CERTIFICATION TEST REPORT

Report Number. : 4790841155-E4V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-X516B
FCC ID	:	A3LSMX516B
EUT Description	:	GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and Digitizer.
Test Standard(s)	:	FCC CFR47 PART 27 SUBPART F,H,L,M

Date Of Issue:
2023-07-21

Prepared by:
UL KOREA LTD.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023-07-14	Initial issue	Yeonhee Lim
V2	2023-07-21	Updated to address TCB's question	Yeonhee Lim

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218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and Digitizer.
MODEL NUMBER:	SM-X516B
SERIAL NUMBER:	R32W400Y96X, R32W400Y98L, R32W400YF3V (CONDUCTED); R32W400YGJB, R32W400YACY, R32W400YF3V (RADIATED);
DATE TESTED:	2023-06-02 - 2023-07-21;

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 27F,H,L,M	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and Modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Yeonhee Lim
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 27.
3. ANSI TIA-603-E, 2016
4. ANSI C63.26, 2015
5. KDB 971168 D01 Power Meas License Digital Systems v03r01

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do,16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☐ Chamber 3(3m semi-anechoic chamber)
☒ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.92 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.06 dB
Radiated Disturbance, 18 GHz to 40 GHz	6.02 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE 5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and Digitizer. This test report addresses the WWAN operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum average radiated ERP / EIRP output powers as follows: Radiated samples were set to a higher power than conducted resulting in radiated ERP/ EIRP greater than conducted measurements.

WCDMA

FCC Part 27						
Band	Frequency Range [MHz]	Modulation	Conducted		Radiated	
			Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 4	1710 ~ 1755	Rel. 99	**24.03**	**252.93**	**27.46**	**557.19**
		HSDPA	23.47	222.33	26.66	463.45

LTE Band 12

FCC Part 27							
Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 12	704 ~ 711	10	QPSK	24.06	254.68	20.53	112.98
			16QAM	23.33	215.28	19.32	85.51
			64QAM	22.21	166.34		
			256QAM	19.29	84.92		
	701.5 ~ 713.5	5	QPSK	24.07	255.27	20.71	117.76
			16QAM	23.37	217.27	19.63	91.83
			64QAM	22.35	171.79		
			256QAM	19.16	82.41		
	700.5 ~ 714.5	3	QPSK	**24.26**	**266.69**	**20.81**	**120.50**
			16QAM	23.34	215.77	19.86	96.83
			64QAM	22.18	165.20		
			256QAM	19.17	82.60		
	699.7 ~ 715.3	1.4	QPSK	24.12	258.23	20.30	107.15
			16QAM	23.30	213.80	19.05	80.35
			64QAM	22.41	174.18		
			256QAM	19.14	82.04		

LTE Band 13

FCC Part 27							
Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 13	782	10	QPSK	23.79	239.33	23.83	241.55
			16QAM	22.95	197.24	22.98	198.61
			64QAM	21.86	153.46		
			256QAM	18.88	77.27		
	779.5 ~ 784.5	5	QPSK	**23.81**	**240.44**	**24.47**	**279.90**
			16QAM	23.26	211.84	23.35	216.27
			64QAM	22.01	158.85		
			256QAM	19.31	85.31		

LTE Band 41

FCC Part 27							
Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 41	2506 ~ 2680	20	QPSK	24.76	299.23	24.58	287.08
			16QAM	23.72	235.50	24.80	302.00
			64QAM	22.40	173.78		
			256QAM	19.65	92.26		
	2503.5 ~ 2682.5	15	QPSK	**24.83**	**304.09**	25.91	389.94
			16QAM	23.79	239.33	25.21	331.89
			64QAM	22.48	177.01		
			256QAM	19.66	92.47		
	2501 ~ 2685	10	QPSK	24.58	287.08	**25.95**	**393.55**
			16QAM	23.74	236.59	25.14	326.59
			64QAM	22.43	174.98		
			256QAM	19.62	91.62		
	2498.5 ~ 2687.5	5	QPSK	24.69	294.44	25.83	382.82
			16QAM	23.47	222.33	24.89	308.32
			64QAM	22.43	174.98		
			256QAM	19.58	90.78		

LTE Band 66

FCC Part 27							
Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 66	1720 ~ 1770	20	QPSK	24.02	252.35	26.43	439.54
			16QAM	23.23	210.38	25.84	383.71
			64QAM	21.67	146.89		
			256QAM	18.79	75.68		
	1717.5 ~ 1772.5	15	QPSK	23.84	242.10	26.77	475.34
			16QAM	23.04	201.37	26.29	425.60
			64QAM	21.76	149.97		
			256QAM	18.56	71.78		
	1715 ~ 1775	10	QPSK	23.59	228.56	26.77	475.34
			16QAM	22.76	188.80	26.31	427.56
			64QAM	21.71	148.25		
			256QAM	18.78	75.51		
	1712.5 ~ 1777.5	5	QPSK	23.62	230.14	27.06	508.16
			16QAM	22.86	193.20	26.37	433.51
			64QAM	21.81	151.71		
			256QAM	18.55	71.61		
	1711.5 ~ 1778.5	3	QPSK	23.87	243.78	27.23	528.45
			16QAM	23.10	204.17	26.54	450.82
			64QAM	22.37	172.58		
			256QAM	19.27	84.53		
	1710.7 ~ 1779.3	1.4	QPSK	**24.09**	**256.45**	**27.42**	**552.08**
			16QAM	23.28	212.81	26.87	486.41
			64QAM	22.46	176.20		
			256QAM	19.27	84.53		

NR Band n66

FCC Part 27								
Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Mode	Conducted		Radiated	
					Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
n66	1720.0 ~ 1770.0	20	DFT-s OFDM	π/2 BPSK	24.11	257.63		
				QPSK	24.20	263.03	26.46	442.59
				16QAM	23.71	234.96	25.52	356.45
				64QAM	21.79	151.01		
				256QAM	19.63	91.83		
			CP-OFDM	QPSK	22.60	181.97		
	1717.5 ~ 1772.5	15	DFT-s OFDM	π/2 BPSK	24.12	258.23		
				QPSK	24.17	261.22	25.36	343.56
				16QAM	23.18	207.97	24.94	311.89
				64QAM	21.63	145.55		
				256QAM	19.57	90.57		
			CP-OFDM	QPSK	22.60	181.97		
	1715.0 ~ 1775.0	10	DFT-s OFDM	π/2 BPSK	24.09	256.45		
				QPSK	**24.22**	**264.24**	**26.63**	**460.26**
				16QAM	23.27	212.32	25.58	361.41
				64QAM	21.80	151.36		
				256QAM	19.62	91.62		
			CP-OFDM	QPSK	22.73	187.50		
	1712.5 ~ 1777.5	5	DFT-s OFDM	π/2 BPSK	24.09	256.45		
				QPSK	24.19	262.42	26.50	446.68
				16QAM	23.30	213.80	25.79	379.31
				64QAM	21.71	148.25		
				256QAM	19.58	90.78		
			CP-OFDM	QPSK	22.74	187.93		

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a internal antenna for the supported bands with a maximum peak gain as follow:

Frequency (MHz)	Peak Gain (dBi/dBd)
LTE Band 4 / LTE Band 66 / NR Band n66 1710 - 1780 MHz	-1.4
LTE Band 12, 17 699 - 716 MHz	-3.2
LTE Band 13 777 - 787 MHz	-2.0
LTE Band 41 2496 - 2690 MHz	-3.1

5.4. WORST-CASE ORIENTATION

Following Modes should be considered as worst-case scenario for all other measurements.

- UMTS REL 99/HSDPA

For LTE Bands the worst-case scenario for all measurements is based on the average conducted output power measurement investigation results. Output power measurements were measured on QPSK, 16QAM, 64QAM and 256QAM modulations. However, the out of band emissions and spurious radiation were only performed on bandwidth and RB offset(with RB size 1) with the highest power in QPSK.

For NR Band 66 the worst-case scenario for all measurements is based on the average conducted output power measurement investigation results. Output power measurements were measured on π/2 BPSK, QPSK, 16QAM, 64QAM and 256QAM modulations. It was found that QPSK and 16QAM results were worst case as below.

Both NSA and SA modes were tested and worst case(SA mode) is reported. the out of band emissions and spurious radiation were only performed on bandwidth and RB offset(with RB size 1) with the highest conducted power.

LTE Band 4
LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 17
LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

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- Conducted Spurious Emission

Highest conducted output power setting for each bands				
LTE Band	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
12	700.5	3	1	14
	707.5		1	0
	714.5		1	14
13	779.5	5	1	12
	782.0		1	12
	784.5		1	24
41	2503.5	15	1	12
	2593.0		1	12
	2682.5		1	12
66	1710.7	1.4	1	0
	1745.0		1	0
	1779.3		1	0
NR Band	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
66	1715.0	10	1	5
	1745.0		1	3
	1775.0		1	5

- Radiated Spurious Emission

Highest conducted output power setting for each bands				
LTE Band	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
12	700.5	3	1	14
	707.5		1	0
	714.5		1	14
13	779.5	5	1	12
	782.0		1	12
	784.5		1	24
41	2501.0	10	1	49
	2593.0		1	25
	2685.0		1	49
66	1710.7	1.4	1	5
	1745.0		1	3
	1779.3		1	5
NR Band	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
66	1715.0	10	1	1
	1745.0		1	1
	1775.0		1	1

For LTE anchor, the band with highest output power was chosen among the possible combinations with NR Bands.

NR Band	LTE Band
66	**2**, 5, 12, 13

The fundamental and radiated spurious emission were investigated in three orthogonal orientations X, Y and Z, it was determined that below orientation was worst-case orientation for each band.

