



RF TEST REPORT

Applicant ZTE Corporation
FCC ID SRQ-ZTEA2022PG
Product 5G NR/LTE/WCDMA/GSM(GPRS)
Multi-Mode Digital Mobile Phone
Marketing ZTE Axon 30 Ultra 5G
Model ZTE A2022PG
Report No. R2103A0263-R4V3
Issue Date May 12, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2019)/ FCC CFR47 Part 27C (2019)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



TABLE OF CONTENT

1	Test Laboratory	5
1.1	Notes of the Test Report	5
1.2.	Test facility	5
1.3	Testing Location	5
2	General Description of Equipment under Test	6
2.1	Applicant and Manufacturer Information	6
2.2	General information	6
3	Applied Standards	8
4	Test Configuration	9
5	Test Case Results	10
5.1	RF Power Output and Effective Isotropic Radiated Power	10
5.2	Occupied Bandwidth	17
5.3	Band Edge Compliance	39
5.4	Peak-to-Average Power Ratio (PAPR)	57
5.5	Frequency Stability	59
5.6	Spurious Emissions at Antenna Terminals	64
5.7	Radiates Spurious Emission	70
6	Main Test Instruments	76
ANNEX A: The EUT Appearance		77
ANNEX B: Test Setup Photos		78



Version	Revision description	Issue Date
Rev.0	Initial issue of report.	April 28, 2021
Rev.1	Update description in Page 9.	May 10, 2021
Rev.2	Update description in Page 9.	May 11, 2021
Rev.3	Add 100MHz bandwidth data	May 12, 2021
Note: This revised report (Report No. R2103A0263-R4V3) supersedes and replaces the previously issued report (Report No. R2103A0263-R4V2). Please discard or destroy the previously issued report and dispose of it accordingly.		



Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046/ 27.50(h) (2)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	/27.53(m)	PASS
4	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 /27.53(m)	PASS
7	Radiates Spurious Emission	2.1051 /27.53(m)	PASS

Date of Testing: March 19, 2021~ May 12, 2021

Date of Sample Received: March 18, 2021

Note: PASS: The EUT complies with the essential requirements in the standard.

FAIL: The EUT does not comply with the essential requirements in the standard.

All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.



1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.2 General information

EUT Description			
Model	ZTE A2022PG		
IMEI	IMEI 1:861959050001059 IMEI 2:861959050002059		
Hardware Version	ZTE A2022PGHW1.0		
Software Version 1	MyOS11.0.0_A2022PG_GLB		
Software Version 2	MyOS11.0.0_A2022PG_TEL		
Flash	8+128G/12+256G		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	-0.09dBi		
NSA Band	DC_2A_n41A		
SA Band	NR n41		
Test Modulation	CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM; DFT-s OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Maximum E.I.R.P.	NR n41:	23.65dBm	
	DC_2A_n41A;	23.47dBm	
Rated Power Supply Voltage:	3.85V		
Operating Voltage	Minimum: 3.4V Maximum: 4.2V		
Operating Temperature	Lowest: -10°C Highest: +45°C		
Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	NR n41	2496~2690	2496~2690
EUT Accessory			
Adapter 1	Manufacturer: ShenZhen KunXing Technology Co., Ltd. Model: STC-A59152050AC-Z		
Adapter 2	Manufacturer: ShenZhen KunXing Technology Co., Ltd. Model: STC-A59152050AC-A		



Battery	Manufacturer: Zhuhai CosMX Battery Co., Ltd. Model: Li3941T44P8h826453
Earphone	Manufacturer: Shen zhen FDC Electronic Co.,Ltd. Model: DEM-9A
USB Cable	Manufacturer: Luxshare-ICT Co., Ltd Model: TC20-TC20-W-100-M-6A-HSF
Type-C to 3.5 mm Headphone Jack Adapter	Manufacture: HUIZHOU JUWEI ELECTRONICS CO. ,LTD Model: JWUB1389-Z01
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. There is more than one Flash/Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (12+256G/Adapter 1) will be recorded in this report. 3.The two different software versions are for different market requirement.	



3 Applied Standards

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

Test standards:

FCC CFR47 Part 27C (2019)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2019)

KDB 971168 D01 Power Meas License Digital Systems v03r01



4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in NR is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for NR n41:

Test items	Mode	Bandwidth (MHz)					Modulation					RB			Test Channel		
		20	40	60	80	100	PI/2 BPSK	QPS K	16 QAM	64 QAM	256 QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	NR n41	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	DC_2A_n41A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	NR n41	-	O	-	-	O	O	O	O	O	O	O	-	O	O	O	O
	DC_2A_n41A	-	O	-	-	O	O	O	O	O	O	O	-	O	O	O	O
Band Edge Compliance	NR n41	-	O	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	DC_2A_n41A	-	O	-	-	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	NR n41	-	O	-	-	-	O	O	O	O	O	-	-	O	O	O	O
	DC_2A_n41A	-	O	-	-	-	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	NR n41	O	O	O	O	O	-	O	O	O	O	-	-	-	-	-	-
	DC_2A_n41A	O	O	O	O	O	-	O	O	O	O	-	-	-	-	-	-
Spurious Emissions at Antenna Terminals	NR n41	-	O	-	-	-	O	O	O	O	O	-	-	-	O	O	O
	DC_2A_n41A	-	O	-	-	-	O	O	O	O	O	-	-	-	O	O	O
Radiates Spurious Emission	NR n41	O	O	-	-	O	-	O	-	-	-	-	-	-	-	O	-
	DC_2A_n41A	O	O	-	-	O	-	O	-	-	-	-	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing.																
	2. The mark "-" means that this configuration is not testing.																
Note	3. Sub 6GHz operates using 15kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports PI/2 BPSK ,QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configurations.																

5 Test Case Results

5.1 RF Power Output and Effective Isotropic Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

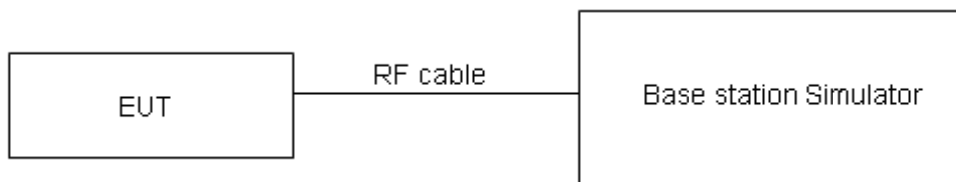
ERP can then be calculated as follows:

$$\text{EIRP (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBi)}$$

where: dBd refers to gain relative to an ideal dipole.

$$\text{EIRP (dBm)} = \text{ERP (dBm)} + 2.15 \text{ (dB.)}$$

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”

Part 27.50(h)(2) Limit	$\leq 2 \text{ W}$ (33 dBm)
------------------------	-----------------------------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=0.4 \text{ dB}$ for RF power output, $k = 2$, $U= 1.19 \text{ dB}$ for ERP/EIRP.



Test Results

NR n41					Maximum Output Power(dBm)			EIRP(dBm)		
Bandwidth (MHz)	Modulation	SCS(KHz)	RB	RB	501204	518598	535998	501204	518598	535998
			Allocation	Offset	2506.02	2592.99	2679.99	2506.02	2592.99	2679.99
20	PI/2 BPSK	30	1	0	22.68	22.86	23.05	22.59	22.77	22.96
			1	1	23.14	23.44	23.63	23.05	23.35	23.54
			25	12	23.12	23.52	23.34	23.03	23.43	23.25
			50	0	23.09	23.55	23.43	23.00	23.46	23.34
	QPSK		1	0	22.58	22.89	23.18	22.49	22.80	23.09
			1	1	22.51	22.87	23.10	22.42	22.78	23.01
			25	12	23.45	22.98	23.00	23.36	22.89	22.91
			50	0	23.40	22.96	22.93	23.31	22.87	22.84
	16QAM		1	0	22.71	22.85	23.17	22.62	22.76	23.08
			1	1	22.64	22.95	23.20	22.55	22.86	23.11
			25	12	23.46	22.94	22.95	23.37	22.85	22.86
			50	0	23.35	21.01	22.99	23.26	20.92	22.90
	64QAM		1	0	23.22	22.65	22.92	23.13	22.56	22.83
			1	1	23.28	22.62	22.95	23.19	22.53	22.86
			25	12	23.46	22.99	23.00	23.37	22.90	22.91
			50	0	23.45	22.97	22.98	23.36	22.88	22.89
	256QAM		1	0	21.67	22.02	21.89	21.58	21.93	21.80
			1	1	22.01	21.96	21.84	21.92	21.87	21.75
			25	12	22.08	22.10	21.86	21.99	22.01	21.77
			50	0	22.13	22.15	21.85	22.04	22.06	21.76
Bandwidth(MHz)	Modulation	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)		
					503202	518598	534000	503202	518598	534000
					2516.01	2592.99	2670	2516.01	2592.99	2670
40	PI/2 BPSK	30	1	0	22.73	22.92	22.92	22.64	22.83	22.83
			1	1	23.35	23.37	22.98	23.26	23.28	22.89
			54	27	23.06	23.60	23.55	22.97	23.51	23.46
			100	0	23.15	23.61	23.74	23.06	23.52	23.65
	QPSK		1	0	22.95	22.89	22.80	22.86	22.80	22.71
			1	1	22.92	22.81	22.42	22.83	22.72	22.33
			54	27	23.18	23.36	23.18	23.09	23.27	23.09
			100	0	22.89	22.78	23.27	22.80	22.69	23.18
	16QAM		1	0	23.25	22.92	22.88	23.16	22.83	22.79
			1	1	22.76	22.85	22.65	22.67	22.76	22.56
			54	27	23.15	23.47	23.16	23.06	23.38	23.07



RF Test Report					Report for: 42-000-0000-0000					
			100	0	22.72	23.40	23.20	22.63	23.31	23.11
	64QAM		1	0	22.97	22.84	22.36	22.88	22.75	22.27
			1	1	22.43	22.47	22.98	22.34	22.38	22.89
			54	27	23.00	23.48	23.21	22.91	23.39	23.12
			100	0	22.78	22.67	23.18	22.69	22.58	23.09
	256QAM		1	0	22.18	22.15	21.92	22.09	22.06	21.83
			1	1	22.29	22.17	21.93	22.20	22.08	21.84
			54	27	22.31	22.18	21.95	22.22	22.09	21.86
			100	0	22.34	22.25	22.00	22.25	22.16	21.91
	Bandwidth(MHz)		Modulation	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)
					505200	518598	531996	505200	518598	531996
					2526	2592.99	2659.98	2526	2592.99	2659.98
60	PI/2 BPSK	30	1	0	22.45	22.70	22.04	22.36	22.61	21.95
			1	1	22.48	22.72	22.01	22.39	22.63	21.92
			81	40	23.35	23.14	23.02	23.26	23.05	22.93
			162	0	22.44	23.15	23.10	22.35	23.06	23.01
	QPSK		1	0	23.14	23.05	22.82	23.05	22.96	22.73
			1	1	23.69	23.60	23.34	23.60	23.51	23.25
			81	40	23.67	23.55	23.27	23.58	23.46	23.18
			162	0	23.66	23.60	23.30	23.57	23.51	23.21
	16QAM		1	0	23.28	23.19	23.05	23.19	23.10	22.96
			1	1	23.62	23.62	23.48	23.53	23.53	23.39
			81	40	23.65	23.57	23.19	23.56	23.48	23.10
			162	0	23.72	23.54	23.31	23.63	23.45	23.22
	64QAM		1	0	22.73	22.62	22.59	22.64	22.53	22.50
			1	1	23.21	23.17	23.18	23.12	23.08	23.09
			81	40	23.73	23.65	23.44	23.64	23.56	23.35
			162	0	23.61	23.60	23.34	23.52	23.51	23.25
	256QAM		1	0	22.03	22.02	21.85	21.94	21.93	21.76
			1	1	22.01	21.85	21.76	21.92	21.76	21.67
			81	40	22.20	22.09	21.80	22.11	22.00	21.71
			162	0	22.21	22.08	21.84	22.12	21.99	21.75
	Bandwidth(MHz)		Modulation	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)
					507204	518598	529998	507204	518598	529998
					2536.02	2592.99	2649.99	2536.02	2592.99	2649.99
80	PI/2 BPSK	30	1	0	22.60	21.98	22.57	22.51	21.89	22.48
			1	1	22.55	22.49	22.61	22.46	22.40	22.52
			108	64	22.74	22.65	22.82	22.65	22.56	22.73
			216	0	22.91	22.62	22.70	22.82	22.53	22.61



			1	0	22.88	22.86	22.76	22.79	22.77	22.67
	QPSK		1	1	23.35	23.31	23.27	23.26	23.22	23.18
			108	64	23.35	23.29	23.16	23.26	23.20	23.07
			216	0	23.33	23.24	23.16	23.24	23.15	23.07
			1	0	22.87	22.86	22.82	22.78	22.77	22.73
	16QAM		1	1	23.37	23.39	23.20	23.28	23.30	23.11
			108	64	23.29	23.33	23.11	23.20	23.24	23.02
			216	0	23.34	23.25	23.14	23.25	23.16	23.05
			1	0	22.55	22.65	22.50	22.46	22.56	22.41
	64QAM		1	1	22.98	23.08	23.05	22.89	22.99	22.96
			108	64	23.27	23.40	23.09	23.18	23.31	23.00
			216	0	23.31	23.36	23.16	23.22	23.27	23.07
			1	0	21.85	21.84	21.68	21.76	21.75	21.59
	256QAM		1	1	21.76	21.78	21.66	21.67	21.69	21.57
			108	64	21.84	21.88	21.68	21.75	21.79	21.59
			216	0	21.84	21.83	21.69	21.75	21.74	21.60
					RB	RB	Maximum Output			EIRP(dBm)
Bandwidth(MHz)	Modulation	SCS(KHz)	Allocation	Offset	Power(dBm)					
					509202	518598	528000	509202	518598	528000
					2546.01	2592.99	2640	2546.01	2592.99	2640
100	PI/2 BPSK	30	1	0	22.44	22.62	22.14	22.35	22.53	22.05
			1	1	22.41	22.45	22.05	22.32	22.36	21.96
			135	67	22.60	23.43	22.52	22.51	23.34	22.43
			270	0	22.65	23.24	22.62	22.56	23.15	22.53
	QPSK		1	0	22.74	22.82	22.80	22.65	22.73	22.71
			1	1	23.23	23.35	23.33	23.14	23.26	23.24
			135	67	23.25	23.32	23.16	23.16	23.23	23.07
			270	0	23.19	23.21	23.15	23.10	23.12	23.06
	16QAM		1	0	22.81	22.98	22.98	22.72	22.89	22.89
			1	1	23.28	23.63	23.42	23.19	23.54	23.33
			135	67	23.22	23.28	23.15	23.13	23.19	23.06
			270	0	23.21	23.26	23.13	23.12	23.17	23.04
	64QAM		1	0	22.32	22.40	22.32	22.23	22.31	22.23
			1	1	22.46	22.89	22.89	22.37	22.80	22.80
			135	67	23.24	23.22	23.15	23.15	23.13	23.06
			270	0	23.23	23.28	23.22	23.14	23.19	23.13
	256QAM		1	0	21.78	21.82	21.76	21.69	21.73	21.67
			1	1	21.77	21.78	21.68	21.68	21.69	21.59
			135	67	21.80	22.72	21.67	21.71	22.63	21.58
			270	0	21.78	21.80	21.75	21.69	21.71	21.66



