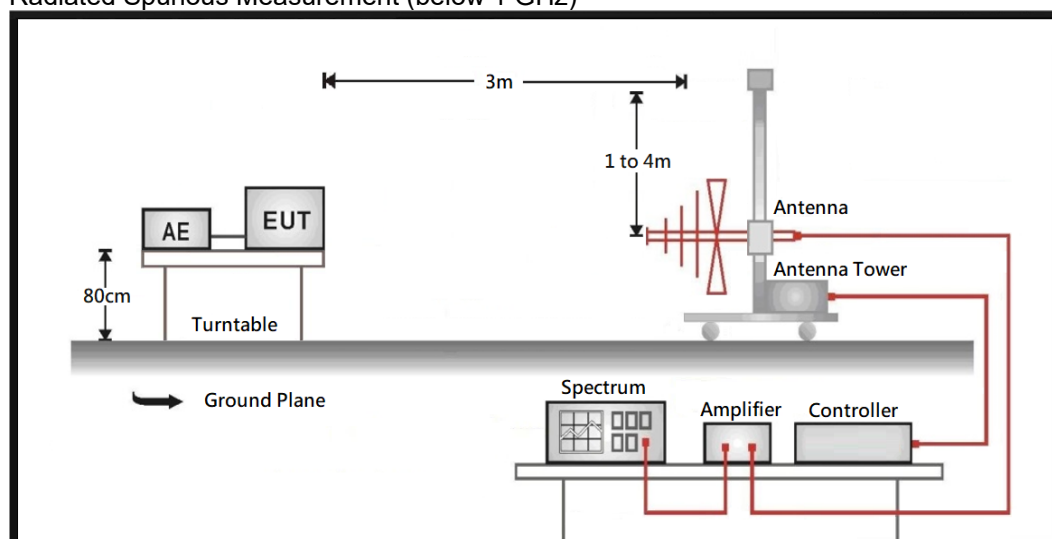
6. Spurious Emission

6.1. Test Setup

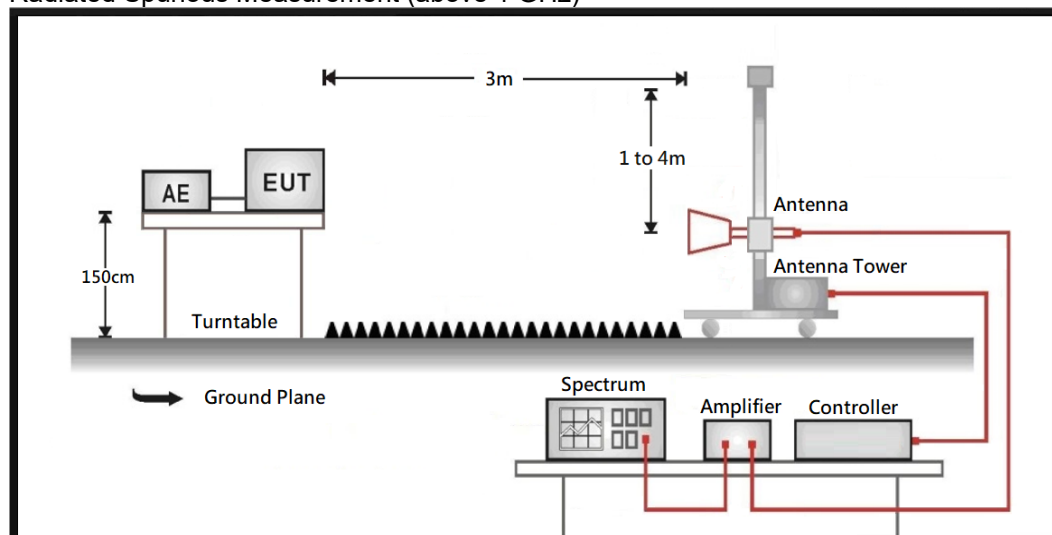
Conducted Spurious Measurement



Radiated Spurious Measurement (below 1 GHz)



Radiated Spurious Measurement (above 1 GHz)



6.2. Test Procedure

Conducted Spurious Measurement:

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement. The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations. The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic. Taking the record of maximum spurious emission.

6.3. Test Methodology and Reference Procedures

KDB 971168 D01 Power Meas License Digital Systems v03r01

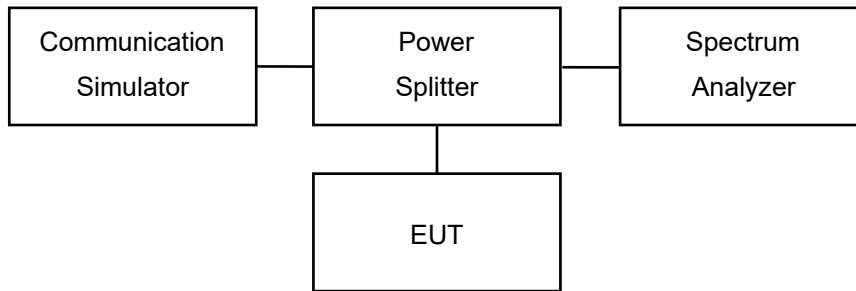
ANSI C63.26-2015

6.4. Test Result of Spurious Emission

Refer as Appendix D

7. Conducted Band Edge

7.1. Test Setup



7.2. Test Procedure

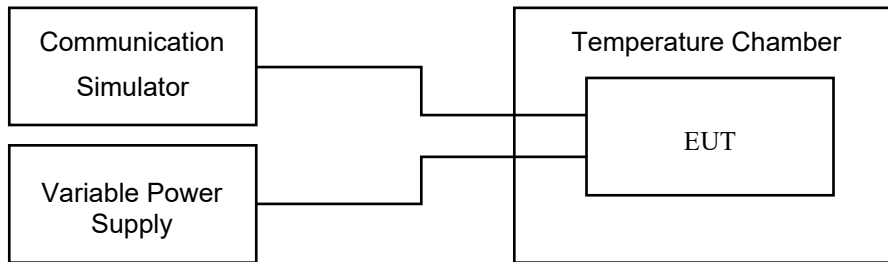
1. The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. The path loss was compensated to the results for each measurement.
2. In the 1MHz bands immediately 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 to measure the out of band Emissions.

7.3. Test Result of Conducted Band Edge

Refer as Appendix E

8. Frequency Stability

8.1. Test Setup



8.2. Test Procedures

Frequency Stability under Temperature Variations:

The EUT under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a communication simulator. The EUT was placed inside the temperature chamber. Set the EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC or DC power supply to power the EUT and set the voltage to rated voltage. Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

8.3. Test Result of Frequency Stability

Refer as Appendix F