Band	ERP/EIRP			RSE		
	X	Y	Z	X	Y	Z
WCDMA B4	O	-	-	O	-	-
LTE B12	-	O	-	-	O	-
LTE B13	-	O	-	O	-	-
LTE B41	O	-	-	-	-	O
LTE B66	O	-	-	-	-	O
NR n66	O	-	-	-	-	O

Note : For ERP/EIRP testing, the EUT didn't attached with travel adapter. But radiated spurious testing, the EUT attached with travel adapter for the worst case condition. The EUT is continuously communicated with the call box during the tests.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacture**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37M9KML7D2DK3	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02115A	N/A

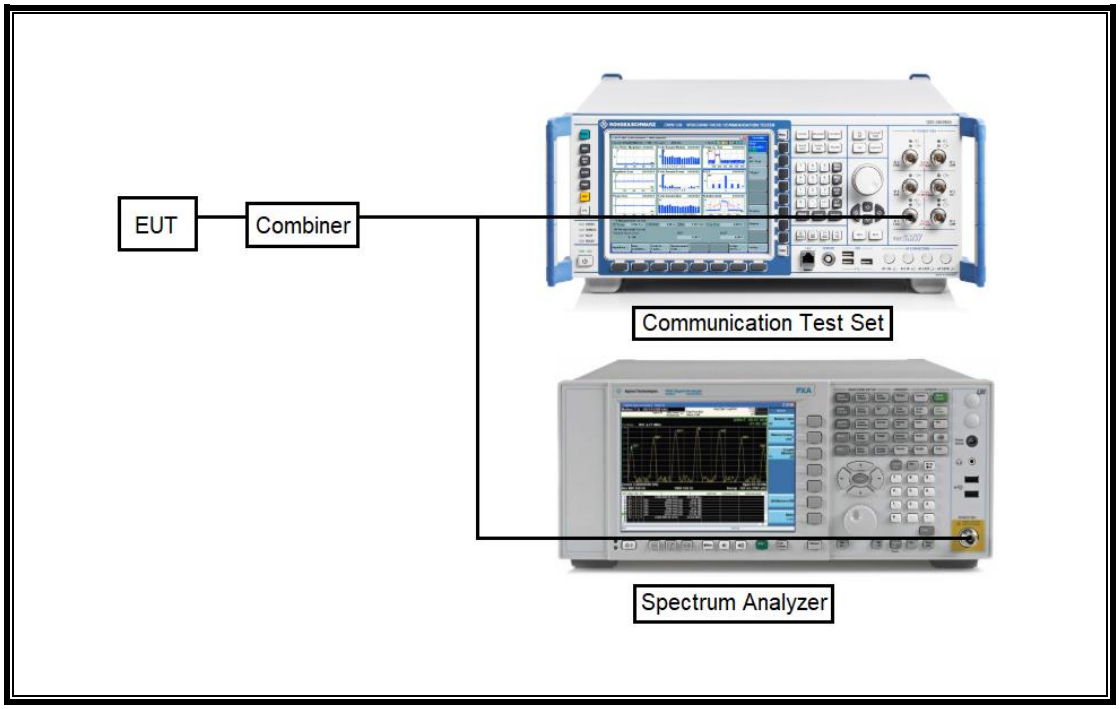
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.0 m	N/A

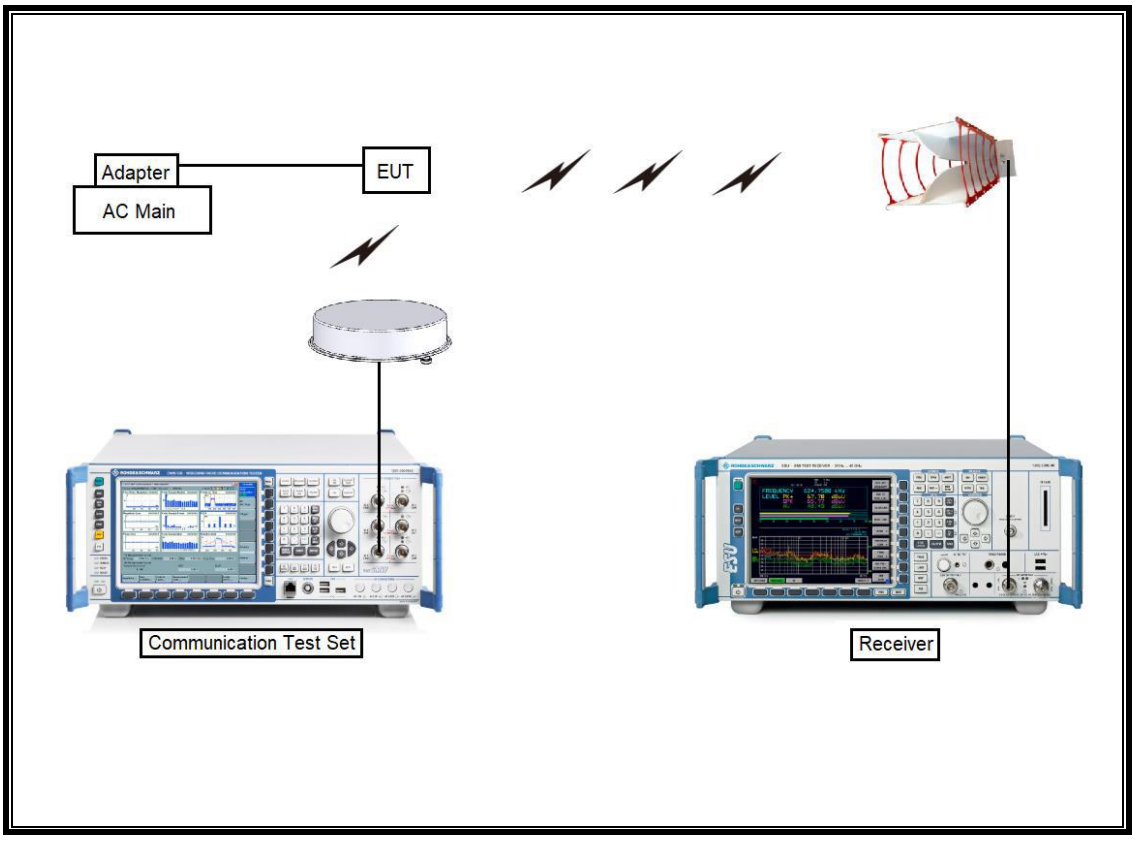
TEST SETUP

The EUT is continuously communicated with the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121D DB4	00164753	2025-01-17
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	110367-0003	N/A
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	80108-0004	N/A
Antenna, Horn, 40 GHz	ETS	3116C	00168645	2023-10-13
Preamplifier	ETS	3115-PA	00167475	2023-08-04
Preamplifier	ETS	3116C-PA	00168841	2023-08-04
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	2024-08-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	2024-08-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2024-08-15
Antenna, Horn, 18 GHz	ETS	3115	00161451	2024-08-21
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Communications Test Set	R&S	CMW500	169796	2024-01-05
DC Power Supply	Agilent / HP	E3640A	MY54226395	2023-08-02
Preamplifier, 1000 MHz	Sonoma	310N	341282	2023-08-02
Preamplifier, 1000 MHz	Sonoma	310N	351741	2023-08-02
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2023-08-01
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2023-08-01
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2023-08-03
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2023-08-01
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2024-01-09
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2023-08-02
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2023-07-29
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	2023-08-01
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	2023-08-01
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	2023-08-01
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	2023-08-01
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G001	2023-08-01
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G002	2023-08-01
Attenuator	PASTERNACK	PE7087-10	A009	2023-08-03
Attenuator	PASTERNACK	PE7087-10	A001	2023-08-03
Attenuator	PASTERNACK	PE7087-10	A008	2023-08-03
Attenuator	PASTERNACK	PE7004-10	2	2023-08-01
Attenuator	PASTERNACK	PE7395-10	A011	2023-08-03
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2023-10-06
Temperature Chamber	ESPEC	SH-642	93001109	2023-08-01
Power Splitter	MINI-CIRCUITS	WA1534	UL003	2024-01-09
Power Splitter	MINI-CIRCUITS	WA1534	UL004	2024-01-09
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY57510655	2024-01-09
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY58010202	2024-01-27
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY58460570	2023-12-08

UL Software			
Description	**Manufacturer**	**Model**	**Version**
Antenna port test software	UL	CLT	Ver 3.4
Radiated software	UL	UL EMC	Ver 9.5
Antenna port test software (5G NR FR1)	UL	UL iM	Ver 1.06

7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
2.1049	Occupied Band width (99%)	N/A	Conducted	Pass
27.53(c),(g),(h)	Band Edge / Conducted Spurious Emission	-13dBm		Pass
27.53(m)	Conducted Spurious Emission	-25dBm		Pass
27.53(m)	Emission mask	Section 9.2.2		Pass
2.1046	Conducted output power	N/A		Pass
27.54	Frequency Stability	2.5PPM		Pass
27.50(b)(10) 27.50(c)(10)	Effective Isotropic Radiated Power	34.77dBm	Radiated	Pass
27.50(d)(4)		30dBm		Pass
27.50(h)(2)		33dBm		Pass
27.53 (c),(g),(h)	Radiated Spurious Emission	-13dBm		Pass
27.53(f)		-40dBm		Pass
27.53(m)		-25dBm		Pass

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8. CONDUCTED RESULTS

8.1. CONDUCTED OUTPUT POWER

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to either CMW500 Test Set or E7515B Test set and configured to operate at maximum power.

NOTE

5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

RESULTS

See the following pages.

8.1.1. CONDUCTED AVERAGE OUTPUT POWER

WCDMA B4

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	23.94	N/A	25.0
		1413	1732.6	23.99		
		1513	1752.6	24.03		
HSDPA	Subtest 1	1312	1712.4	23.21	0	24.5
		1413	1732.6	23.47		
		1513	1752.6	23.47		
	Subtest 2	1312	1712.4	23.09	0	24.5
		1413	1732.6	22.99		
		1513	1752.6	23.20		
	Subtest 3	1312	1712.4	22.59	0.5	24.0
		1413	1732.6	22.44		
		1513	1752.6	22.66		
	Subtest 4	1312	1712.4	22.60	0.5	24.0
		1413	1732.6	22.42		
		1513	1752.6	22.64		
HSUPA	Subtest 1	1312	1712.4	22.45	0	24.0
		1413	1732.6	22.20		
		1513	1752.6	21.85		
	Subtest 2	1312	1712.4	19.96	2	22.0
		1413	1732.6	19.76		
		1513	1752.6	19.93		
	Subtest 3	1312	1712.4	22.48	1	23.0
		1413	1732.6	22.23		
		1513	1752.6	22.45		
	Subtest 4	1312	1712.4	20.25	2	22.0
		1413	1732.6	20.05		
		1513	1752.6	19.53		
	Subtest 5	1312	1712.4	23.29	0	24.0
		1413	1732.6	23.36		
		1513	1752.6	23.62		
DC-HSDPA	Subtest 1	1312	1712.4	23.79	0	24.5
		1413	1732.6	24.14		
		1513	1752.6	24.15		
	Subtest 2	1312	1712.4	23.10	0	24.5
		1413	1732.6	23.19		
		1513	1752.6	23.37		
	Subtest 3	1312	1712.4	22.03	0.5	24.0
		1413	1732.6	22.07		
		1513	1752.6	22.28		
	Subtest 4	1312	1712.4	22.61	0.5	24.0
		1413	1732.6	22.66		
		1513	1752.6	22.88		