DC-2A-n41A						Maximum Output Power(dBm)			EIRP(dBm)		
Bandwidth (MHz)	Modulation	Modulation (LTE)	SCS(KHz)	RB	RB	501204	518598	535998	501204	518598	535998
				Allocation	Offset	2506.02	2592.99	2679.99	2506.02	2592.99	2679.99
20	PI/2 BPSK	LTE-B2 QPSK 20MHz 1880MHz	30	1	0	22.87	22.83	22.56	22.78	22.74	22.47
				1	1	23.44	22.37	23.08	23.35	22.28	22.99
				25	12	23.42	23.45	23.23	23.33	23.36	23.14
				50	0	23.45	23.34	23.15	23.36	23.25	23.06
	QPSK			1	0	22.80	22.68	22.46	22.71	22.59	22.37
				1	1	23.26	23.18	23.03	23.17	23.09	22.94
				25	12	23.34	23.33	23.12	23.25	23.24	23.03
				50	0	23.35	23.39	23.15	23.26	23.30	23.06
	16QAM			1	0	22.71	22.70	22.50	22.62	22.61	22.41
				1	1	23.23	23.07	23.00	23.14	22.98	22.91
				25	12	23.30	23.35	23.15	23.21	23.26	23.06
				50	0	23.41	23.37	23.11	23.32	23.28	23.02
	64QAM			1	0	22.65	22.23	22.03	22.56	22.14	21.94
				1	1	22.87	22.67	22.49	22.78	22.58	22.40
				25	12	23.31	23.40	23.15	23.22	23.31	23.06
				50	0	23.31	23.40	23.16	23.22	23.31	23.07
	256QAM			1	0	21.68	21.73	21.59	21.59	21.64	21.50
				1	1	21.64	21.70	21.52	21.55	21.61	21.43
				25	12	21.77	21.70	21.54	21.68	21.61	21.45
				50	0	21.90	21.87	21.70	21.81	21.78	21.61
Bandwidth (MHz)	Modulation	Modulation (LTE)	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)		
						503202	518598	534000	503202	518598	534000
						2516.01	2592.99	2670	2516.01	2592.99	2670
40	PI/2 BPSK	LTE B2-QPSK-20MHz-1880MHz	30	1	0	23.04	22.93	23.01	22.95	22.84	22.92
				1	1	23.56	23.33	22.95	23.47	23.24	22.86
				54	27	23.37	23.38	23.29	23.28	23.29	23.20
				100	0	23.39	23.34	23.38	23.30	23.25	23.29
	QPSK			1	0	22.89	22.87	22.95	22.80	22.78	22.86
				1	1	23.41	23.29	23.47	23.32	23.20	23.38
				54	27	23.34	23.33	23.28	23.25	23.24	23.19
				100	0	23.41	23.40	23.39	23.32	23.31	23.30
	16QAM			1	0	22.82	22.57	22.91	22.73	22.48	22.82
				1	1	23.46	23.18	23.35	23.37	23.09	23.26
				54	27	23.39	23.35	23.38	23.30	23.26	23.29
				100	0	23.52	23.41	23.42	23.43	23.32	23.33
	64QAM			1	0	22.48	22.17	22.29	22.39	22.08	22.20



				1	1	23.42	22.93	22.77	23.33	22.84	22.68
				54	27	23.34	23.22	23.33	23.25	23.13	23.24
				100	0	23.40	23.41	23.39	23.31	23.32	23.30
				1	0	21.69	22.01	21.85	21.60	21.92	21.76
				1	1	21.65	22.03	21.87	21.56	21.94	21.78
				54	27	21.85	21.81	21.79	21.76	21.72	21.70
				100	0	22.15	21.94	21.95	22.06	21.85	21.86
Bandwidth (MHz)	Modulation	Modulation (LTE)	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)		
						505200	518598	531996	505200	518598	531996
						2526	2592.99	2659.98	2526	2592.99	2659.98
60	PI/2 BPSK	LTE B2-QPSK- 20MHz-1880MHz	30	1	0	22.68	22.65	22.76	22.59	22.56	22.67
				1	1	23.29	23.16	23.42	23.20	23.07	23.33
				81	40	23.25	22.28	23.18	23.16	22.19	23.09
				162	0	23.30	23.35	23.21	23.21	23.26	23.12
	QPSK			1	0	22.66	22.54	22.75	22.57	22.45	22.66
				1	1	23.15	23.06	23.22	23.06	22.97	23.13
				81	40	23.21	23.24	23.16	23.12	23.15	23.07
				162	0	23.27	23.37	23.22	23.18	23.28	23.13
	16QAM			1	0	22.60	22.60	22.50	22.51	22.51	22.41
				1	1	23.18	23.11	23.16	23.09	23.02	23.07
				81	40	23.26	23.26	23.19	23.17	23.17	23.10
				162	0	23.21	23.37	23.20	23.12	23.28	23.11
	64QAM			1	0	22.07	21.97	22.38	21.98	21.88	22.29
				1	1	22.85	22.48	22.87	22.76	22.39	22.78
				81	40	23.26	23.29	23.13	23.17	23.20	23.04
				162	0	23.35	23.40	23.27	23.26	23.31	23.18
	256QAM			1	0	21.46	21.45	21.48	21.37	21.36	21.39
				1	1	21.57	21.56	21.55	21.48	21.47	21.46
				81	40	21.71	21.90	21.65	21.62	21.81	21.56
				162	0	21.75	21.90	21.59	21.66	21.81	21.50
Bandwidth (MHz)	Modulation	Modulation (LTE)	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)		
						507204	518598	529998	507204	518598	529998
						2536.02	2592.99	2649.99	2536.02	2592.99	2649.99
80	PI/2 BPSK	LTE B2-QPSK- 20MHz-1880MHz	30	1	0	22.34	22.52	22.40	22.25	22.43	22.31
				1	1	22.92	22.96	23.02	22.83	22.87	22.93
				108	64	22.95	22.95	23.05	22.86	22.86	22.96
				216	0	22.81	22.97	22.87	22.72	22.88	22.78
	QPSK			1	0	22.95	22.37	22.45	22.86	22.28	22.36
				1	1	22.77	22.97	22.88	22.68	22.88	22.79



	16QAM			108	64	22.88	23.02	22.93	22.79	22.93	22.84
				216	0	22.96	22.90	22.92	22.87	22.81	22.83
				1	0	22.23	22.33	22.34	22.14	22.24	22.25
				1	1	22.77	22.92	23.01	22.68	22.83	22.92
				108	64	22.92	23.03	22.96	22.83	22.94	22.87
				216	0	22.93	22.97	22.88	22.84	22.88	22.79
	64QAM			1	0	21.70	21.72	21.95	21.61	21.63	21.86
				1	1	22.22	22.49	22.50	22.13	22.40	22.41
				108	64	22.91	23.08	23.00	22.82	22.99	22.91
				216	0	22.80	23.00	22.89	22.71	22.91	22.80
				1	0	21.20	21.18	21.18	21.11	21.09	21.09
				1	1	21.21	21.24	21.44	21.12	21.15	21.35
	256QAM			108	64	21.44	21.49	21.46	21.35	21.40	21.37
				216	0	21.32	21.70	21.40	21.23	21.61	21.31

Bandwidth (MHz)	Modulation	Modulation (LTE)	SCS(KHz)	RB Allocation	RB Offset	Maximum Output Power(dBm)			EIRP(dBm)		
						509202	518598	528000	509202	518598	528000
						2546.01	2592.99	2640	2546.01	2592.99	2640

100	PI/2 BPSK	LTE B2-QPSK- 20MHz-1880MHz	30	1	0	22.40	22.55	22.34	22.31	22.46	22.25
				1	1	22.89	23.01	22.95	22.80	22.92	22.86
				135	67	22.91	22.90	23.00	22.82	22.81	22.91
				270	0	22.87	23.07	23.00	22.78	22.98	22.91
	QPSK			1	0	22.37	22.47	22.17	22.28	22.38	22.08
				1	1	22.86	23.02	23.02	22.77	22.93	22.93
				135	67	22.80	22.84	22.92	22.71	22.75	22.83
				270	0	23.04	22.95	22.90	22.95	22.86	22.81
	16QAM			1	0	22.21	22.21	22.39	22.12	22.12	22.30
				1	1	22.81	22.90	22.94	22.72	22.81	22.85
				135	67	22.85	22.89	22.95	22.76	22.80	22.86
				270	0	22.83	23.01	22.95	22.74	22.92	22.86
	64QAM			1	0	21.97	22.12	21.94	21.88	22.03	21.85
				1	1	22.51	22.56	22.53	22.42	22.47	22.44
				135	67	22.85	22.91	22.97	22.76	22.82	22.88
				270	0	23.04	22.89	22.96	22.95	22.80	22.87
	256QAM			1	0	21.15	21.26	21.14	21.06	21.17	21.05
				1	1	21.26	21.35	21.03	21.17	21.26	20.94
				135	67	21.37	21.39	21.43	21.28	21.30	21.34
				270	0	21.59	21.21	21.49	21.50	21.12	21.40

5.2 Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

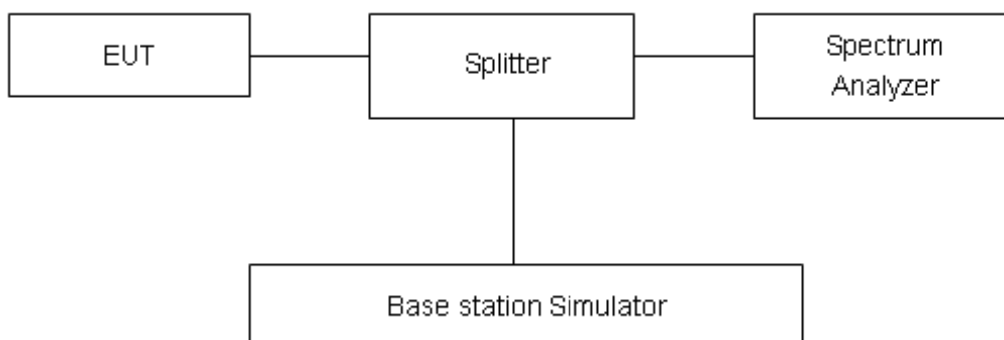
The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter for NR n41 (40MHz/100MHz).

RBW is set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter for DC_2A_n41A (40MHz/100MHz).

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=624\text{Hz}$.



Test Result

NR n41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100% RB	P1/2 BPSK	40	503202	2516.01	35.743	38.310
			518598	2592.99	35.902	38.290
			534000	2670	35.853	38.310
	QPSK	40	503202	2516.01	35.844	38.190
			518598	2592.99	35.868	38.270
			534000	2670	35.870	38.300
	16QAM	40	503202	2516.01	35.774	38.330
			518598	2592.99	35.939	38.250
			534000	2670	35.953	38.470
	64QAM	40	503202	2516.01	35.835	38.360
			518598	2592.99	35.869	38.320
			534000	2670	35.908	38.390
	256QAM	40	503202	2516.01	35.700	38.230
			518598	2592.99	35.755	38.280
			534000	2670	35.753	38.410
1RB	P1/2 BPSK	100	509202	2546.01	0.714	1.279
			518598	2592.99	0.784	1.318
			528000	2640	0.839	1.361
	QPSK	100	509202	2546.01	0.728	1.303
			518598	2592.99	0.790	1.345
			528000	2640	0.735	1.269
	16QAM	100	509202	2546.01	0.712	1.308
			518598	2592.99	0.752	1.277
			528000	2640	0.671	1.251
	64QAM	100	509202	2546.01	0.741	1.312
			518598	2592.99	0.705	1.258
			528000	2640	0.688	1.367
	256QAM	100	509202	2546.01	0.686	1.314
			518598	2592.99	0.733	1.298



			528000	2640	0.720	1.233
100% RB	P1/2 BPSK	100	503202	2516.01	96.446	101.5
			518598	2592.99	96.346	101.6
			534000	2670	96.568	101.6
	QPSK	100	503202	2516.01	96.347	101.6
			518598	2592.99	96.418	101.3
			534000	2670	96.662	101.5
	16QAM	100	503202	2516.01	96.229	101.3
			518598	2592.99	96.427	101.3
			534000	2670	96.359	101.4
	64QAM	100	503202	2516.01	96.119	101.4
			518598	2592.99	96.339	101.4
			534000	2670	96.345	101.4
	256QAM	100	503202	2516.01	96.151	101.2
			518598	2592.99	96.254	101.3
			534000	2670	96.411	101.4



DC_2A_n41A						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	P1/2 BPSK	40	503202	2516.01	37.794	40.280
			518598	2592.99	37.930	40.320
			534000	2670	37.873	40.380
	QPSK	40	503202	2516.01	37.892	40.370
			518598	2592.99	37.879	40.310
			534000	2670	37.881	40.300
	16QAM	40	503202	2516.01	37.844	40.220
			518598	2592.99	37.891	40.290
			534000	2670	37.948	40.360
	64QAM	40	503202	2516.01	37.800	40.210
			518598	2592.99	37.845	40.240
			534000	2670	37.861	40.230
	256QAM	40	503202	2516.01	37.857	40.310
			518598	2592.99	37.868	40.340
			534000	2670	37.950	40.370
1%	P1/2 BPSK	100	503202	2516.01	0.733	1.300
			518598	2592.99	0.767	1.295
			534000	2670	0.750	1.302
	QPSK	100	503202	2516.01	0.747	1.305
			518598	2592.99	0.741	1.228
			534000	2670	0.696	1.262
	16QAM	100	503202	2516.01	1.122	1.482
			518598	2592.99	0.754	1.411
			534000	2670	0.738	1.305
	64QAM	100	503202	2516.01	0.753	1.298
			518598	2592.99	0.698	1.242
			534000	2670	0.704	1.328
	256QAM	100	503202	2516.01	0.863	1.360
			518598	2592.99	0.722	1.268



			534000	2670	0.688	1.260
100%	P1/2 BPSK	100	503202	2546.01	96.381	101.600
			518598	2592.99	96.392	101.500
			534000	2640	96.505	101.500
	QPSK	100	503202	2546.01	96.197	101.500
			518598	2592.99	96.404	101.600
			534000	2640	96.622	101.700
	16QAM	100	503202	2546.01	96.252	101.500
			518598	2592.99	96.439	101.400
			534000	2640	96.375	101.600
	64QAM	100	503202	2546.01	96.068	101.100
			518598	2592.99	97.667	102.100
			534000	2640	96.449	101.500
	256QAM	100	503202	2546.01	96.151	101.200
			518598	2592.99	96.359	101.300
			534000	2640	96.430	101.100