LTE Band 12

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				23060	23095	23130		
				704 MHz	707.5 MHz	711 MHz		
10 MHz	QPSK	1	0	23.84	23.90	24.06	0.0	25.0
		1	25	23.62	23.88	24.06	0.0	25.0
		1	49	23.74	23.74	23.99	0.0	25.0
		25	0	22.80	22.82	23.03	1.0	24.0
		25	12	22.77	22.79	22.97	1.0	24.0
		25	25	22.74	22.75	22.92	1.0	24.0
		50	0	22.77	22.79	22.99	1.0	24.0
	16QAM	1	0	23.09	23.15	23.33	1.0	24.0
		1	25	22.99	23.04	23.19	1.0	24.0
		1	49	22.88	23.02	23.16	1.0	24.0
		25	0	21.84	21.84	22.00	2.0	23.0
		25	12	21.81	21.78	21.95	2.0	23.0
		25	25	21.79	21.74	21.93	2.0	23.0
		50	0	21.76	21.78	21.97	2.0	23.0
	64QAM	1	0	22.15	21.86	21.63	2.0	23.0
		1	25	22.21	21.56	21.51	2.0	23.0
		1	49	22.09	21.78	21.47	2.0	23.0
		25	0	20.80	20.86	21.04	3.0	22.0
		25	12	20.79	20.83	20.98	3.0	22.0
		25	25	20.75	20.76	20.95	3.0	22.0
		50	0	20.79	20.79	20.98	3.0	22.0
	256QAM	1	0	19.25	18.86	19.11	5.0	20.0
		1	25	19.29	18.77	19.12	5.0	20.0
		1	49	19.11	18.67	18.96	5.0	20.0
		25	0	18.85	18.84	19.10	5.0	20.0
		25	12	18.81	18.79	19.05	5.0	20.0
		25	25	18.77	18.74	19.00	5.0	20.0
		50	0	18.76	18.76	18.97	5.0	20.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	23.77	23.75	24.07	0.0	25.0
		1	12	23.81	23.74	23.89	0.0	25.0
		1	24	23.79	23.73	24.07	0.0	25.0
		12	0	22.78	22.79	23.13	1.0	24.0
		12	7	22.77	22.78	23.12	1.0	24.0
		12	13	22.74	22.76	23.10	1.0	24.0
		25	0	22.77	22.76	23.10	1.0	24.0
	16QAM	1	0	22.95	22.88	23.37	1.0	24.0
		1	12	22.87	22.80	23.21	1.0	24.0
		1	24	22.89	22.84	23.28	1.0	24.0
		12	0	21.77	21.78	22.11	2.0	23.0
		12	7	21.73	21.75	22.09	2.0	23.0
		12	13	21.73	21.74	22.07	2.0	23.0
		25	0	21.72	21.78	22.05	2.0	23.0
	64QAM	1	0	21.96	21.83	22.31	2.0	23.0
		1	12	21.86	21.80	22.28	2.0	23.0
		1	24	21.89	21.81	22.35	2.0	23.0
		12	0	20.75	20.82	21.06	3.0	22.0
		12	7	20.74	20.79	21.04	3.0	22.0
		12	13	20.73	20.77	21.00	3.0	22.0
		25	0	20.78	20.75	21.05	3.0	22.0
	256QAM	1	0	19.16	18.86	19.00	5.0	20.0
		1	12	19.04	18.77	18.72	5.0	20.0
		1	24	19.09	18.78	18.90	5.0	20.0
		12	0	18.81	18.79	19.05	5.0	20.0
		12	7	18.81	18.76	19.04	5.0	20.0
		12	13	18.77	18.74	18.99	5.0	20.0
		25	0	18.73	18.77	19.05	5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	23.81	23.75	24.23	0.0	25.0
		1	8	23.77	23.71	23.96	0.0	25.0
		1	14	23.84	23.69	24.26	0.0	25.0
		8	0	22.80	22.78	23.21	1.0	24.0
		8	4	22.79	22.76	23.15	1.0	24.0
		8	7	22.79	22.75	23.16	1.0	24.0
		15	0	22.75	22.77	23.14	1.0	24.0
	16QAM	1	0	22.99	23.10	23.34	1.0	24.0
		1	8	22.94	22.99	23.28	1.0	24.0
		1	14	22.90	23.07	23.27	1.0	24.0
		8	0	21.76	21.90	22.20	2.0	23.0
		8	4	21.70	21.91	22.18	2.0	23.0
		8	7	21.70	21.91	22.13	2.0	23.0
		15	0	21.73	21.77	22.12	2.0	23.0
	64QAM	1	0	21.45	22.14	22.11	2.0	23.0
		1	8	21.34	21.99	22.10	2.0	23.0
		1	14	21.38	22.03	22.18	2.0	23.0
		8	0	20.71	20.79	21.08	3.0	22.0
		8	4	20.69	20.77	21.10	3.0	22.0
		8	7	20.72	20.80	21.12	3.0	22.0
		15	0	20.67	20.70	21.16	3.0	22.0
	256QAM	1	0	18.66	18.96	19.08	5.0	20.0
		1	8	18.66	18.77	19.05	5.0	20.0
		1	14	18.66	18.87	19.05	5.0	20.0
		8	0	18.78	18.82	19.17	5.0	20.0
		8	4	18.75	18.79	19.12	5.0	20.0
		8	7	18.71	18.77	19.16	5.0	20.0
		15	0	18.70	18.74	19.15	5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	23.72	23.71	24.10	0.0	25.0
		1	3	23.54	23.53	24.12	0.0	25.0
		1	5	23.71	23.70	24.07	0.0	25.0
		3	0	23.68	23.72	24.09	0.0	25.0
		3	1	23.61	23.74	24.11	0.0	25.0
		3	3	23.64	23.61	24.08	0.0	25.0
		6	0	22.63	22.73	23.13	1.0	24.0
	16QAM	1	0	22.67	22.86	23.11	1.0	24.0
		1	3	22.78	23.01	23.30	1.0	24.0
		1	5	22.73	22.89	23.16	1.0	24.0
		3	0	22.80	22.62	23.17	1.0	24.0
		3	1	22.74	22.71	23.07	1.0	24.0
		3	3	22.69	22.61	23.12	1.0	24.0
		6	0	21.56	21.71	22.08	2.0	23.0
	64QAM	1	0	21.69	21.42	22.41	2.0	23.0
		1	3	21.44	21.50	22.26	2.0	23.0
		1	5	21.64	21.48	22.36	2.0	23.0
		3	0	21.82	21.67	22.20	2.0	23.0
		3	1	21.71	21.59	22.13	2.0	23.0
		3	3	21.78	21.56	22.15	2.0	23.0
		6	0	20.78	20.69	21.07	3.0	22.0
	256QAM	1	0	18.69	18.83	19.01	5.0	20.0
		1	3	18.57	18.86	19.14	5.0	20.0
		1	5	18.68	18.76	18.93	5.0	20.0
		3	0	18.68	18.85	19.13	5.0	20.0
		3	1	18.67	18.79	19.00	5.0	20.0
		3	3	18.62	18.66	19.00	5.0	20.0
		6	0	18.66	18.66	19.09	5.0	20.0

LTE Band 13

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
					23230			
					782 MHz			
10 MHz	QPSK	1	0		23.79		0.0	25.0
		1	25		23.76		0.0	25.0
		1	49		23.74		0.0	25.0
		25	0		22.81		1.0	24.0
		25	12		22.78		1.0	24.0
		25	25		22.73		1.0	24.0
		50	0		22.78		1.0	24.0
	16QAM	1	0		22.92		1.0	24.0
		1	25		22.95		1.0	24.0
		1	49		22.74		1.0	24.0
		25	0		21.80		2.0	23.0
		25	12		21.78		2.0	23.0
		25	25		21.74		2.0	23.0
		50	0		21.77		2.0	23.0
	64QAM	1	0		21.86		2.0	23.0
		1	25		21.83		2.0	23.0
		1	49		21.68		2.0	23.0
		25	0		20.84		3.0	22.0
		25	12		20.80		3.0	22.0
		25	25		20.78		3.0	22.0
		50	0		20.78		3.0	22.0
	256QAM	1	0		18.86		5.0	20.0
		1	25		18.87		5.0	20.0
		1	49		18.73		5.0	20.0
		25	0		18.88		5.0	20.0
		25	12		18.86		5.0	20.0
		25	25		18.81		5.0	20.0
		50	0		18.78		5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23205	23230	23255		
				779.5 MHz	782 MHz	784.5 MHz		
5 MHz	QPSK	1	0	23.55	23.76	23.78	0.0	25.0
		1	12	23.56	23.78	23.72	0.0	25.0
		1	24	23.55	23.76	23.81	0.0	25.0
		12	0	22.62	22.77	22.83	1.0	24.0
		12	7	22.61	22.75	22.83	1.0	24.0
		12	13	22.58	22.72	22.82	1.0	24.0
		25	0	22.60	22.77	22.81	1.0	24.0
	16QAM	1	0	22.92	23.02	23.26	1.0	24.0
		1	12	22.91	22.97	23.22	1.0	24.0
		1	24	22.89	22.96	23.18	1.0	24.0
		12	0	21.65	21.81	21.92	2.0	23.0
		12	7	21.62	21.79	21.91	2.0	23.0
		12	13	21.58	21.79	21.89	2.0	23.0
		25	0	21.61	21.74	21.79	2.0	23.0
	64QAM	1	0	21.78	21.82	22.01	2.0	23.0
		1	12	21.73	21.78	21.97	2.0	23.0
		1	24	21.78	21.84	21.90	2.0	23.0
		12	0	20.66	20.76	20.83	3.0	22.0
		12	7	20.62	20.76	20.83	3.0	22.0
		12	13	20.62	20.74	20.80	3.0	22.0
		25	0	20.58	20.76	20.83	3.0	22.0
	256QAM	1	0	18.85	18.84	19.28	5.0	20.0
		1	12	18.74	18.72	19.31	5.0	20.0
		1	24	18.79	18.76	19.26	5.0	20.0
		12	0	18.66	18.76	18.91	5.0	20.0
		12	7	18.63	18.75	18.90	5.0	20.0
		12	13	18.60	18.71	18.85	5.0	20.0
		25	0	18.66	18.79	18.82	5.0	20.0