NR n41 P1/2 BPSK 100%RB40MHz CH-Low



NR n41 QPSK 100%RB 40MHz CH-Low



NR n41 P1/2 BPSK 100% 40MHz CH-Middle



NR n41 QPSK 100%RB40MHz CH-Middle



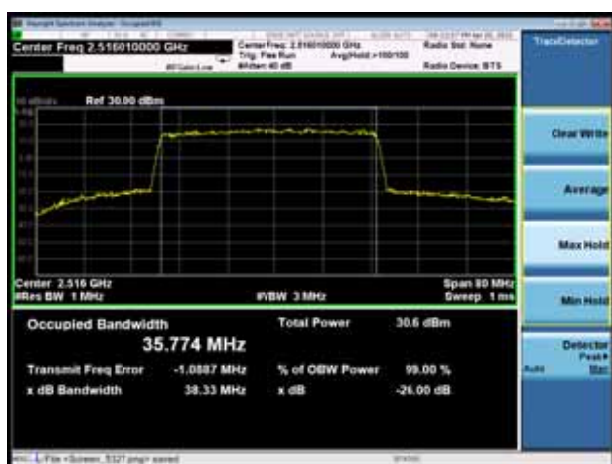
NR n41 P1/2 BPSK 100%RB 40MHz CH-High



NR n41 QPSK RB100%40MHz CH-High



NR n41 16QAM 100%RB40MHz CH-Low



NR n41 64QAM 100%RB40MHz CH-Low



NR n41 16QAM 100%RB40MHz CH-Middle



NR n41 64QAM 100%RB40MHz CH-Middle



NR n41 16QAM 100%RB40MHz CH-High



NR n41 64QAM 100%RB40MHz CH-High



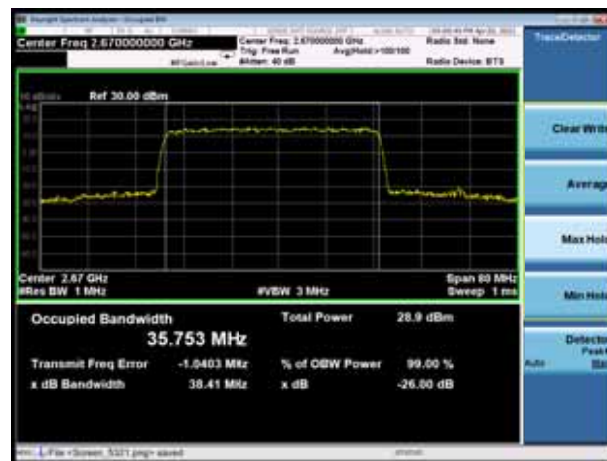
NR n41 256QAM 100%RB 40MHz CH-Low



NR n41 256QAM 100%RB40MHz CH-Middle



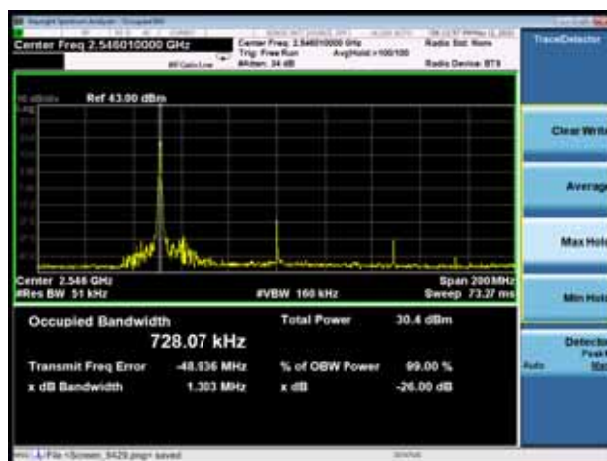
NR n41 256QAM 100%RB40MHz CH-High



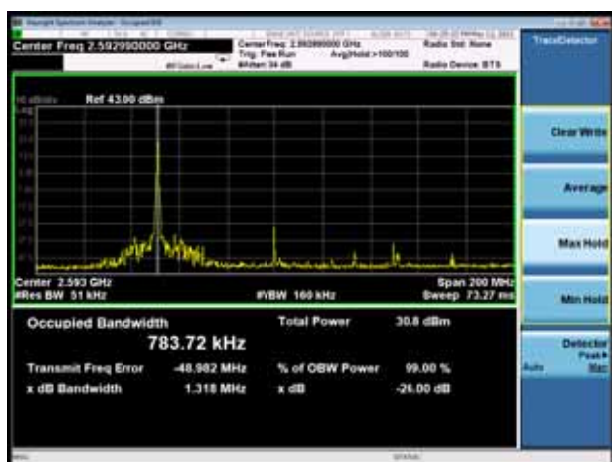
NR n41 P1/2 BPSK 1RB 100MHz CH-Low



NR n41 QPSK 1RB 100MHz CH-Low



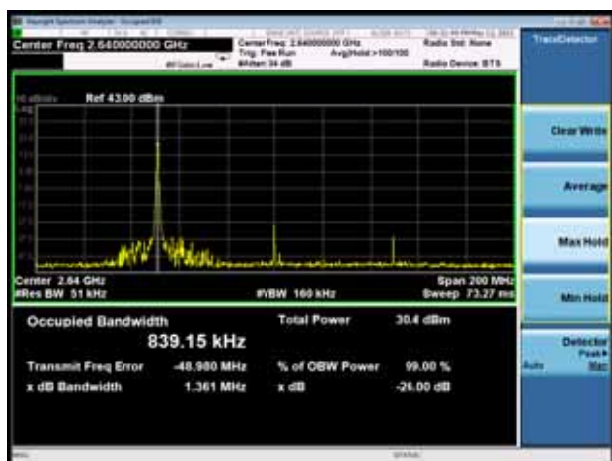
NR n41 P1/2 BPSK 1RB 100MHz CH-Middle



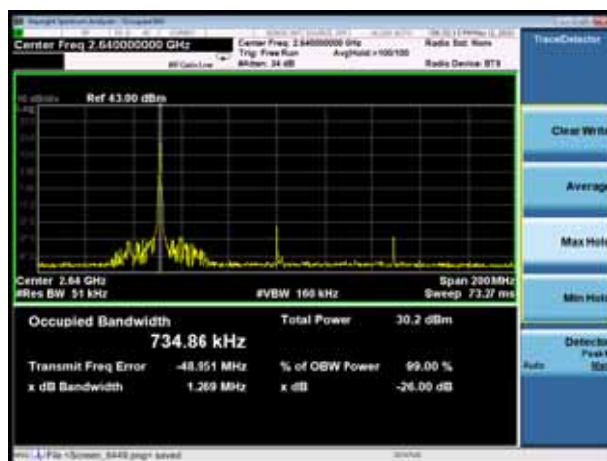
NR n41 QPSK 1RB 100MHz CH-Middle



NR n41 P1/2 BPSK 1RB 100MHz CH-High



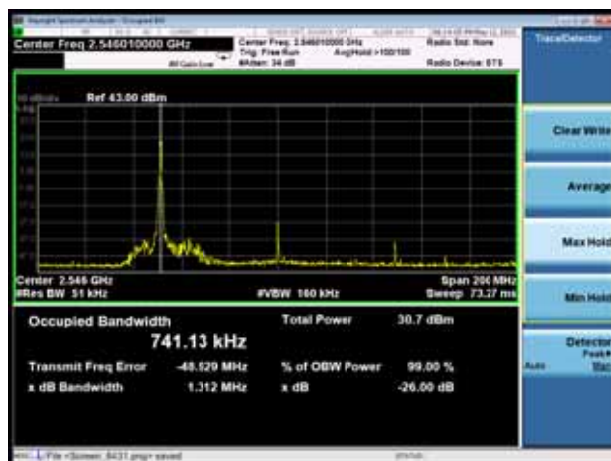
NR n41 QPSK 1RB 100MHz CH-High



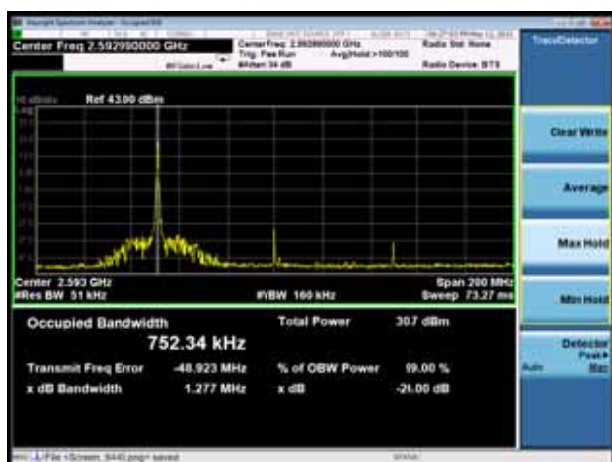
NR n41 16QAM 1RB 100MHz CH-Low



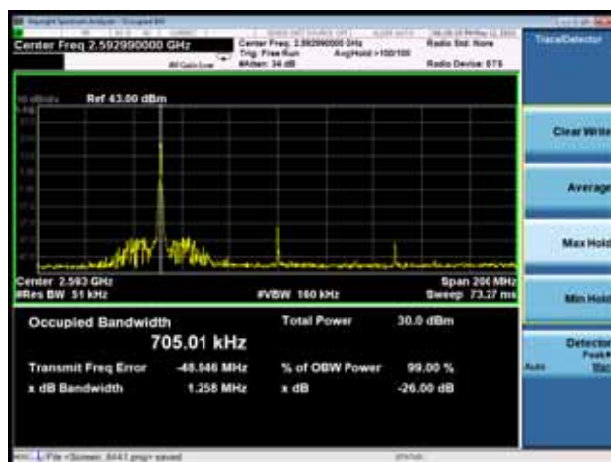
NR n41 64QAM 1RB 100MHz CH-Low



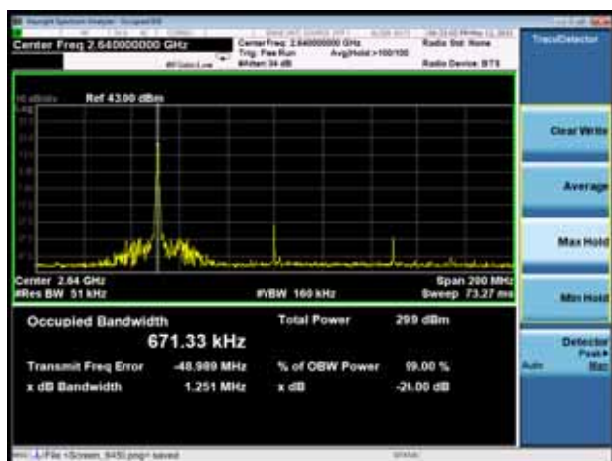
NR n41 16QAM 1RB 100MHz CH-Middle



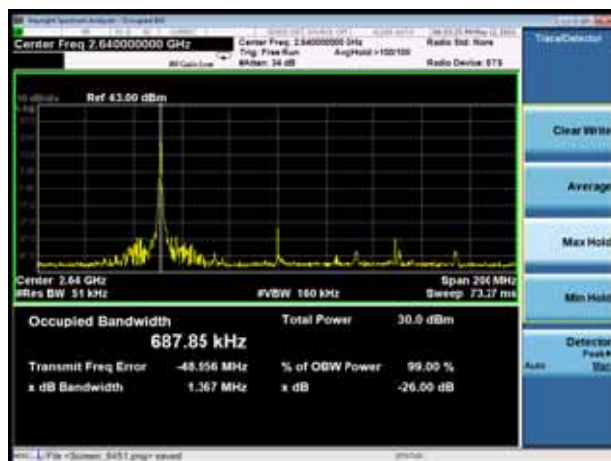
NR n41 64QAM 1RB 100MHz z CH-Middle



NR n41 16QAM 1RB 100MHz z CH-High



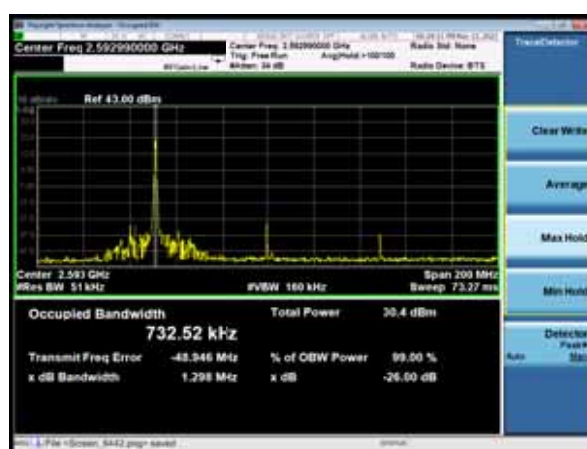
NR n41 64QAM 1RB 100MHz CH-High



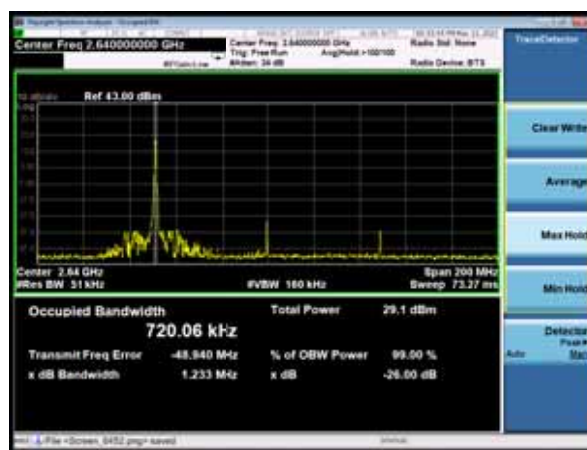
NR n41 256QAM 1RB 100MHz CH-Low



NR n41 256QAM 1RB 100MHz z CH-Middle



NR n41 256QAM 1RB 100MHz CH-High





NR n41 P1/2 BPSK 100%RB 100MHz CH-Low



NR n41 QPSK 100%RB 100MHz CH-Low



NR n41 P1/2 BPSK 100%RB 100MHz CH-Middle



NR n41 QPSK 100%RB 100MHz CH-Middle



NR n41 P1/2 BPSK 100%RB 100MHz CH-High



NR n41 QPSK 100%RB 100MHz CH-High



NR n41 16QAM 100%RB 100MHz CH-Low



NR n41 64QAM 100%RB 100MHz CH-Low



NR n41 16QAM 100%RB 100MHz CH-Middle



NR n41 64QAM 100%RB 100MHz z CH-Middle



NR n41 16QAM 100%RB 100MHz z CH-High



NR n41 64QAM 100%RB 100MHz CH-High



NR n41 256QAM 100%RB 100MHz CH-Low



DC_2A_n41A P1/2 BPSK 40MHz CH-Low



NR n41 256QAM 100%RB 100MHz z CH-Middle



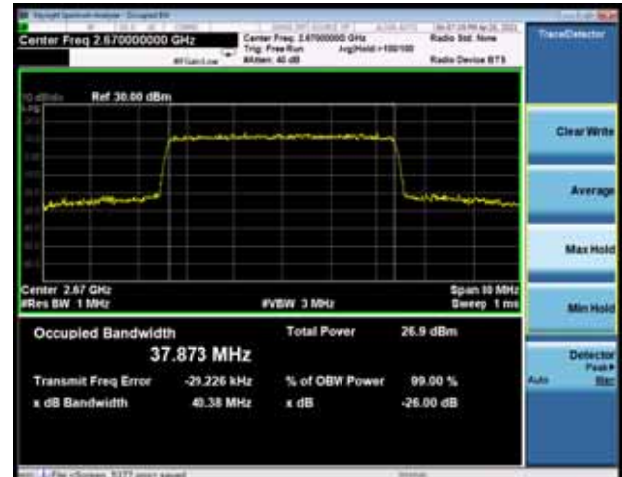
DC_2A_n41A P1/2 BPSK 40MHz CH-Middle



NR n41 256QAM 100%RB 100MHz CH-High



DC_2A_n41A P1/2 BPSK 40MHz CH-High





DC_2A_n41A QPSK 100 %RB40MHz CH-Low



DC_2A_n41A 16QAM 100 %RB 40MHz CH-Low



DC_2A_n41A QPSK100 %RB 40MHz CH-Middle



DC_2A_n41A 16QAM100 %RB 40MHz CH-Middle



DC_2A_n41A QPSK100 %RB 40MHz CH-High



DC_2A_n41A 16QAM 100 %RB 40MHz CH-High



DC_2A_n41A 64QAM 100 %RB 40MHz CH-Low



DC_2A_n41A 256QAM 100 %RB 40MHz CH-Low



DC_2A_n41A 64QAM 100 %RB 40MHz CH-Middle



DC_2A_n41A 256QAM 100 %RB 40MHz CH-Middle



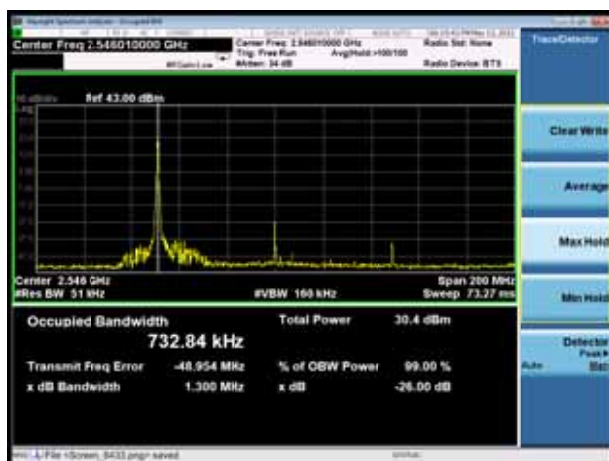
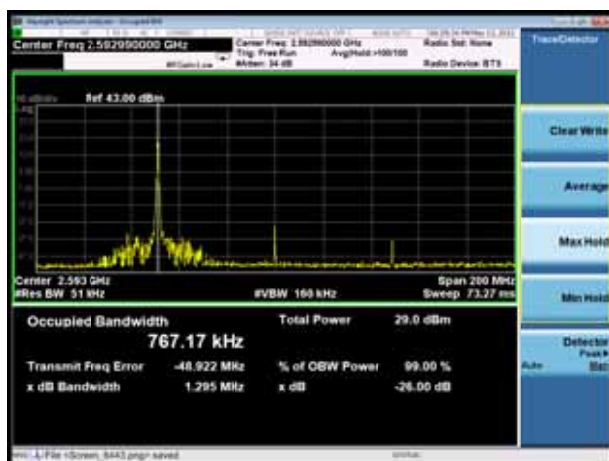
DC_2A_n41A 64QAM 100 %RB 40MHz CH-High



DC_2A_n41A 256QAM 100 %RB 40MHz CH-High



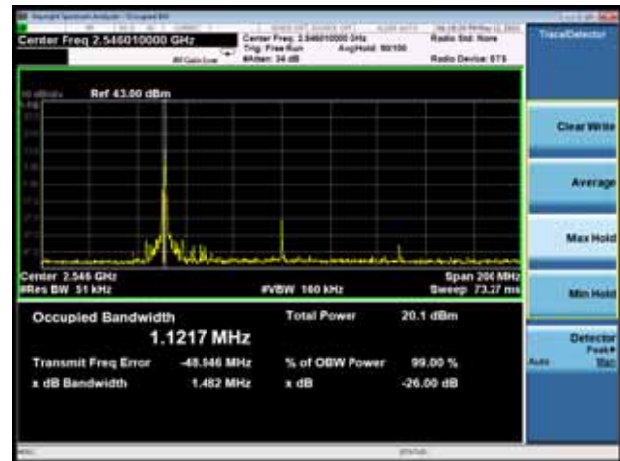
DC_2A_n41A P1/2 BPSK 1RB 100MHz CH-Low


DC_2A_n41A P1/2 BPSK 1RB 100MHz
CH-Middle

DC_2A_n41A P1/2 BPSK 1RB 100MHz
CH-High

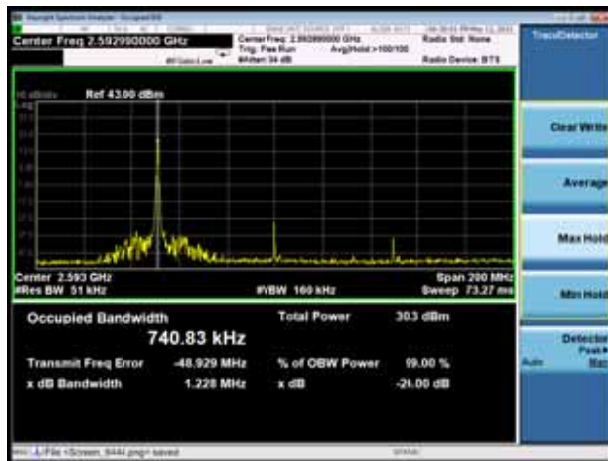

DC_2A_n41A QPSK 1RB 100MHz CH-Low



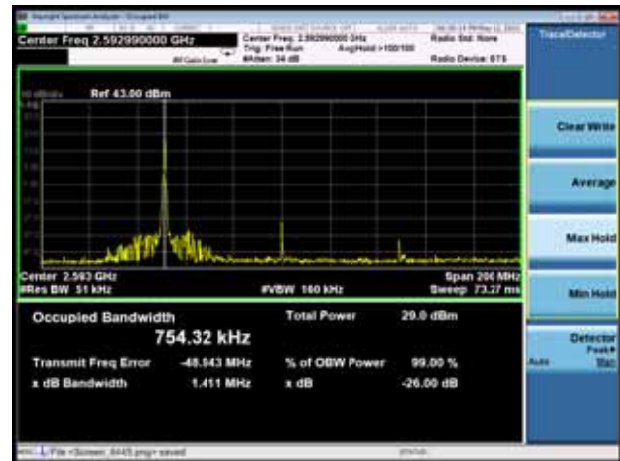
DC_2A_n41A 16QAM 1RB 100MHz CH-Low



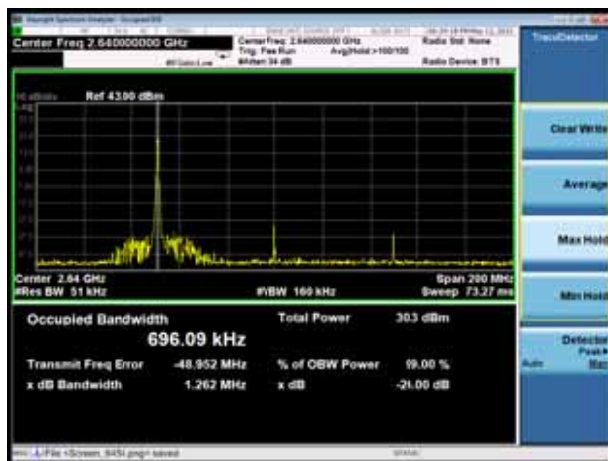
DC_2A_n41A QPSK 1RB 100MHz CH-Middle



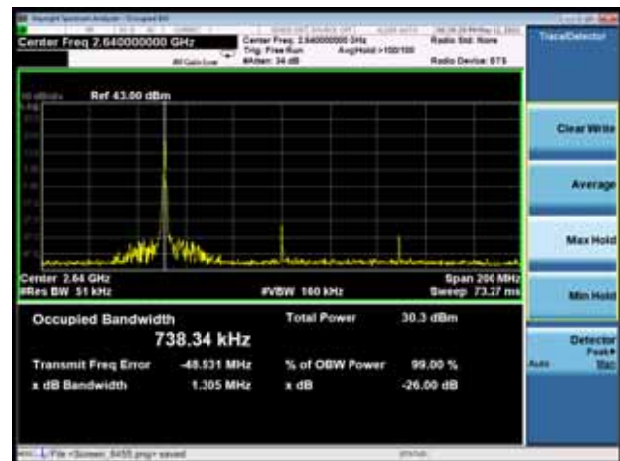
DC_2A_n41A 16QAM 1RB 100MHz CH-Middle



DC_2A_n41A QPSK1RB 100MHz CH-High



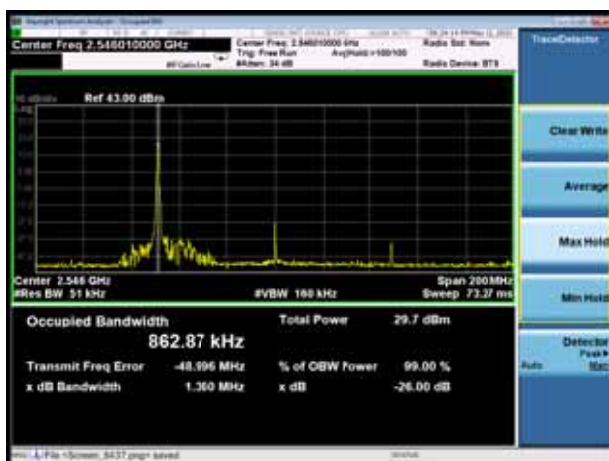
DC_2A_n41A 16QAM 1RB 100MHz CH-High



DC_2A_n41A 64QAM 1RB 100MHz CH-Low



DC_2A_n41A 256QAM 1RB 100MHz CH-Low



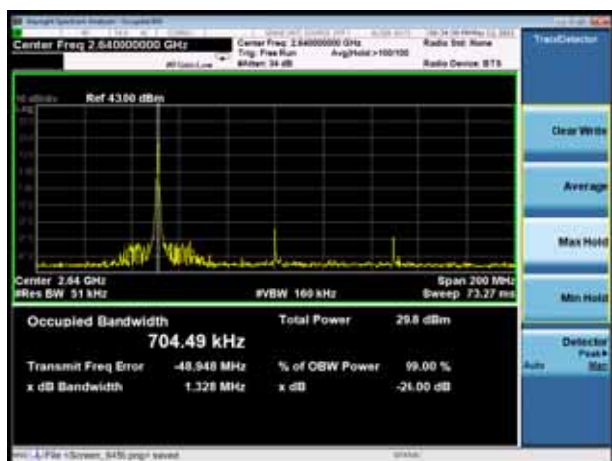
DC_2A_n41A 64QAM 1RB 100MHz CH-Middle



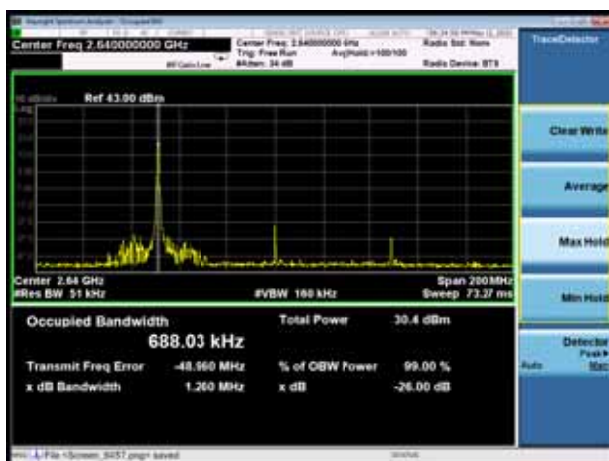
DC_2A_n41A 256QAM 1RB 100MHz CH-Middle



DC_2A_n41A 64QAM 1RB 100MHz CH-High



DC_2A_n41A 256QAM 1RB 100MHz CH-High



DC_2A_n41A P1/2 BPSK 100%RB 100MHz CH-Low



DC_2A_n41A P1/2 BPSK 100%RB 100MHz CH-Middle



DC_2A_n41A P1/2 BPSK 100%RB 100MHz CH-High





DC_2A_n41A QPSK 100%RB 100MHz CH-Low



DC_2A_n41A 16QAM 100%RB 100MHz CH-Low

DC_2A_n41A QPSK 100%RB 100MHz
CH-MiddleDC_2A_n41A 16QAM 100%RB 100MHz
CH-Middle

DC_2A_n41A QPSK 100%RB 100MHz CH-High



DC_2A_n41A 16QAM 100%RB 100MHz CH-High



DC_2A_n41A 64QAM 100%RB 100MHz
CH-LowDC_2A_n41A 256QAM 100%RB 100MHz
CH-LowDC_2A_n41A 64QAM 100%RB 100MHz
CH-MiddleDC_2A_n41A 256QAM 100%RB 100MHz
CH-MiddleDC_2A_n41A 64QAM 100%RB 100MHz
CH-HighDC_2A_n41A 256QAM 100%RB 100MHz
CH-High

5.3 Band Edge Compliance

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.

The testing follows KDB 971168 D01 v03r01 Section 6.0

The EUT was connected to spectrum analyzer and system simulator via a power divider.

The band edges of low and high channels for the highest RF powers were measured.

RBW is set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter for NR n41 (40MHz/100MHz).

RBW is set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter for DC_2A_n41A (40MHz/100MHz).

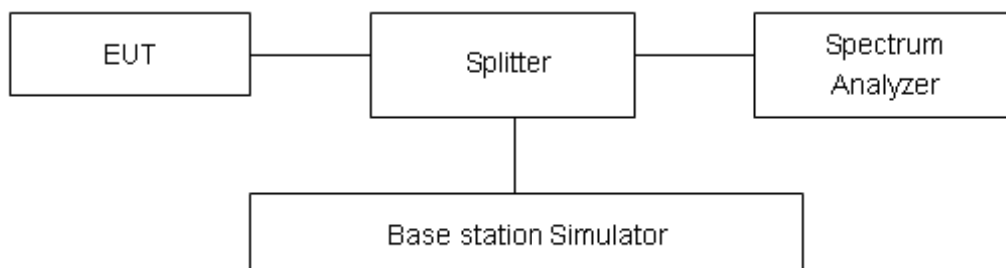
on spectrum analyzer.