LTE Band 41

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				39750	40620	41490		
				2506 MHz	2593 MHz	2680 MHz		
20 MHz	QPSK	1	0	23.74	24.58	23.50	0.0	25.0
		1	49	23.85	24.76	23.47	0.0	25.0
		1	99	23.78	24.68	23.47	0.0	25.0
		50	0	22.69	23.67	22.43	1.0	24.0
		50	24	22.75	23.67	22.51	1.0	24.0
		50	50	22.78	23.66	22.49	1.0	24.0
		100	0	22.76	23.67	22.50	1.0	24.0
	16QAM	1	0	22.61	23.65	22.31	1.0	24.0
		1	49	22.78	23.72	22.35	1.0	24.0
		1	99	22.81	23.63	22.59	1.0	24.0
		50	0	21.67	22.69	21.45	2.0	23.0
		50	24	21.75	22.65	21.41	2.0	23.0
		50	50	21.72	22.62	21.39	2.0	23.0
		100	0	21.71	22.65	21.43	2.0	23.0
	64QAM	1	0	21.86	22.15	21.37	2.0	23.0
		1	49	21.29	22.40	21.57	2.0	23.0
		1	99	22.09	22.33	21.45	2.0	23.0
		50	0	20.62	21.63	20.39	3.0	22.0
		50	24	20.65	21.55	20.37	3.0	22.0
		50	50	20.69	21.55	20.37	3.0	22.0
		100	0	20.65	21.59	20.34	3.0	22.0
	256QAM	1	0	18.46	19.65	18.36	5.0	20.0
		1	49	18.73	19.40	18.37	5.0	20.0
		1	99	18.72	19.61	18.85	5.0	20.0
		50	0	18.61	19.63	18.31	5.0	20.0
		50	24	18.67	19.63	18.33	5.0	20.0
		50	50	18.71	19.57	18.35	5.0	20.0
		100	0	18.68	19.58	18.33	5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				39725	40620	41515		
				2503.5 MHz	2593 MHz	2682.5 MHz		
15 MHz	QPSK	1	0	23.48	24.64	23.49	0.0	25.0
		1	37	23.79	24.83	23.73	0.0	25.0
		1	74	23.58	24.64	23.65	0.0	25.0
		36	0	22.59	23.74	22.61	1.0	24.0
		36	20	22.61	23.65	22.63	1.0	24.0
		36	39	22.67	23.68	22.65	1.0	24.0
		75	0	22.62	23.72	22.67	1.0	24.0
	16QAM	1	0	22.48	23.74	22.63	1.0	24.0
		1	37	22.38	23.79	22.41	1.0	24.0
		1	74	22.57	23.25	22.33	1.0	24.0
		36	0	21.50	22.67	21.55	2.0	23.0
		36	20	21.60	22.65	21.52	2.0	23.0
		36	39	21.60	22.66	21.55	2.0	23.0
		75	0	21.54	22.65	21.56	2.0	23.0
	64QAM	1	0	21.19	22.43	21.52	2.0	23.0
		1	37	21.54	22.40	21.38	2.0	23.0
		1	74	21.39	22.48	21.31	2.0	23.0
		36	0	20.52	21.69	20.61	3.0	22.0
		36	20	20.58	21.64	20.63	3.0	22.0
		36	39	20.54	21.65	20.57	3.0	22.0
		75	0	20.49	21.61	20.54	3.0	22.0
	256QAM	1	0	18.39	19.66	18.57	5.0	20.0
		1	37	18.51	19.49	18.38	5.0	20.0
		1	74	18.60	19.49	18.17	5.0	20.0
		36	0	18.45	19.66	18.55	5.0	20.0
		36	20	18.47	19.65	18.54	5.0	20.0
		36	39	18.49	19.61	18.51	5.0	20.0
		75	0	18.53	19.61	18.54	5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				39700	40620	41540		
				2501 MHz	2593 MHz	2685 MHz		
10 MHz	QPSK	1	0	23.47	24.55	23.24	0.0	25.0
		1	25	23.56	24.58	23.27	0.0	25.0
		1	49	23.53	24.52	23.27	0.0	25.0
		25	0	22.47	23.54	22.31	1.0	24.0
		25	12	22.49	23.54	22.29	1.0	24.0
		25	25	22.47	23.51	22.29	1.0	24.0
		50	0	22.47	23.54	22.30	1.0	24.0
	16QAM	1	0	22.53	23.65	22.48	1.0	24.0
		1	25	22.76	23.74	22.66	1.0	24.0
		1	49	22.71	23.69	22.46	1.0	24.0
		25	0	21.43	22.50	21.27	2.0	23.0
		25	12	21.42	22.48	21.30	2.0	23.0
		25	25	21.42	22.46	21.29	2.0	23.0
		50	0	21.44	22.52	21.32	2.0	23.0
	64QAM	1	0	21.18	22.35	21.08	2.0	23.0
		1	25	21.27	22.43	21.23	2.0	23.0
		1	49	21.26	22.30	21.17	2.0	23.0
		25	0	20.42	21.51	20.29	3.0	22.0
		25	12	20.42	21.46	20.28	3.0	22.0
		25	25	20.43	21.45	20.29	3.0	22.0
		50	0	20.41	21.44	20.26	3.0	22.0
	256QAM	1	0	18.39	19.46	18.22	5.0	20.0
		1	25	18.53	19.62	18.43	5.0	20.0
		1	49	18.41	19.34	18.26	5.0	20.0
		25	0	18.39	19.47	18.29	5.0	20.0
		25	12	18.42	19.46	18.28	5.0	20.0
		25	25	18.43	19.45	18.26	5.0	20.0
		50	0	18.42	19.50	18.29	5.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				39675	40620	41565		
				2498.5 MHz	2593 MHz	2687.5 MHz		
5 MHz	QPSK	1	0	23.53	24.53	23.27	0.0	25.0
		1	12	23.68	24.69	23.51	0.0	25.0
		1	24	23.58	24.58	23.30	0.0	25.0
		12	0	22.51	23.54	22.28	1.0	24.0
		12	7	22.55	23.56	22.28	1.0	24.0
		12	13	22.52	23.54	22.27	1.0	24.0
		25	0	22.50	23.53	22.27	1.0	24.0
	16QAM	1	0	22.50	23.46	22.30	1.0	24.0
		1	12	22.56	23.47	22.43	1.0	24.0
		1	24	22.51	23.44	22.20	1.0	24.0
		12	0	21.52	22.53	21.31	2.0	23.0
		12	7	21.55	22.56	21.31	2.0	23.0
		12	13	21.53	22.51	21.27	2.0	23.0
		25	0	21.44	22.50	21.25	2.0	23.0
	64QAM	1	0	21.32	22.37	21.33	2.0	23.0
		1	12	21.41	22.39	21.56	2.0	23.0
		1	24	21.54	22.43	21.17	2.0	23.0
		12	0	20.43	21.40	20.24	3.0	22.0
		12	7	20.41	21.37	20.25	3.0	22.0
		12	13	20.38	21.39	20.22	3.0	22.0
		25	0	20.42	21.39	20.25	3.0	22.0
	256QAM	1	0	18.44	19.47	18.21	5.0	20.0
		1	12	18.64	19.58	18.50	5.0	20.0
		1	24	18.49	19.32	18.17	5.0	20.0
		12	0	18.41	19.41	18.21	5.0	20.0
		12	7	18.42	19.36	18.24	5.0	20.0
		12	13	18.43	19.37	18.23	5.0	20.0
		25	0	18.39	19.41	18.24	5.0	20.0

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BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	23.11	23.71	23.73	0.0	24.5
		1	49	23.19	23.79	23.99	0.0	24.5
		1	99	23.41	24.02	23.74	0.0	24.5
		50	0	22.43	22.78	22.75	1.0	23.5
		50	24	22.43	22.79	22.75	1.0	23.5
		50	50	22.40	22.81	22.73	1.0	23.5
		100	0	22.43	22.82	22.73	1.0	23.5
	16QAM	1	0	22.38	23.14	23.01	1.0	23.5
		1	49	22.54	23.21	23.23	1.0	23.5
		1	99	22.61	23.07	22.88	1.0	23.5
		50	0	21.40	21.81	21.69	2.0	22.5
		50	24	21.42	21.80	21.67	2.0	22.5
		50	50	21.37	21.79	21.66	2.0	22.5
		100	0	21.36	21.81	21.69	2.0	22.5
	64QAM	1	0	21.54	21.50	21.67	2.0	22.5
		1	49	21.65	21.64	21.59	2.0	22.5
		1	99	21.56	21.61	21.52	2.0	22.5
		50	0	20.40	20.40	20.36	3.0	21.5
		50	24	20.46	20.44	20.46	3.0	21.5
		50	50	20.39	20.41	20.41	3.0	21.5
		100	0	20.39	20.37	20.38	3.0	21.5
	256QAM	1	0	18.64	18.65	18.42	5.0	19.5
		1	49	18.77	18.79	18.64	5.0	19.5
		1	99	18.53	18.62	18.37	5.0	19.5
		50	0	18.24	18.22	18.28	5.0	19.5
		50	24	18.28	18.29	18.30	5.0	19.5
		50	50	18.20	18.25	18.28	5.0	19.5
		100	0	18.20	18.30	18.27	5.0	19.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	22.24	23.72	23.79	0.0	24.5
		1	37	23.34	23.84	23.83	0.0	24.5
		1	74	23.79	23.80	23.74	0.0	24.5
		36	0	22.14	22.86	22.83	1.0	23.5
		36	20	22.69	22.83	22.80	1.0	23.5
		36	39	22.96	22.82	22.81	1.0	23.5
		75	0	22.64	22.86	22.82	1.0	23.5
	16QAM	1	0	21.69	23.01	22.86	1.0	23.5
		1	37	22.85	23.04	22.93	1.0	23.5
		1	74	22.96	22.96	22.83	1.0	23.5
		36	0	21.40	21.78	21.82	2.0	22.5
		36	20	21.92	21.75	21.80	2.0	22.5
		36	39	21.90	21.75	21.77	2.0	22.5
		75	0	21.87	21.79	21.77	2.0	22.5
	64QAM	1	0	21.76	21.57	21.51	2.0	22.5
		1	37	21.34	21.53	21.55	2.0	22.5
		1	74	21.36	21.60	21.50	2.0	22.5
		36	0	20.42	20.41	20.49	3.0	21.5
		36	20	20.41	20.39	20.48	3.0	21.5
		36	39	20.39	20.39	20.47	3.0	21.5
		75	0	20.44	20.36	20.43	3.0	21.5
	256QAM	1	0	18.56	18.52	18.49	5.0	19.5
		1	37	18.55	18.37	18.52	5.0	19.5
		1	74	18.51	18.51	18.43	5.0	19.5
		36	0	18.35	18.34	18.32	5.0	19.5
		36	20	18.33	18.32	18.31	5.0	19.5
		36	39	18.32	18.29	18.31	5.0	19.5
		75	0	18.34	18.30	18.30	5.0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	22.10	23.45	23.50	0.0	24.5
		1	25	22.66	23.59	23.44	0.0	24.5
		1	49	23.13	23.46	23.55	0.0	24.5
		25	0	21.67	22.47	22.53	1.0	23.5
		25	12	22.01	22.47	22.53	1.0	23.5
		25	25	22.31	22.45	22.50	1.0	23.5
		50	0	22.03	22.48	22.51	1.0	23.5
	16QAM	1	0	21.57	22.71	22.72	1.0	23.5
		1	25	22.17	22.76	22.59	1.0	23.5
		1	49	22.66	22.75	22.62	1.0	23.5
		25	0	20.94	21.46	21.55	2.0	22.5
		25	12	21.31	21.45	21.53	2.0	22.5
		25	25	21.58	21.44	21.51	2.0	22.5
		50	0	21.36	21.43	21.48	2.0	22.5
	64QAM	1	0	20.97	21.62	21.47	2.0	22.5
		1	25	21.50	21.63	21.31	2.0	22.5
		1	49	21.37	21.71	21.53	2.0	22.5
		25	0	20.55	20.39	20.49	3.0	21.5
		25	12	20.55	20.39	20.50	3.0	21.5
		25	25	20.53	20.39	20.46	3.0	21.5
		50	0	20.51	20.39	20.46	3.0	21.5
	256QAM	1	0	18.62	18.70	18.46	5.0	19.5
		1	25	18.64	18.78	18.44	5.0	19.5
		1	49	18.56	18.67	18.37	5.0	19.5
		25	0	18.53	18.34	18.41	5.0	19.5
		25	12	18.52	18.32	18.40	5.0	19.5
		25	25	18.49	18.31	18.37	5.0	19.5
		50	0	18.43	18.31	18.35	5.0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	23.57	23.37	23.37	0.0	24.5
		1	12	23.62	23.36	23.50	0.0	24.5
		1	24	23.61	23.44	23.43	0.0	24.5
		12	0	22.62	22.42	22.50	1.0	23.5
		12	7	22.62	22.43	22.50	1.0	23.5
		12	13	22.61	22.42	22.48	1.0	23.5
		25	0	22.63	22.43	22.48	1.0	23.5
	16QAM	1	0	22.86	22.61	22.48	1.0	23.5
		1	12	22.80	22.56	22.51	1.0	23.5
		1	24	22.82	22.59	22.50	1.0	23.5
		12	0	21.61	21.39	21.47	2.0	22.5
		12	7	21.58	21.38	21.46	2.0	22.5
		12	13	21.56	21.34	21.44	2.0	22.5
		25	0	21.60	21.38	21.47	2.0	22.5
	64QAM	1	0	21.71	21.62	21.36	2.0	22.5
		1	12	21.77	21.55	21.40	2.0	22.5
		1	24	21.81	21.65	21.43	2.0	22.5
		12	0	20.50	20.34	20.44	3.0	21.5
		12	7	20.51	20.34	20.43	3.0	21.5
		12	13	20.47	20.33	20.42	3.0	21.5
		25	0	20.52	20.35	20.38	3.0	21.5
	256QAM	1	0	18.52	18.55	18.53	5.0	19.5
		1	12	18.40	18.47	18.46	5.0	19.5
		1	24	18.46	18.51	18.47	5.0	19.5
		12	0	18.45	18.33	18.38	5.0	19.5
		12	7	18.45	18.33	18.36	5.0	19.5
		12	13	18.42	18.31	18.36	5.0	19.5
		25	0	18.48	18.26	18.32	5.0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	22.61	23.77	23.80	0.0	24.5
		1	8	22.72	23.87	23.87	0.0	24.5
		1	14	22.76	23.78	23.85	0.0	24.5
		8	0	21.96	22.83	22.75	1.0	23.5
		8	4	22.04	22.83	22.76	1.0	23.5
		8	7	22.08	22.82	22.78	1.0	23.5
		15	0	22.06	22.81	22.72	1.0	23.5
	16QAM	1	0	21.96	23.05	22.77	1.0	23.5
		1	8	22.11	23.05	22.80	1.0	23.5
		1	14	22.17	23.10	22.69	1.0	23.5
		8	0	21.25	21.92	21.79	2.0	22.5
		8	4	21.37	21.87	21.73	2.0	22.5
		8	7	21.42	21.90	21.75	2.0	22.5
		15	0	21.34	21.78	21.71	2.0	22.5
	64QAM	1	0	22.31	21.71	21.49	2.0	22.5
		1	8	22.27	21.74	21.34	2.0	22.5
		1	14	22.37	21.81	21.45	2.0	22.5
		8	0	21.14	20.75	20.65	3.0	21.5
		8	4	21.07	20.77	20.61	3.0	21.5
		8	7	21.12	20.80	20.63	3.0	21.5
		15	0	21.03	20.78	20.61	3.0	21.5
	256QAM	1	0	19.27	18.78	18.77	5.0	19.5
		1	8	19.13	18.73	18.68	5.0	19.5
		1	14	19.21	18.68	18.70	5.0	19.5
		8	0	19.07	18.68	18.61	5.0	19.5
		8	4	19.04	18.65	18.60	5.0	19.5
		8	7	19.03	18.67	18.57	5.0	19.5
		15	0	19.03	18.68	18.61	5.0	19.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	24.07	23.84	23.78	0.0	24.5
		1	3	23.97	23.93	23.65	0.0	24.5
		1	5	24.09	23.85	23.80	0.0	24.5
		3	0	24.09	23.88	23.77	0.0	24.5
		3	1	24.04	23.83	23.74	0.0	24.5
		3	3	24.06	23.77	23.67	0.0	24.5
		6	0	23.08	22.80	22.77	1.0	23.5
	16QAM	1	0	23.20	22.90	22.81	1.0	23.5
		1	3	23.23	22.96	22.87	1.0	23.5
		1	5	23.26	22.93	22.86	1.0	23.5
		3	0	23.28	22.83	22.66	1.0	23.5
		3	1	23.20	22.81	22.67	1.0	23.5
		3	3	23.16	22.83	22.60	1.0	23.5
		6	0	22.08	21.78	21.71	2.0	22.5
	64QAM	1	0	22.44	21.87	21.33	2.0	22.5
		1	3	22.46	21.77	21.59	2.0	22.5
		1	5	22.39	21.86	21.44	2.0	22.5
		3	0	22.17	22.00	21.52	2.0	22.5
		3	1	22.07	21.86	21.48	2.0	22.5
		3	3	22.07	21.94	21.41	2.0	22.5
		6	0	21.05	20.78	20.59	3.0	21.5
	256QAM	1	0	19.04	18.77	18.59	5.0	19.5
		1	3	19.27	18.71	18.60	5.0	19.5
		1	5	19.01	18.72	18.52	5.0	19.5
		3	0	19.02	18.52	18.64	5.0	19.5
		3	1	18.96	18.55	18.62	5.0	19.5
		3	3	18.86	18.50	18.50	5.0	19.5
		6	0	19.01	18.67	18.49	5.0	19.5

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BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
					Measured Pwr (dBm)			MPR	Tune-up Limit
					344000	349000	354000		
					1720 MHz	1745 MHz	1770 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.03	23.66	24.01	0.0	25.0
			1	53	23.72	23.88	24.10	0.0	25.0
			1	104	23.66	24.11	24.10	0.0	25.0
			50	0	22.67	22.86	23.15	0.5	24.5
			50	28	23.79	23.98	23.88	0.0	25.0
			50	56	22.75	23.12	23.25	0.5	24.5
			100	0	22.81	22.98	23.20	0.5	24.5
		QPSK	1	1	22.60	23.80	23.90	0.0	25.0
			1	53	23.60	24.00	24.00	0.0	25.0
			1	104	23.80	24.10	24.00	0.0	25.0
			50	0	22.50	22.90	23.20	1.0	24.0
			50	28	23.70	24.20	24.20	0.0	25.0
			50	56	22.80	23.20	23.30	1.0	24.0
			100	0	22.90	23.00	23.30	1.0	24.0
		16QAM	1	1	22.11	23.71	23.27	1.0	24.0
			1	53	22.14	23.07	23.01	1.0	24.0
			1	104	22.12	22.01	22.34	1.0	24.0
		64QAM	1	1	20.77	21.31	21.79	2.5	22.5
		256QAM	1	1	19.12	19.31	19.63	4.5	20.5
	CP-OFDM	QPSK	1	1	21.51	22.40	22.60	1.5	23.5
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343500	349000	354500		
					1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.45	23.57	23.93	0.0	25.0
			1	40	23.74	23.71	23.96	0.0	25.0
			1	77	23.82	23.99	24.02	0.0	25.0
			36	0	22.98	22.78	23.08	0.5	24.5
			36	22	24.05	23.86	24.12	0.0	25.0
			36	43	23.05	23.01	23.16	0.5	24.5
			75	0	23.07	22.89	23.14	0.5	24.5
		QPSK	1	1	23.24	23.79	23.90	0.0	25.0
			1	40	24.02	23.88	24.13	0.0	25.0
			1	77	24.01	24.14	24.17	0.0	25.0
			36	0	23.08	22.86	23.15	1.0	24.0
			36	22	24.10	23.95	24.17	0.0	25.0
			36	43	23.12	23.09	23.22	1.0	24.0
			75	0	23.14	22.96	23.20	1.0	24.0
		16QAM	1	1	22.44	22.86	23.18	1.0	24.0
		64QAM	1	1	21.35	21.23	21.63	2.5	22.5
		256QAM	1	1	19.15	19.25	19.57	4.5	20.5
	CP-OFDM	QPSK	1	1	21.62	22.27	22.60	1.5	23.5