Set spectrum analyzer with RMS detector.

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

Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(m) (4)/ specifies that “for BRS and EBS stations. 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)(4) 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 2490.5 MHz. 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.

Example:

The limit line is derived from 43 + 10log (P) dB below the transmitter power P(Watts)

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log (P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$$

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684\text{dB}$.



Test Result

All the test traces in the plots shows the test results clearly.

NR n41 40MHz PI/2 BPSK 1RB CH-Low



NR n41 40MHz PI/2 BPSK 1RB CH-High



NR n41 40MHz PI/2 BPSK 100%RB CH-Low



NR n41 40MHz PI/2 BPSK 100%RB CH-High



NR n41 40MHz QPSK 1RB CH-Low



NR n41 40MHz QPSK 1RB CH-High





NR n41 40MHz QPSK 100%RB CH-Low



NR n41 40MHz QPSK 100%RB CH-High



NR n41 40MHz 16QAM 1RB CH-Low



NR n41 40MHz 16QAM 1RB CH-High



NR n41 40MHz 16QAM 100%RB CH-Low



NR n41 40MHz 16QAM 100%RB CH-High

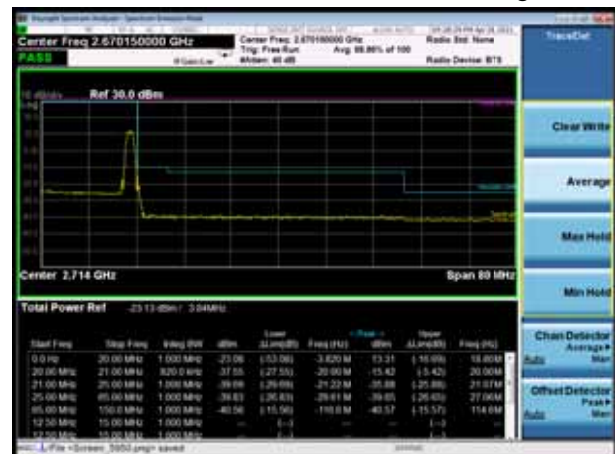




NR n41 40MHz 64QAM 1RB CH-Low



NR n41 40MHz 64QAM 1RB CH-High



NR n41 40MHz 64QAM 100%RB CH-Low



NR n41 40MHz 64QAM 100%RB CH-High



NR n41 40MHz 256QAM 1RB CH-Low



NR n41 40MHz 256QAM 1RB CH-High





NR n41 40MHz 256QAM 100%RB CH-Low



NR n41 40MHz 256QAM 100%RB CH-High





NR n41 100MHz PI/2 BPSK 1RB CH-Low



NR n41 100MHz PI/2 BPSK 1RB CH-High



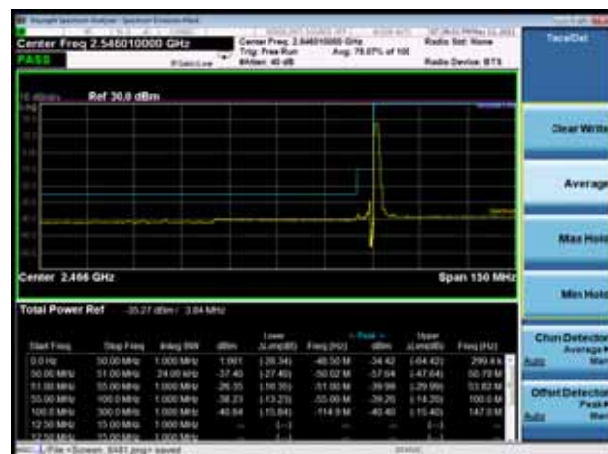
NR n41 100MHz PI/2 BPSK 100%RB CH-Low



NR n41 100MHz PI/2 BPSK 100%RB CH-High



NR n41 100MHz QPSK 1RB CH-Low



NR n41 100MHz QPSK 1RB CH-High







NR n41 100MHz 64QAM 1RB CH-Low



NR n41 100MHz 64QAM 1RB CH-High



NR n41 100MHz 64QAM 100%RB CH-Low



NR n41 100MHz 64QAM 100%RB CH-High



NR n41 100MHz 256QAM 1RB CH-Low



NR n41 100MHz 256QAM 1RB CH-High



NR n41 100MHz 256QAM 100%RB CH-Low



NR n41 100MHz 256QAM 100%RB CH-High





DC_2A_n41A 40MHz PI/2 BPSK 1RB CH-Low



DC_2A_n41A 40MHz PI/2 BPSK 1RB CH-High

DC_2A_n41A 40MHz PI/2 BPSK 100%RB
CH-LowDC_2A_n41A 40MHz PI/2 BPSK 100%RB
CH-High

DC_2A_n41A 40MHz QPSK 1RB CH-Low



DC_2A_n41A 40MHz QPSK 1RB CH-High

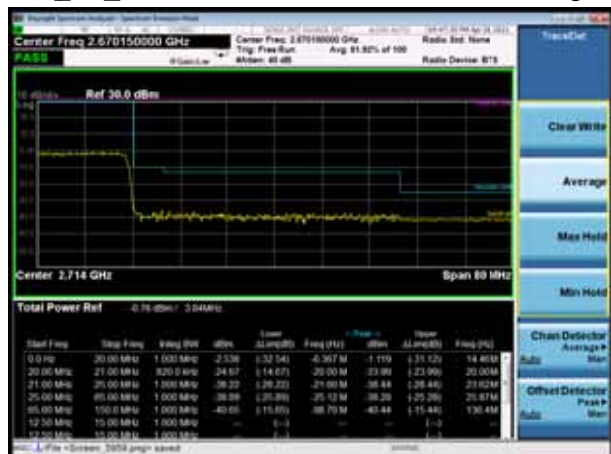




DC_2A_n41A 40MHz QPSK 100%RB CH-Low



DC_2A_n41A 40MHz QPSK 100%RB CH-High



DC_2A_n41A 40MHz 16QAM 1RB CH-Low



DC_2A_n41A 40MHz 16QAM 1RB CH-High



DC_2A_n41A 40MHz 16QAM 100%RB CH-Low



DC_2A_n41A 40MHz 16QAM 100%RB CH-High





N DC_2A_n41A 40MHz 64QAM 1RB CH-Low



DC_2A_n41A 40MHz 64QAM 1RB CH-High



DC_2A_n41A 40MHz 64QAM 100%RB CH-Low



DC_2A_n41A 40MHz 64QAM 100%RB CH-High

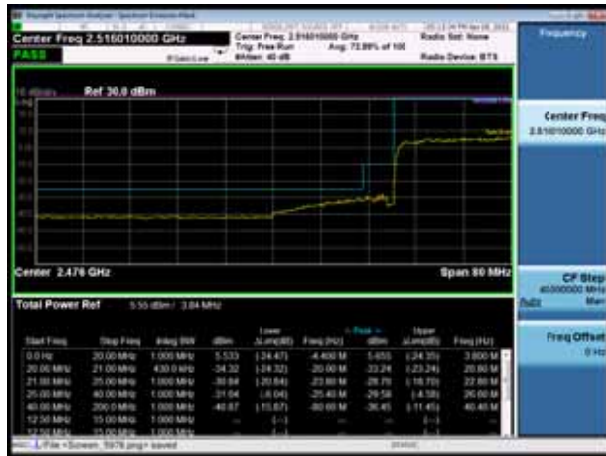
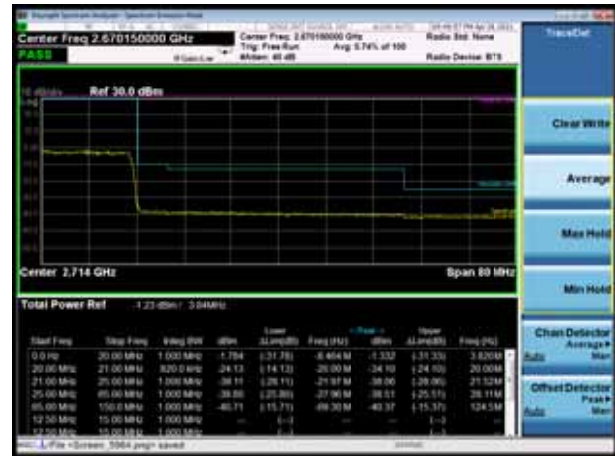


DC_2A_n41A 40MHz 256QAM 1RB CH-Low

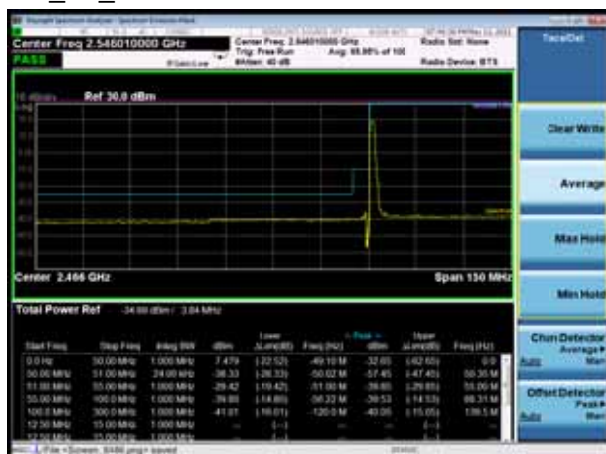


DC_2A_n41A 40MHz 256QAM 1RB CH-High



DC_2A_n41A 40MHz 256QAM 100%RB
CH-LowDC_2A_n41A 40MHz 256QAM 100%RB
CH-High

DC 2A n41A 100MHz PI/2 BPSK 1RB CH-Low



DC 2A n41A 100MHz PI/2 BPSK 1RB CH-High



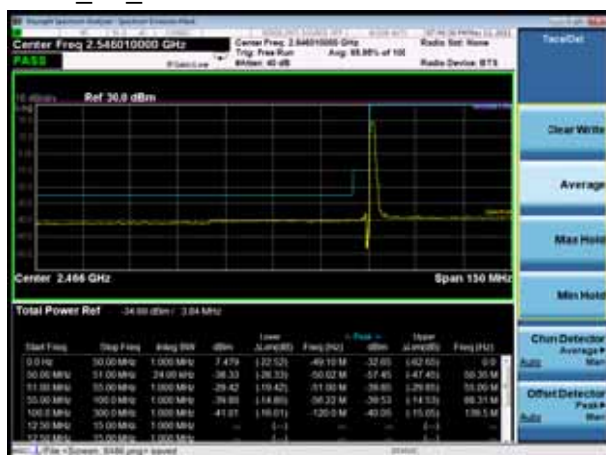
DC_2A_n41A 100MHz PI/2 BPSK 100%RB
CH-Low



DC_2A_n41A 100MHz PI/2 BPSK 100%RB
CH-High



DC 2A n41A 100MHz QPSK 1RB CH-Low



DC 2A n41A 100MHz QPSK 1RB CH-High





DC_2A_n41A 100MHz QPSK 100%RB CH-Low



DC_2A_n41A 100MHz QPSK 100%RB CH-High



DC_2A_n41A 100MHz 16QAM 1RB CH-Low



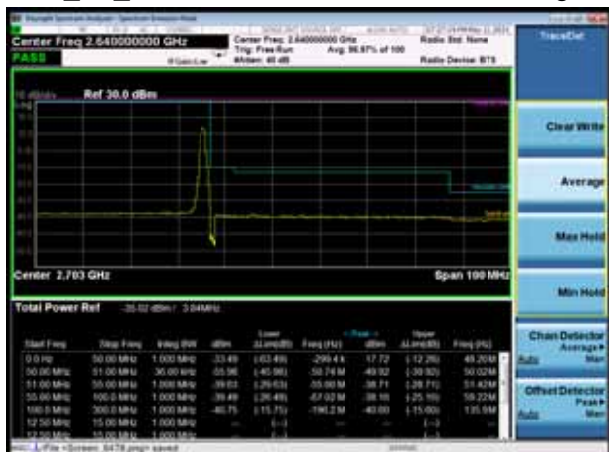
DC_2A_n41A 100MHz 16QAM 1RB CH-High

DC_2A_n41A 100MHz 16QAM 100%RB
CH-LowDC_2A_n41A 100MHz 16QAM 100%RB
CH-High

N DC 2A n41A 100MHz 64QAM 1RB CH-Low



DC 2A n41A 100MHz 64QAM 1RB CH-High



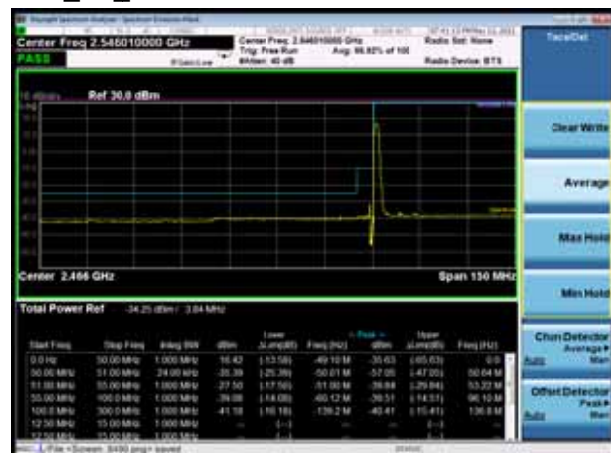
DC_2A_n41A 100MHz 64QAM 100%RB
CH-Low



DC_2A_n41A 100MHz 64QAM 100%RB
CH-High

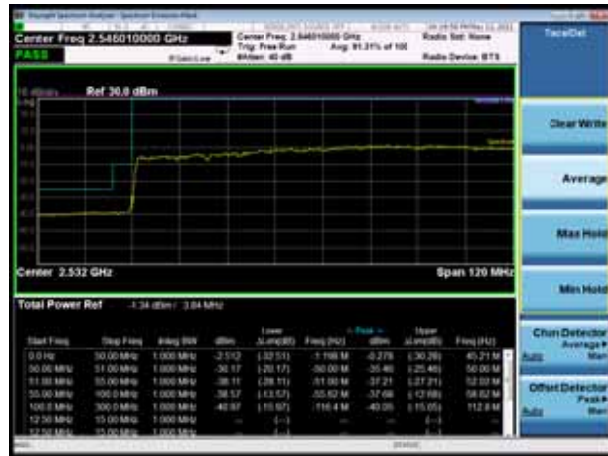


DC 2A n41A 100MHz 256QAM 1RB CH-Low



DC 2A n41A 100MHz 256QAM 1RB CH-High



DC_2A_n41A 40MHz 256QAM 100%RB
CH-LowDC_2A_n41A 100MHz 256QAM 100%RB
CH-High

5.4 Peak-to-Average Power Ratio (PAPR)

Ambient condition

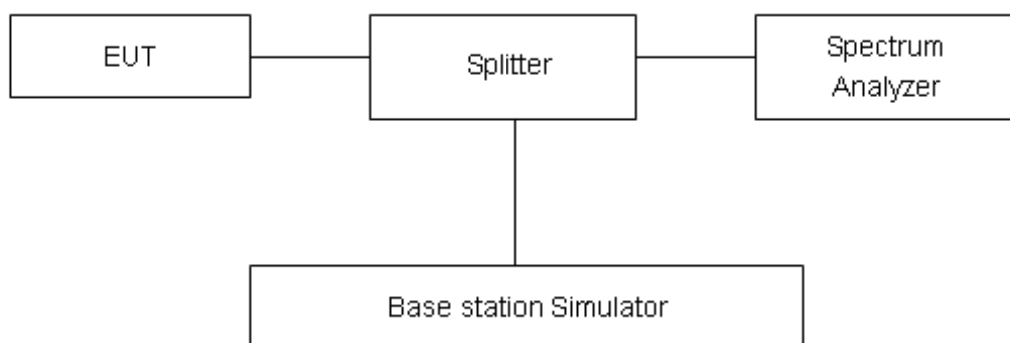
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

Measure the total peak power and record as PPK. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

Test Setup



Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.