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343000	349000	355000		
					1715 MHz	1745 MHz	1775 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.51	23.68	23.94	0.0	25.0
			1	26	23.71	23.84	24.06	0.0	25.0
			1	50	23.70	23.96	24.00	0.0	25.0
			25	0	22.68	22.82	23.10	0.5	24.5
			25	14	23.73	23.87	24.09	0.0	25.0
			25	27	22.77	22.99	23.12	0.5	24.5
			50	0	22.75	22.92	23.15	0.5	24.5
		QPSK	1	1	23.44	23.85	24.15	0.0	25.0
			1	26	23.84	23.98	24.22	0.0	25.0
			1	50	23.81	24.12	24.16	0.0	25.0
			25	0	22.78	22.92	23.20	1.0	24.0
			25	14	23.79	23.95	24.20	0.0	25.0
			25	27	22.85	23.06	23.19	1.0	24.0
			50	0	22.82	22.99	23.22	1.0	24.0
		16QAM	1	1	22.69	23.01	23.27	1.0	24.0
		64QAM	1	1	21.22	21.41	21.80	2.5	22.5
		256QAM	1	1	19.16	19.26	19.62	4.5	20.5
	CP-OFDM	QPSK	1	1	22.18	22.33	22.73	1.5	23.5

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					342500	349000	355500		
					1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.49	23.73	24.02	0.0	25.0
			1	13	23.71	23.75	23.95	0.0	25.0
			1	23	23.73	23.90	24.05	0.0	25.0
			12	0	22.72	22.85	23.12	0.5	24.5
			12	7	23.68	23.89	24.09	0.0	25.0
			12	13	22.76	22.97	23.12	0.5	24.5
			25	0	22.72	22.94	23.12	0.5	24.5
		QPSK	1	1	23.47	23.90	24.19	0.0	25.0
			1	13	23.85	23.90	24.10	0.0	25.0
			1	23	23.77	24.01	24.18	0.0	25.0
			12	0	22.79	22.95	23.22	1.0	24.0
			12	7	23.83	23.98	24.18	0.0	25.0
			12	13	22.82	23.02	23.19	1.0	24.0
			25	0	22.85	22.98	23.20	1.0	24.0
		16QAM	1	1	22.73	22.93	23.30	1.0	24.0
		64QAM	1	1	21.25	21.50	21.71	2.5	22.5
		256QAM	1	1	19.24	19.37	19.58	4.5	20.5
	CP-OFDM	QPSK	1	1	22.16	22.37	22.74	1.5	23.5

8.2. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to either CMW500 Test Set or E7515B Test set and configured to operate at maximum power.The PAR were measured on the Spectrum Analyzer.

Test Spec

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

NOTE

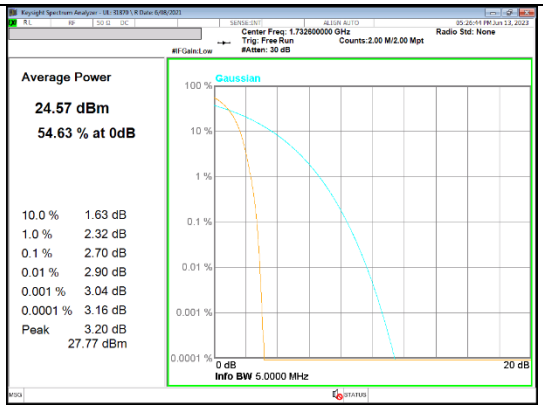
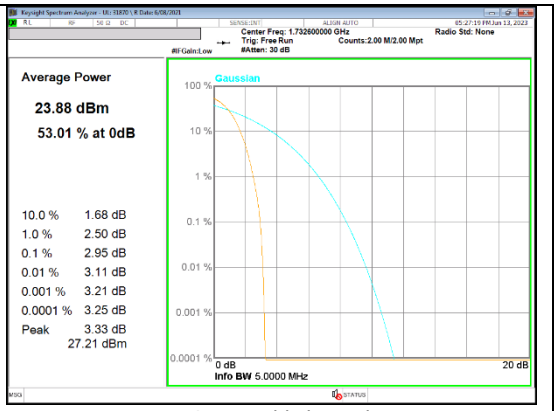
5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

RESULTS

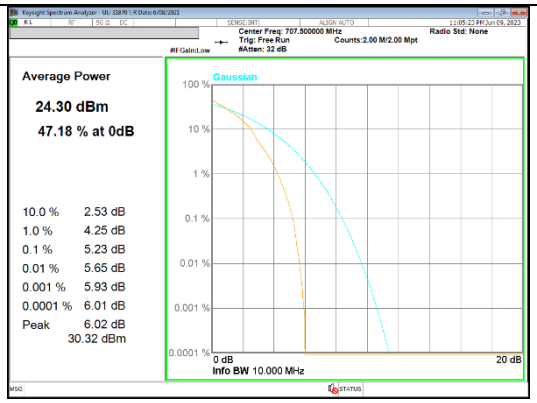
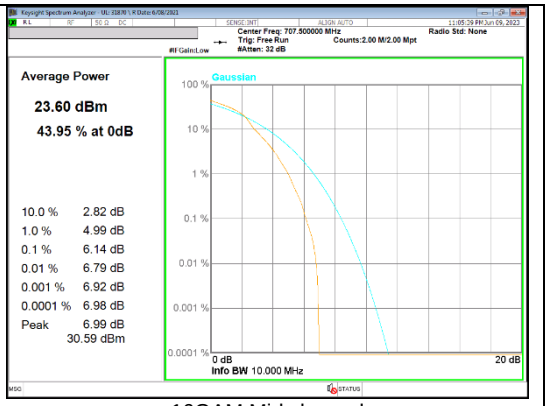
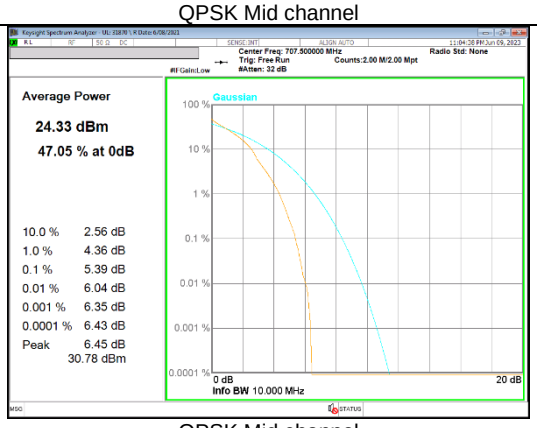
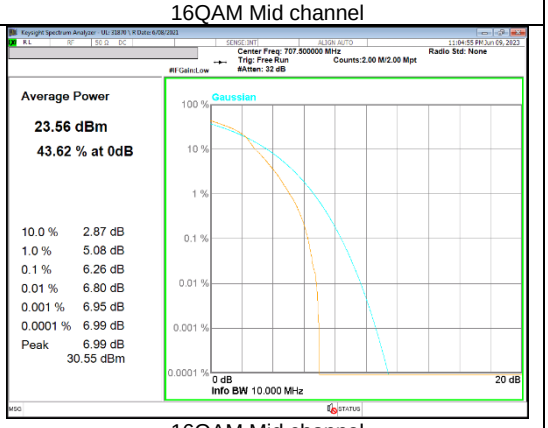
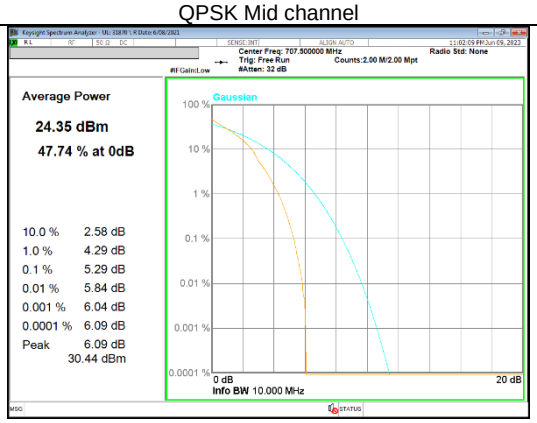
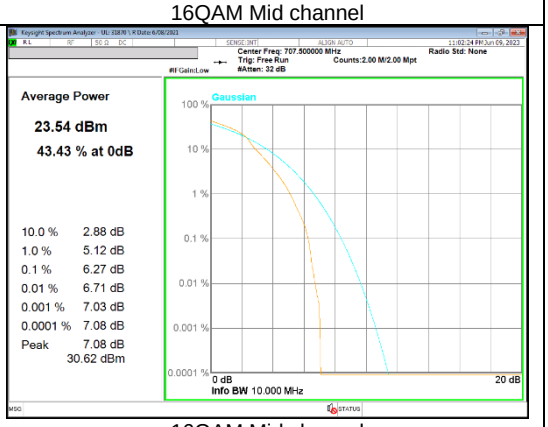
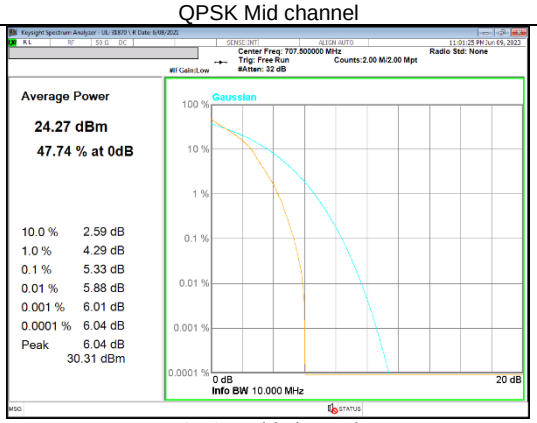
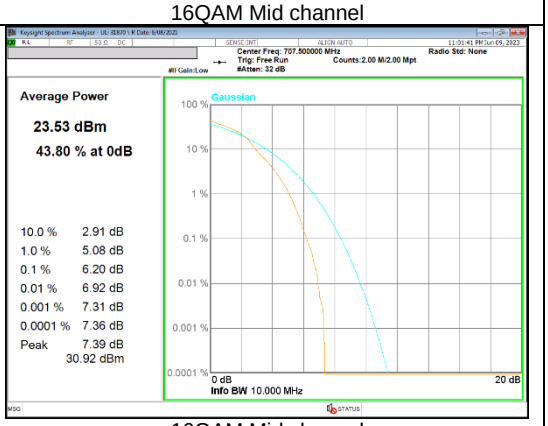
See the following pages.