Test Results

NR n41								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
P1/2 BPSK	40	503202	2516.01	25.48	14.44	11.04	≤13	PASS
		518598	2592.99	25.82	15.20	10.62	≤13	PASS
		534000	2670	25.80	14.48	11.32	≤13	PASS
QPSK	40	503202	2516.01	26.45	16.05	10.40	≤13	PASS
		518598	2592.99	26.94	15.00	11.94	≤13	PASS
		534000	2670	26.92	15.98	10.94	≤13	PASS
16QAM	40	503202	2516.01	27.36	14.55	12.81	≤13	PASS
		518598	2592.99	27.65	15.13	12.52	≤13	PASS
		534000	2670	12.20	15.8	12.20	≤13	PASS
64QAM	40	503202	2516.01	27.61	15.56	12.05	≤13	PASS
		518598	2592.99	27.87	15.87	12.00	≤13	PASS
		534000	2670	27.70	15.36	12.34	≤13	PASS
256QAM	40	503202	2516.01	26.10	13.84	12.26	≤13	PASS
		518598	2592.99	26.50	13.87	12.63	≤13	PASS
		534000	2670	26.27	13.56	12.71	≤13	PASS

DC_2A_n41A								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
P1/2 BPSK	40	503202	2516.01	26.16	15.22	10.94	≤13	PASS
		518598	2592.99	26.61	14.63	11.98	≤13	PASS
		534000	2670	26.50	14.73	11.77	≤13	PASS
QPSK	40	503202	2516.01	26.13	14.31	11.82	≤13	PASS
		518598	2592.99	26.68	15.06	11.62	≤13	PASS
		534000	2670	26.55	14.41	12.14	≤13	PASS
16QAM	40	503202	2516.01	27.23	14.74	12.49	≤13	PASS
		518598	2592.99	27.40	14.84	12.56	≤13	PASS
		534000	2670	27.44	15.77	11.67	≤13	PASS
64QAM	40	503202	2516.01	27.40	15.43	11.97	≤13	PASS
		518598	2592.99	23.57	11.37	12.20	≤13	PASS
		534000	2670	27.48	15.27	12.21	≤13	PASS
256QAM	40	503202	2516.01	25.89	12.99	12.90	≤13	PASS
		518598	2592.99	26.15	13.53	12.62	≤13	PASS
		534000	2670	26.05	13.43	12.62	≤13	PASS

5.5 Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -10°C to +45°C in 10°C step size.

(1) With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -10°C to +45°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

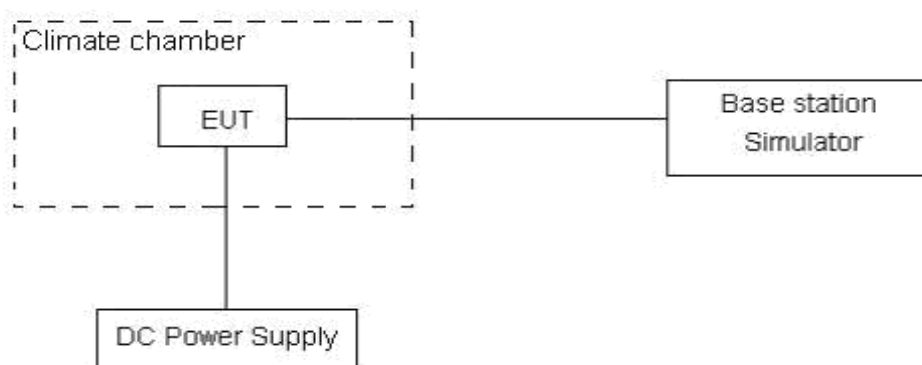
Frequency Stability (Voltage Variation)

The frequency stability shall be measured with variation of primary supply voltage as follows:

Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.4V and 4.2 V, with a nominal voltage of 3.85V.

Test setup



Limits

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

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3$, $U = 0.01\text{ppm}$.



Test Result

NR n41									
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	20MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	5.36	2.72	10.46	7.36	0.00285	0.00145	0.00556	0.00556
Extreme (45°C)		16.97	8.11	13.23	4.97	0.00903	0.00431	0.00704	0.00704
Extreme (40°C)		3.78	15.65	8.46	3.78	0.00201	0.00833	0.00450	0.00450
Extreme (30°C)		1.52	7.96	12.40	2.52	0.00081	0.00423	0.00660	0.00660
Extreme (20°C)		1.37	17.80	11.69	15.37	0.00073	0.00947	0.00622	0.00622
Extreme (10°C)		13.83	3.26	3.40	1.83	0.00735	0.00173	0.00181	0.00181
Extreme (0°C)		4.92	3.19	7.83	7.92	0.00262	0.00170	0.00416	0.00416
Extreme (-10°C)		9.53	11.47	9.05	4.53	0.00507	0.00610	0.00481	0.00481
25°C	LV	7.46	17.04	6.58	17.46	0.00397	0.00906	0.00350	0.00350
	HV	6.54	8.74	17.42	15.54	0.00348	0.00465	0.00926	0.00926
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	40MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	5.24	5.96	7.54	7.24	0.00279	0.00317	0.00401	0.00401
Extreme (45°C)		15.92	16.15	14.87	2.92	0.00847	0.00859	0.00791	0.00791
Extreme (40°C)		5.37	14.87	6.55	10.37	0.00285	0.00791	0.00348	0.00348
Extreme (30°C)		9.73	7.25	8.53	5.73	0.00518	0.00386	0.00454	0.00454
Extreme (20°C)		7.37	8.97	10.74	14.37	0.00392	0.00477	0.00571	0.00571
Extreme (10°C)		5.89	6.28	1.45	17.89	0.00313	0.00334	0.00077	0.00077
Extreme (0°C)		17.34	17.89	1.78	4.34	0.00922	0.00952	0.00095	0.00095
Extreme (-10°C)		3.24	7.02	13.40	2.24	0.00172	0.00374	0.00713	0.00713
25°C	LV	12.26	8.48	9.57	5.26	0.00652	0.00451	0.00509	0.00509
	HV	14.06	4.80	17.81	6.06	0.00748	0.00256	0.00947	0.00947
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	60MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	13.72	17.59	15.64	9.72	0.00730	0.00936	0.00832	0.00832
Extreme (45°C)		15.11	11.20	14.44	3.11	0.00804	0.00596	0.00768	0.00768
Extreme (40°C)		2.28	13.30	7.43	17.28	0.00121	0.00708	0.00395	0.00395
Extreme (30°C)		8.70	10.82	12.58	11.70	0.00463	0.00576	0.00669	0.00669
Extreme (20°C)		4.65	17.84	11.82	4.65	0.00247	0.00949	0.00628	0.00628
Extreme (10°C)		3.74	12.12	8.79	2.74	0.00199	0.00645	0.00467	0.00467



Extreme (0°C)		8.89	11.97	7.11	4.89	0.00473	0.00637	0.00378	0.00378
Extreme (-10°C)		8.87	10.58	8.66	7.87	0.00472	0.00563	0.00460	0.00460
25°C	LV	6.35	2.79	7.02	10.35	0.00338	0.00149	0.00373	0.00373
	HV	11.12	9.98	13.17	13.12	0.00592	0.00531	0.00701	0.00701
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	80MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	11.73	11.85	5.33	16.73	0.00624	0.00630	0.00284	0.00284
Extreme (45°C)		8.72	15.72	10.14	14.72	0.00464	0.00836	0.00539	0.00539
Extreme (40°C)		11.49	3.83	9.09	14.49	0.00611	0.00204	0.00484	0.00484
Extreme (30°C)		15.06	10.99	7.98	16.06	0.00801	0.00585	0.00424	0.00424
Extreme (20°C)		17.12	11.33	11.78	3.12	0.00911	0.00603	0.00627	0.00627
Extreme (10°C)		16.11	13.95	6.76	15.11	0.00857	0.00742	0.00359	0.00359
Extreme (0°C)		11.14	8.02	5.09	8.14	0.00593	0.00427	0.00271	0.00271
Extreme (-10°C)		5.89	14.58	17.92	7.89	0.00314	0.00775	0.00953	0.00953
25°C	LV	7.33	16.26	9.58	17.33	0.00390	0.00865	0.00510	0.00510
	HV	1.65	3.70	4.68	10.65	0.00088	0.00197	0.00249	0.00249
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	100MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	13.06	8.51	15.40	9.06	0.00695	0.00453	0.00819	0.00819
Extreme (45°C)		15.97	1.24	15.88	5.97	0.00850	0.00066	0.00845	0.00845
Extreme (40°C)		11.73	3.18	2.86	11.73	0.00624	0.00169	0.00152	0.00152
Extreme (30°C)		1.53	17.78	10.67	1.53	0.00081	0.00946	0.00567	0.00567
Extreme (20°C)		17.31	6.02	16.86	12.31	0.00921	0.00320	0.00897	0.00897
Extreme (10°C)		3.77	16.54	9.86	10.77	0.00200	0.00880	0.00525	0.00525
Extreme (0°C)		2.77	1.32	14.20	6.77	0.00147	0.00070	0.00755	0.00755
Extreme (-10°C)		4.02	17.06	16.66	10.02	0.00214	0.00907	0.00886	0.00886
25°C	LV	13.23	3.01	17.45	9.23	0.00704	0.00160	0.00928	0.00928
	HV	17.73	16.03	11.92	4.73	0.00943	0.00853	0.00634	0.00634



DC_2A_n41A									
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	20MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	14.23	6.65	2.96	10.23	0.00757	0.00354	0.00158	0.00158
Extreme (45°C)		8.30	17.79	11.07	15.30	0.00442	0.00946	0.00589	0.00589
Extreme (40°C)		3.60	9.00	8.89	1.60	0.00192	0.00479	0.00473	0.00473
Extreme (30°C)		14.34	3.77	11.95	5.34	0.00763	0.00201	0.00636	0.00636
Extreme (20°C)		14.51	5.18	10.45	14.51	0.00772	0.00276	0.00556	0.00556
Extreme (10°C)		14.50	5.03	2.27	11.50	0.00771	0.00268	0.00121	0.00121
Extreme (0°C)		6.55	14.48	10.29	11.55	0.00349	0.00770	0.00547	0.00547
Extreme (-10°C)		13.72	5.58	6.16	6.72	0.00730	0.00297	0.00328	0.00328
25°C	LV	17.47	5.92	10.34	3.47	0.00929	0.00315	0.00550	0.00550
	HV	6.68	5.33	4.59	5.68	0.00355	0.00284	0.00244	0.00244
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	40MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	4.25	16.63	1.65	7.25	0.00226	0.00885	0.00088	0.00088
Extreme (45°C)		16.39	13.24	11.45	6.39	0.00872	0.00704	0.00609	0.00609
Extreme (40°C)		17.63	5.63	16.82	7.63	0.00938	0.00299	0.00894	0.00894
Extreme (30°C)		8.01	8.23	16.88	15.01	0.00426	0.00438	0.00898	0.00898
Extreme (20°C)		13.09	7.18	7.44	5.09	0.00696	0.00382	0.00396	0.00396
Extreme (10°C)		1.49	17.08	15.59	13.49	0.00079	0.00909	0.00829	0.00829
Extreme (0°C)		13.04	16.77	1.94	8.04	0.00694	0.00892	0.00103	0.00103
Extreme (-10°C)		12.00	12.55	5.90	12.00	0.00638	0.00668	0.00314	0.00314
25°C	LV	16.59	2.96	8.32	2.59	0.00883	0.00158	0.00442	0.00442
	HV	13.59	14.62	14.99	7.59	0.00723	0.00778	0.00797	0.00797
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	60MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	17.50	9.13	2.49	9.50	0.00931	0.00486	0.00132	0.00132
Extreme (45°C)		16.39	13.34	5.47	12.39	0.00872	0.00710	0.00291	0.00291
Extreme (40°C)		13.76	14.88	2.25	4.76	0.00732	0.00791	0.00120	0.00120
Extreme (30°C)		2.60	13.45	8.68	10.60	0.00138	0.00715	0.00462	0.00462
Extreme (20°C)		5.51	12.00	2.99	7.51	0.00293	0.00638	0.00159	0.00159
Extreme (10°C)		10.46	9.16	14.91	2.46	0.00557	0.00487	0.00793	0.00793
Extreme (0°C)		14.85	14.67	1.39	4.85	0.00790	0.00780	0.00074	0.00074



Extreme (-10°C)		15.26	9.10	17.39	8.26	0.00812	0.00484	0.00925	0.00925
25°C	LV	4.81	6.13	6.82	12.81	0.00256	0.00326	0.00363	0.00363
	HV	1.92	5.16	10.27	12.92	0.00102	0.00274	0.00546	0.00546
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	80MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	16.20	10.69	5.74	14.20	0.00862	0.00569	0.00305	0.00305
Extreme (45°C)		7.65	12.89	3.27	2.65	0.00407	0.00685	0.00174	0.00174
Extreme (40°C)		10.43	1.80	3.08	17.43	0.00555	0.00096	0.00164	0.00164
Extreme (30°C)		8.64	13.39	3.49	11.64	0.00459	0.00712	0.00186	0.00186
Extreme (20°C)		16.83	17.87	4.40	2.83	0.00895	0.00951	0.00234	0.00234
Extreme (10°C)		6.66	15.35	2.73	13.66	0.00355	0.00817	0.00145	0.00145
Extreme (0°C)		2.83	6.44	17.77	7.83	0.00150	0.00343	0.00945	0.00945
Extreme (-10°C)		13.23	15.43	15.02	3.23	0.00704	0.00821	0.00799	0.00799
25°C	LV	3.49	17.79	6.62	16.49	0.00186	0.00946	0.00352	0.00352
	HV	6.47	1.55	4.99	10.47	0.00344	0.00083	0.00266	0.00266
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)
BANDWIDTH	100MHz								
Temperature	Voltage	256QAM	64QAM	16QAM	QPSK	256QAM	64QAM	16QAM	QPSK
Normal (25°C)	Normal	5.01	5.89	6.30	13.01	0.00266	0.00313	0.00335	0.00335
Extreme (45°C)		1.26	17.76	13.36	3.26	0.00067	0.00945	0.00710	0.00710
Extreme (40°C)		15.59	1.12	3.38	4.59	0.00829	0.00060	0.00180	0.00180
Extreme (30°C)		12.99	17.14	11.15	13.99	0.00691	0.00912	0.00593	0.00593
Extreme (20°C)		1.28	11.48	2.67	17.28	0.00068	0.00611	0.00142	0.00142
Extreme (10°C)		9.43	2.82	7.41	14.43	0.00502	0.00150	0.00394	0.00394
Extreme (0°C)		16.21	15.71	8.64	9.21	0.00862	0.00836	0.00460	0.00460
Extreme (-10°C)		12.73	8.01	5.03	2.73	0.00677	0.00426	0.00268	0.00268
25°C	LV	16.20	8.10	3.04	12.20	0.00861	0.00431	0.00162	0.00162
	HV	8.90	14.08	8.35	4.90	0.00473	0.00749	0.00444	0.00444

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),

RBW is set to 10 kHz (0.15 MHz~ 30 MHz)

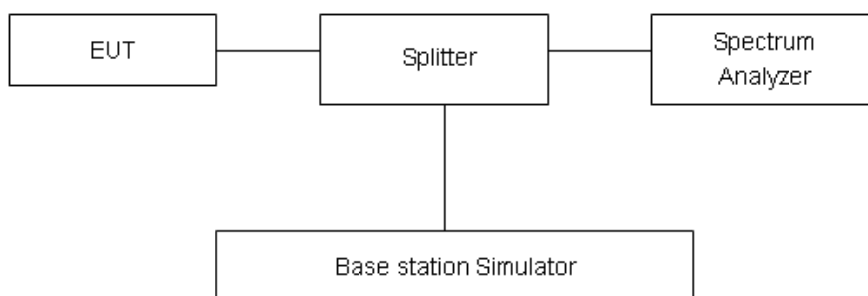
RBW is set to 100 kHz (30MHz~1000 MHz)

RBW is set to 1000 kHz (above 1000MHz)

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 27.53(m) $55 + 10 \log (P)$ 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)(4) of this section.

Part 27.53(m) Limit	-25 dBm
---------------------	---------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

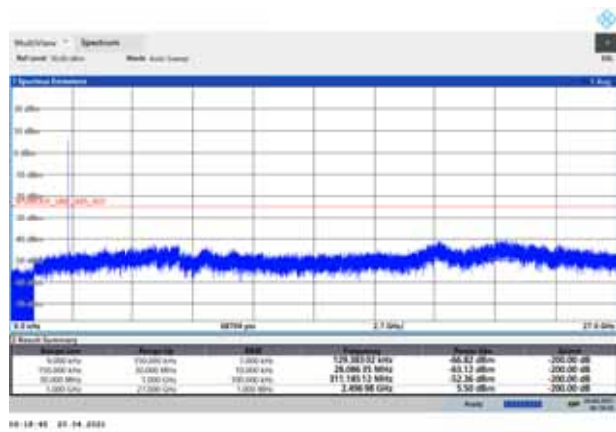


Test Result

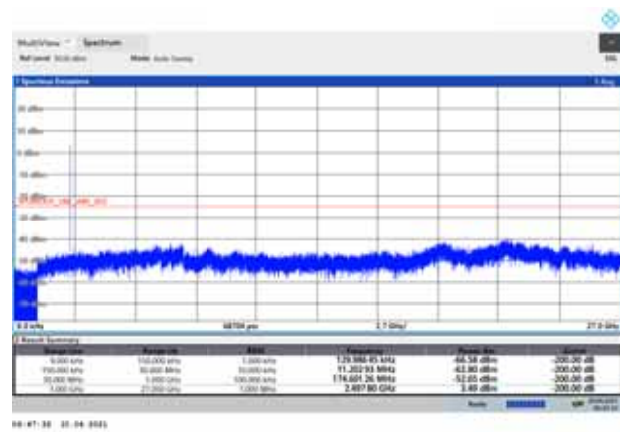
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