8.2.1. CONDUCTED PEAK TO AVERAGE RESULT

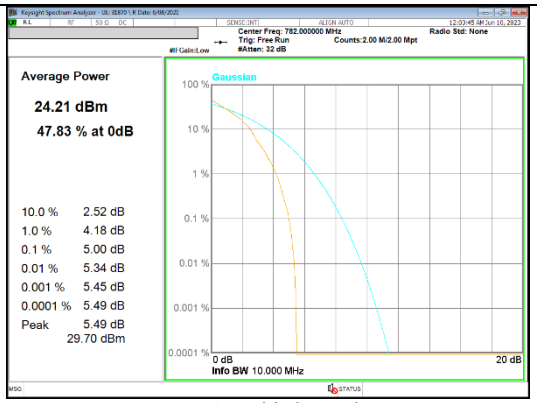
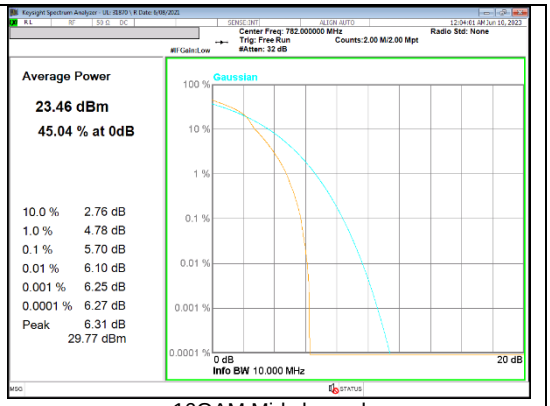
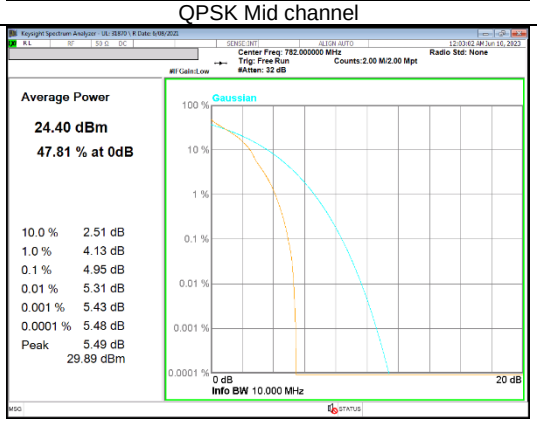
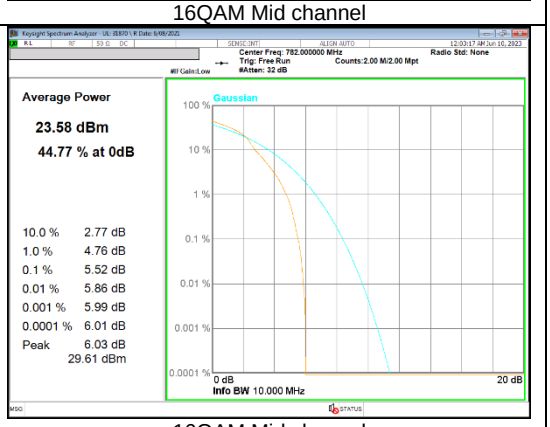
WCDMA

Band 4	 REL99 Mid channel	 HSDPA Mid channel

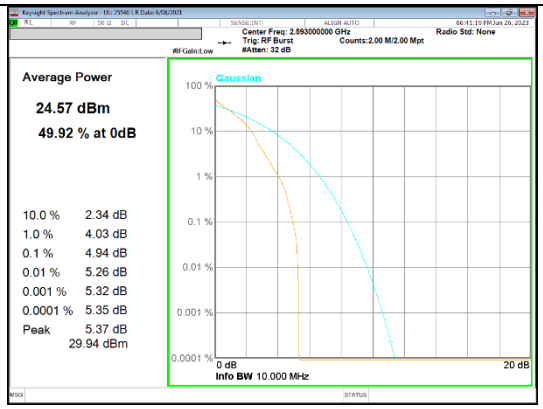
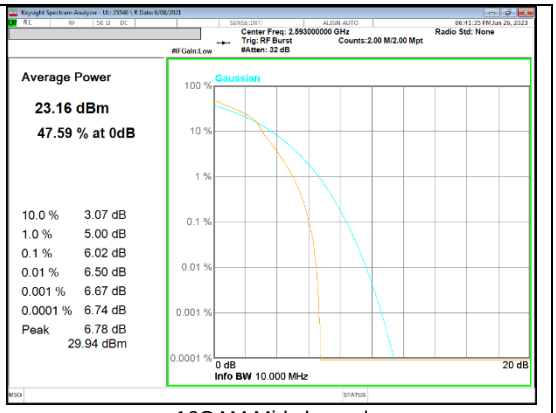
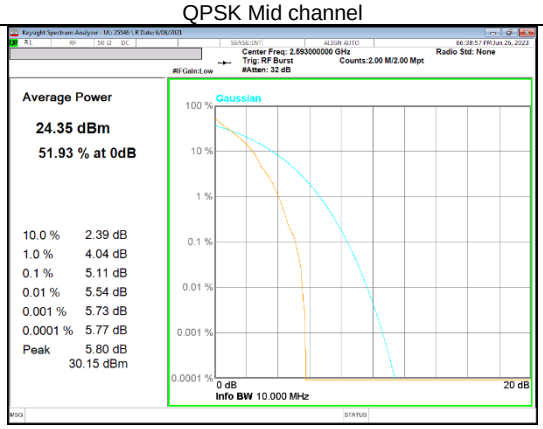
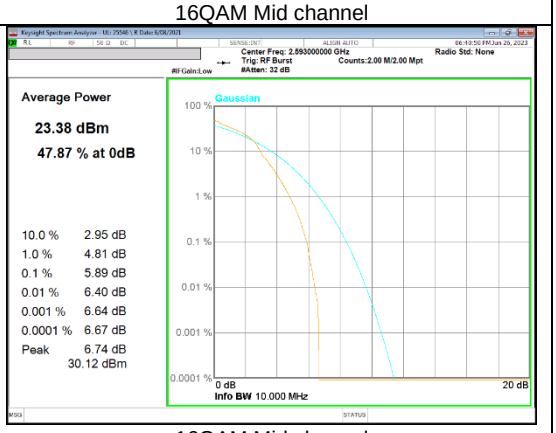
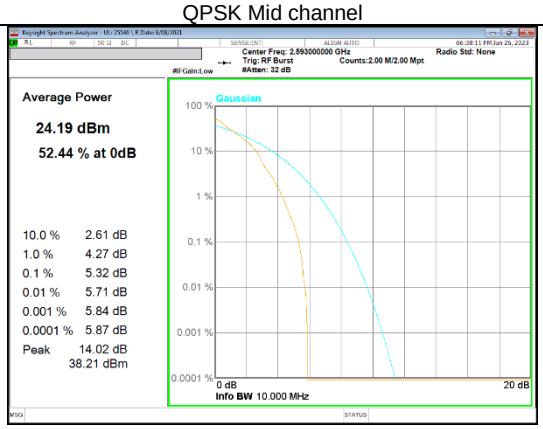
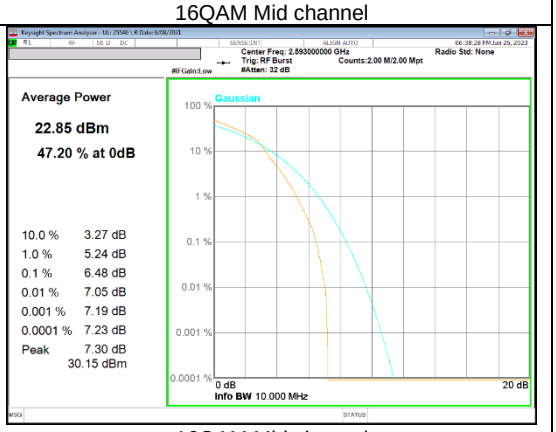
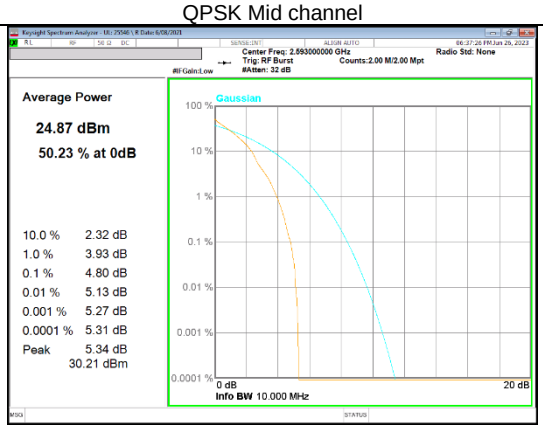
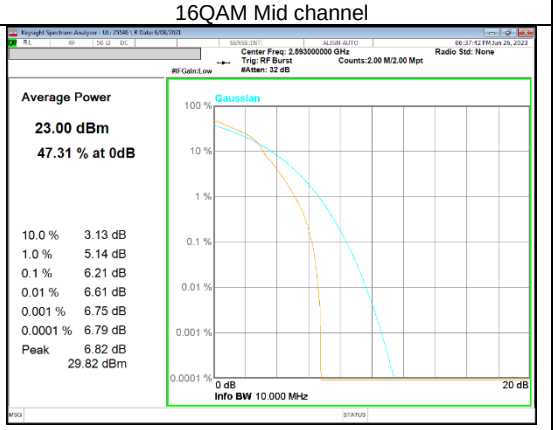
LTE Band 12

10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel
3 MHz	 QPSK Mid channel	 16QAM Mid channel
1.4 MHz	 QPSK Mid channel	 16QAM Mid channel