NR n41 P1/2 BPSK 40MHz CH-Low



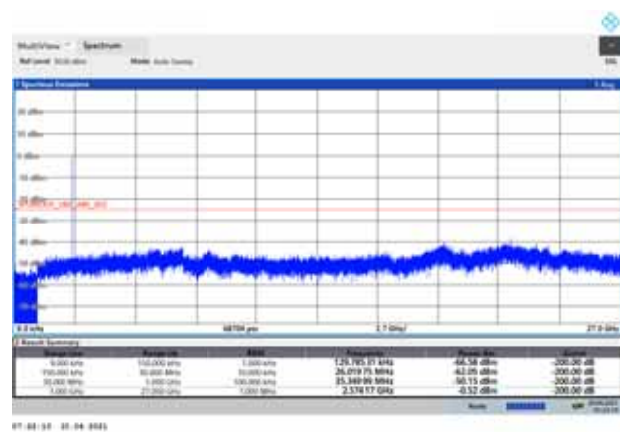
NR n41 QPSK 40MHz CH-Low



NR n41 P1/2 BPSK 40MHz CH-Middle



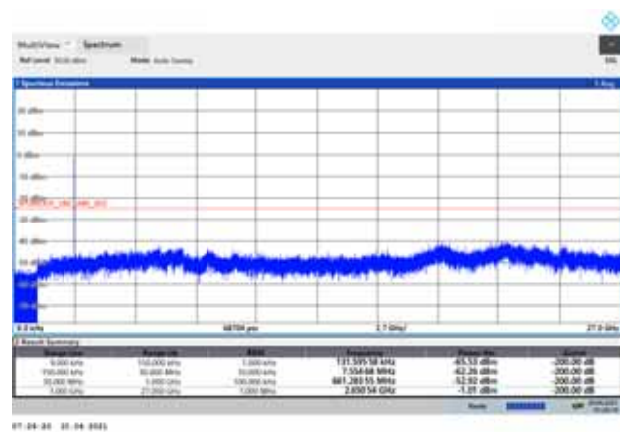
NR n41 QPSK 40MHz CH-Middle



NR n41 P1/2 BPSK 40MHz CH-High



NR n41 QPSK 40MHz CH-High





NR n41 16QAM 40MHz CH-Low



01:00:01 01:04:0001

NR n41 64QAM 40MHz CH-Low



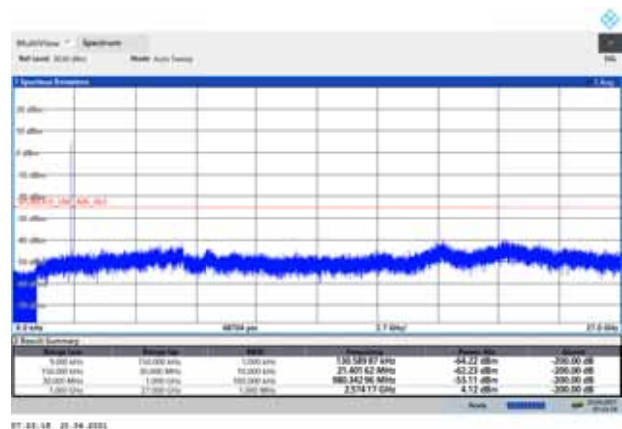
01:00:01 01:04:0001

NR n41 16QAM 40MHz CH-Middle



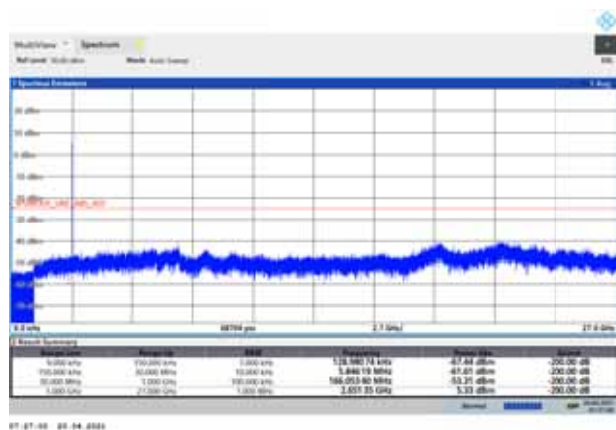
01:00:01 01:04:0001

NR n41 64QAM 40MHz CH-Middle



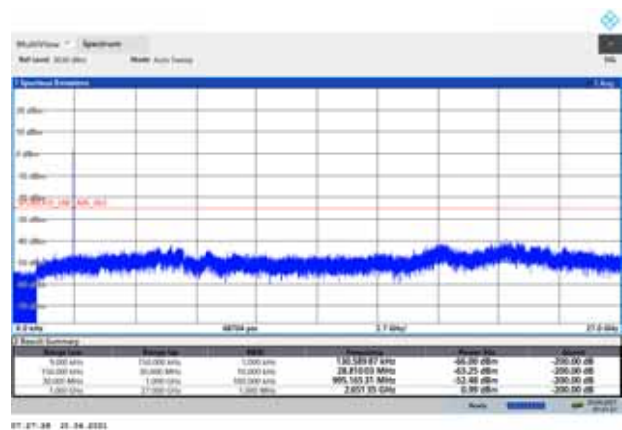
01:00:01 01:04:0001

NR n41 16QAM 40MHz CH-High



01:00:01 01:04:0001

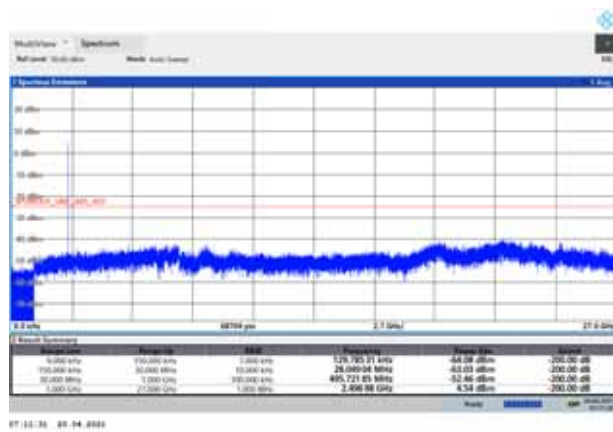
NR n41 64QAM 40MHz CH-High



01:00:01 01:04:0001



NR n41 256QAM 40MHz CH-Low



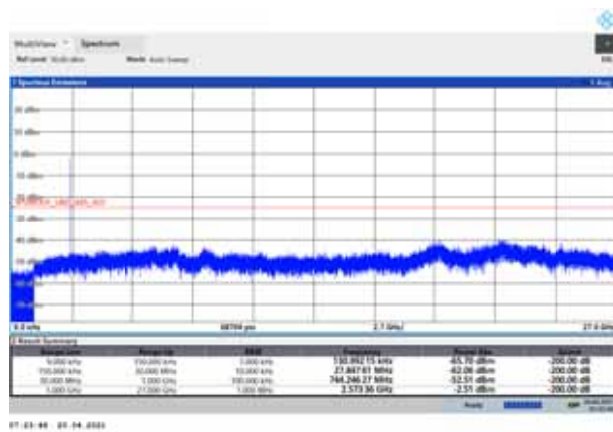
07-12-30 00:04:00

DC_2A_n41A P1/2 BPSK 40MHz CH-Low



08-10-10 00:04:00

NR n41 256QAM 40MHz CH-Middle



07-12-30 00:04:00

DC_2A_n41A P1/2 BPSK 40MHz CH-Middle



08-10-10 00:04:00

NR n41 256QAM 40MHz CH-High



07-12-30 00:04:00

DC_2A_n41A P1/2 BPSK 40MHz CH-High



08-10-10 00:04:00



DC_2A_n41A QPSK 40MHz CH-Low



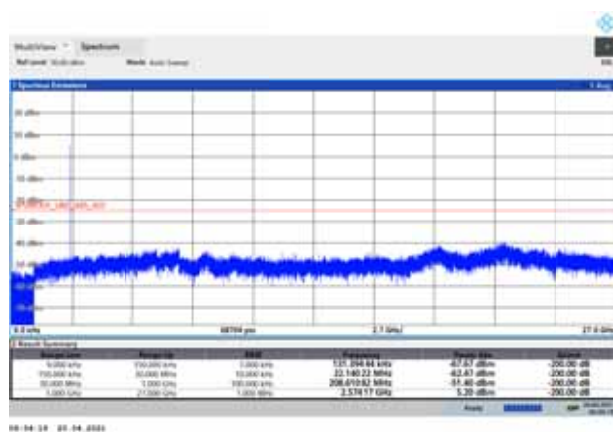
00:04:00 00:04:00

DC_2A_n41A 16QAM 40MHz CH-Low



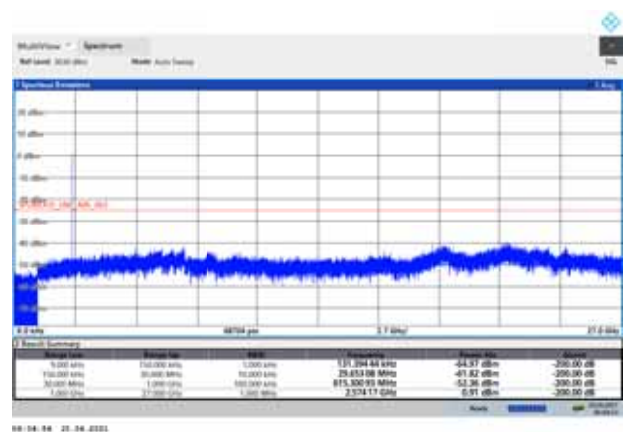
00:07:30 00:04:00

DC_2A_n41A QPSK 40MHz CH-Middle



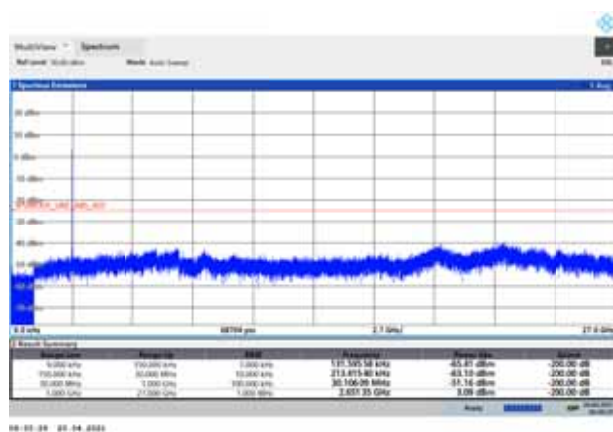
00:04:30 00:04:00

DC_2A_n41A 16QAM 40MHz CH-Middle



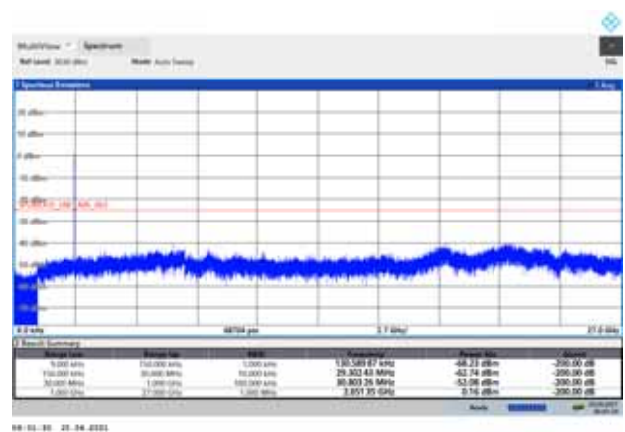
00:04:30 00:04:00

DC_2A_n41A QPSK 40MHz CH-High



00:01:30 00:04:00

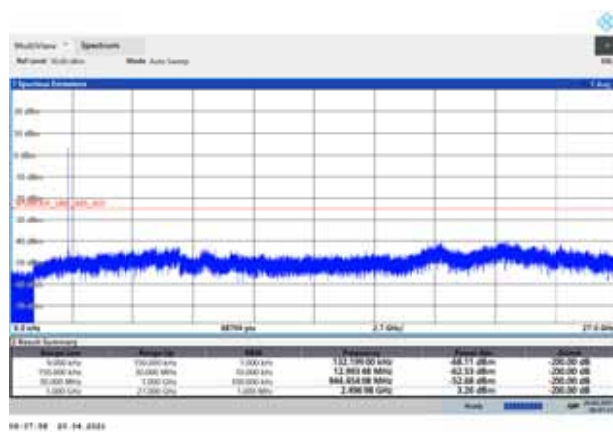
DC_2A_n41A 16QAM 40MHz CH-High



00:01:30 00:04:00



DC_2A_n41A 64QAM 40MHz CH-Low



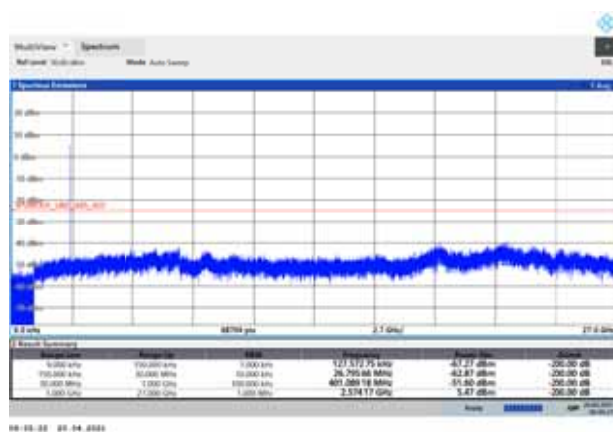
00:07:00 00:04:0000

DC_2A_n41A 256QAM 40MHz CH-Low



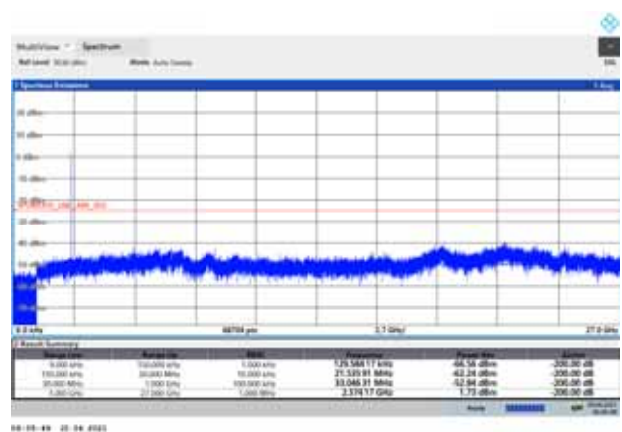
00:08:00 00:04:0000

DC_2A_n41A 64QAM 40MHz CH-Middle



00:09:00 00:04:0000

DC_2A_n41A 256QAM 40MHz CH-Middle



00:10:00 00:04:0000

DC_2A_n41A 64QAM 40MHz CH-High



00:11:00 00:04:0000

DC_2A_n41A 256QAM 40MHz CH-High



00:12:00 00:04:0000



5.7 Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=200Hz,VBW=600Hz for 9kHz-150kHz , RBW=10kHz, VBW=30kHz 150kHz-30MHz ,RBW=100kHz,VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$

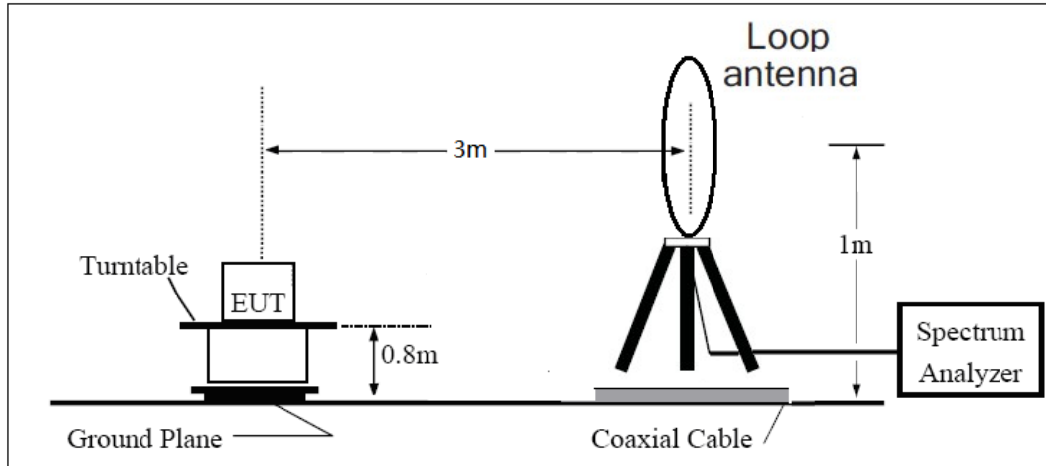
The measurement results are amend as described below:
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

= EIRP-2.15dBi.

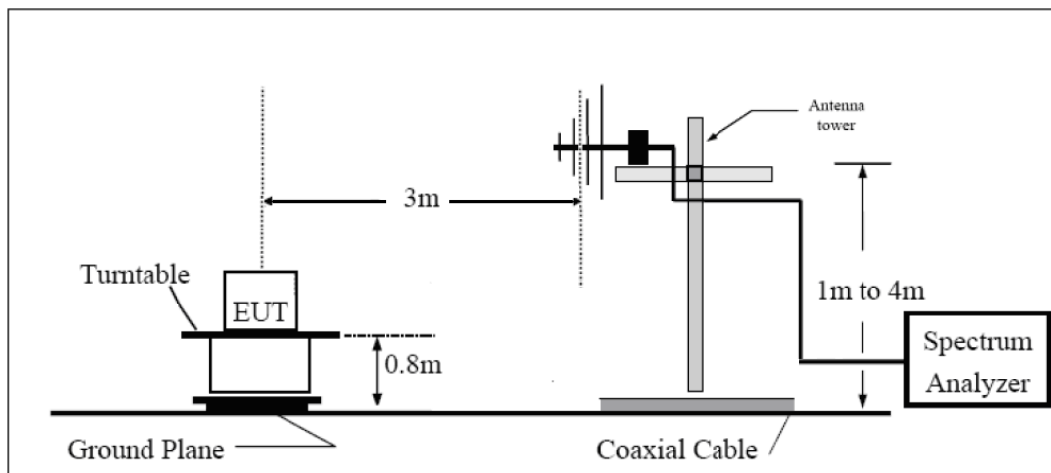
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

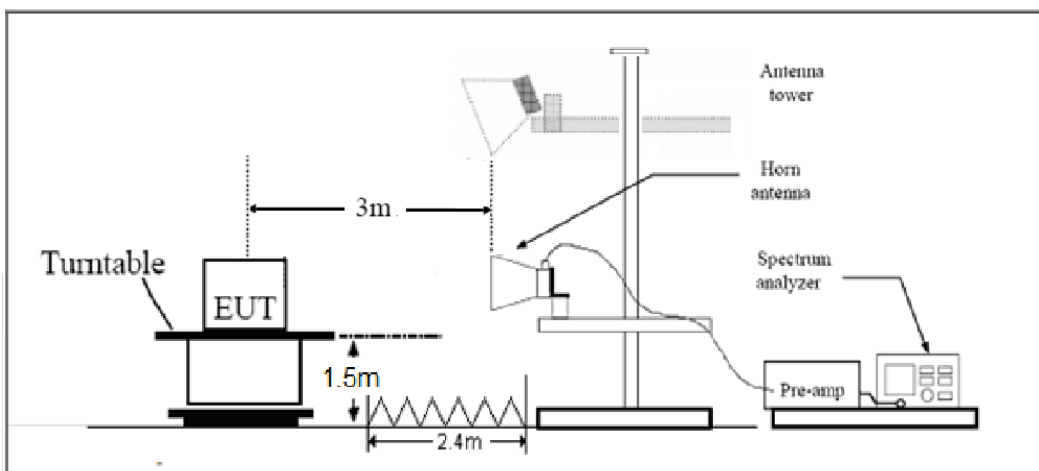
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

**Limits**

Rule Part 27.53(m) $55 + 10 \log (P)$ 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)(4) of this section.

Part 27.53(m) Limit	-25 dBm
---------------------	---------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

**Test Result**

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

NR n41 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5204.34	-61.07	3.20	12.50	Horizontal	-51.77	-25.00	26.77	135
3	7806.51	-58.26	4.40	12.20	Horizontal	-50.36	-25.00	25.36	90
4	10408.68	-54.70	4.70	11.80	Horizontal	-47.60	-25.00	22.60	45
5	13010.85	-54.66	5.40	14.00	Horizontal	-46.06	-25.00	21.06	135
6	15613.02	-60.95	6.10	16.80	Horizontal	-50.25	-25.00	25.25	90
7	18215.19	--	--	--	--	--	--	--	--
8	20817.36	--	--	--	--	--	--	--	--
9	23419.53	--	--	--	--	--	--	--	--
10	26021.70	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

NR n41 QPSK 40MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5325.20	-60.32	3.20	12.50	Horizontal	-51.02	-25.00	26.02	45
3	7850.79	-57.97	4.40	12.20	Horizontal	-50.07	-25.00	25.07	0
4	10467.72	-50.84	4.70	11.80	Horizontal	-43.74	-25.00	18.74	315
5	13084.65	-56.24	5.40	14.00	Horizontal	-47.64	-25.00	22.64	135
6	15701.58	-60.39	6.10	16.80	Horizontal	-49.69	-25.00	24.69	180
7	18318.51	--	--	--	--	--	--	--	--
8	20935.00	--	--	--	--	--	--	--	--
9	23552.37	--	--	--	--	--	--	--	--
10	26169.30	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.



NR n41 QPSK 100MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5327.90	-60.54	3.20	12.50	Horizontal	-51.24	-25.00	26.24	180
3	7926.90	-56.76	4.40	12.20	Horizontal	-48.86	-25.00	23.86	225
4	10569.20	-54.63	4.70	11.80	Horizontal	-47.53	-25.00	22.53	315
5	13211.50	-56.99	5.40	14.00	Horizontal	-48.39	-25.00	23.39	90
6	15853.00	-59.62	6.10	16.80	Horizontal	-48.92	-25.00	23.92	180
7	18496.00	--	--	--	--	--	--	--	--
8	21138.40	--	--	--	--	--	--	--	--
9	23780.70	--	--	--	--	--	--	--	--
10	26423.00	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

DC-2A-n41A QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5613.00	-62.46	3.20	12.50	Horizontal	-53.16	-25.00	28.16	90
3	8419.50	-57.47	4.40	12.20	Horizontal	-49.67	-25.00	24.67	90
4	11226.00	-52.24	4.70	11.80	Horizontal	-45.14	-25.00	20.14	0
5	14032.50	-54.45	5.40	14.00	Horizontal	-45.85	-25.00	20.85	135
6	16839.00	-56.22	6.10	16.80	Horizontal	-45.52	-25.00	20.52	315
7	19645.50	--	--	--	--	--	--	--	--
8	22452.00	--	--	--	--	--	--	--	--
9	25258.50	--	--	--	--	--	--	--	--
10	28065.00	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.



DC-2A-n41A QPSK 40MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5613.00	-58.85	3.20	12.50	Horizontal	-49.55	-25.00	24.55	270
3	8419.50	-57.07	4.40	12.20	Horizontal	-49.27	-25.00	24.27	0
4	11226.00	-52.35	4.70	11.80	Horizontal	-45.25	-25.00	20.25	315
5	14032.50	-53.47	5.40	14.00	Horizontal	-44.87	-25.00	19.87	90
6	16839.00	-57.97	6.10	16.80	Horizontal	-47.27	-25.00	22.27	90
7	19645.50	--	--	--	--	--	--	--	--
8	22452.00	--	--	--	--	--	--	--	--
9	25258.50	--	--	--	--	--	--	--	--
10	28065.00	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

DC-2A-n41A QPSK 100MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5613.40	-57.50	3.20	12.50	Horizontal	-48.20	-25.00	23.20	45
3	8419.50	-58.70	4.40	12.20	Horizontal	-50.90	-25.00	25.90	270
4	11226.00	-54.35	4.70	11.80	Horizontal	-47.25	-25.00	22.25	315
5	14032.50	-53.06	5.40	14.00	Horizontal	-44.46	-25.00	19.46	0
6	16839.00	-57.84	6.10	16.80	Horizontal	-47.14	-25.00	22.14	90
7	19645.50	--	--	--	--	--	--	--	--
8	22452.00	--	--	--	--	--	--	--	--
9	25258.50	--	--	--	--	--	--	--	--
10	28065.00	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.



6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2020-05-18	2021-05-17
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2020-05-18	2021-05-17
Signal Analyzer	R&S	FSV30	100815	2020-12-14	2021-12-13
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2021-12-15
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
Horn Antenna	STEATITE	QSH-SL-26-40-K-15	16779	2017-07-20	2021-07-19
Signal generator	R&S	SMB 100A	102594	2020-05-18	2021-05-17
Climatic Chamber	ESPEC	SU-242	93000506	2020-12-16	2023-12-15
Wireless Communication Tester	Anritsu	MT8000A	6261844783	2020-05-17	2021-05-16
Wireless Communication Tester	Anritsu	MT8821C	6201538758	2020-05-17	2021-05-16
Preamplifier	R&S	SCU18	102327	2020-05-18	2021-05-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2020-05-18	2021-05-17
RF Cable	Agilent	SMA 15cm	0001	2020-12-11	2021-06-10
Software	R&S	EMC32	9.26.0	/	/

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.