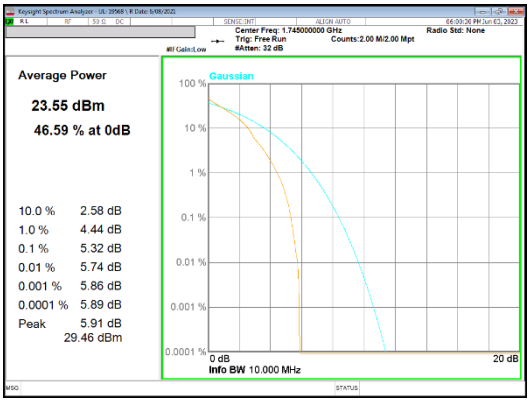
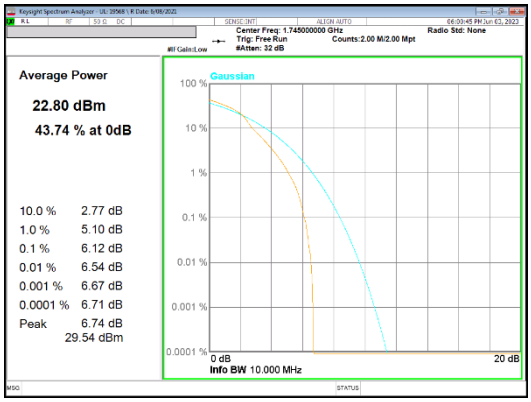
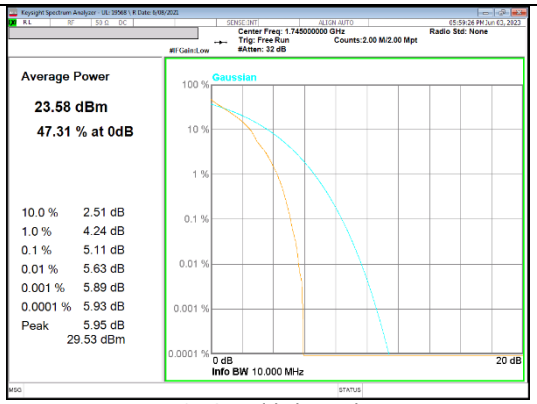
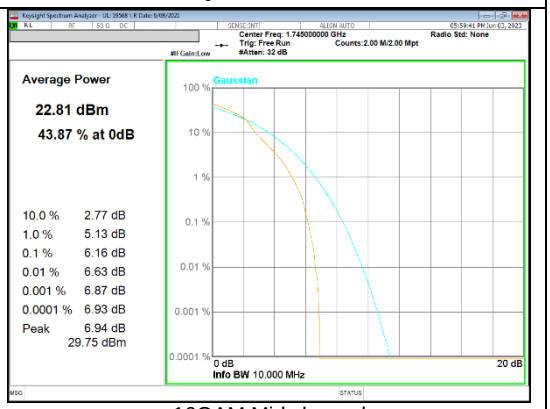
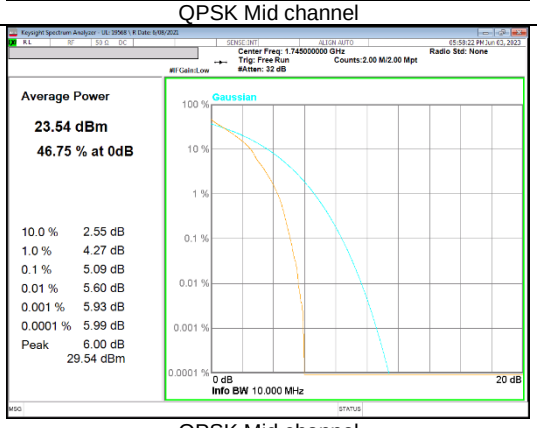
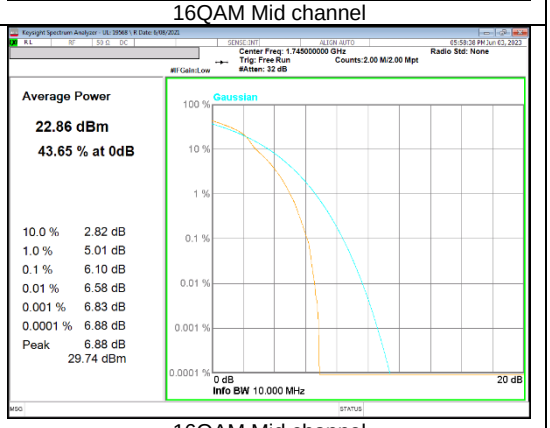
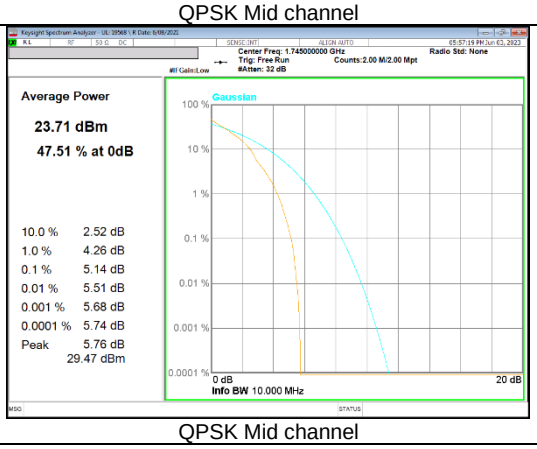
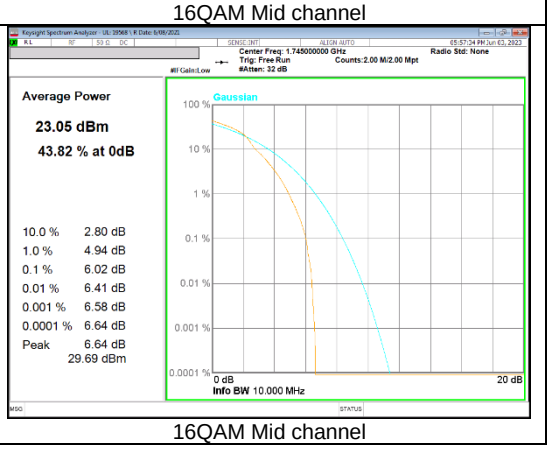
LTE Band 13

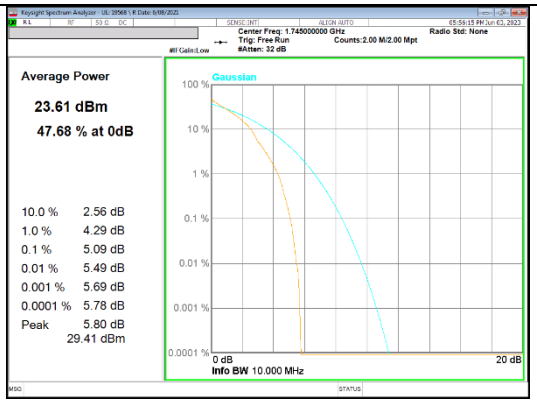
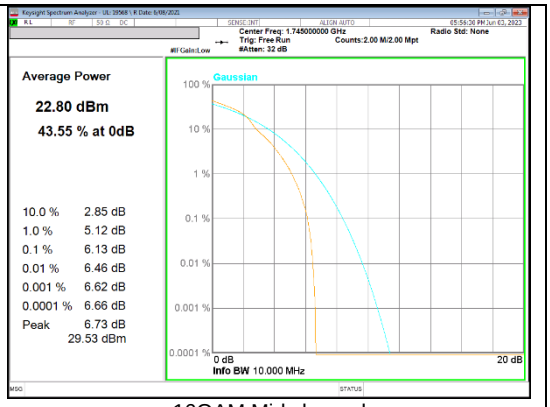
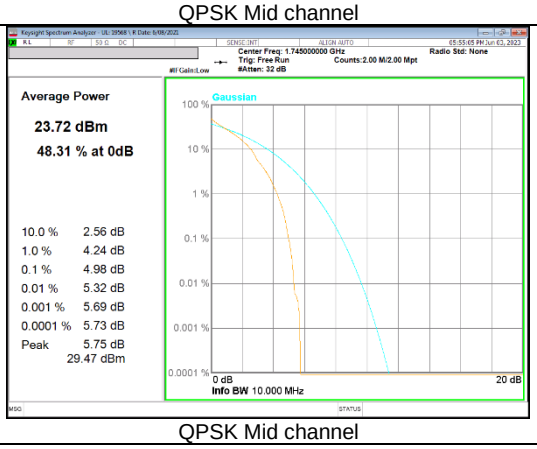
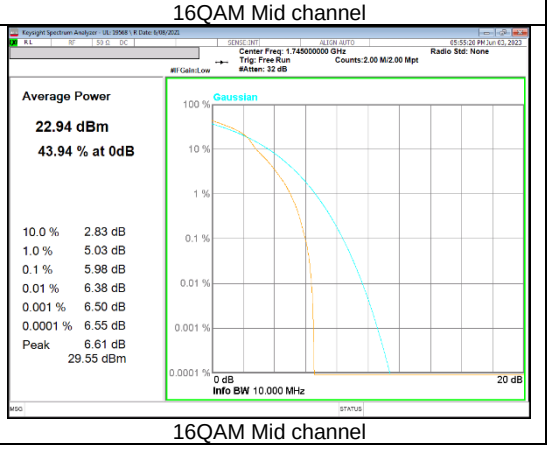
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 41

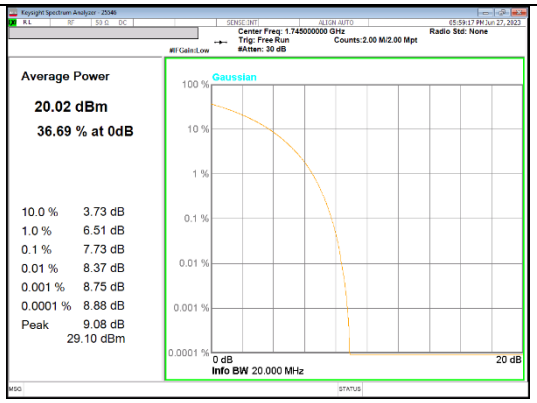
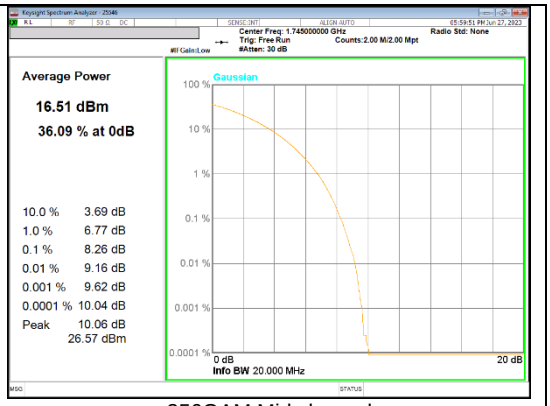
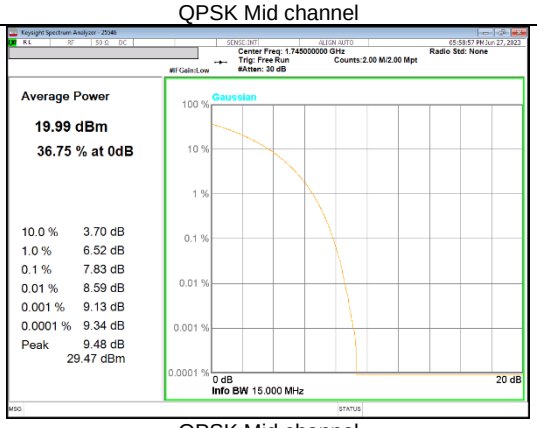
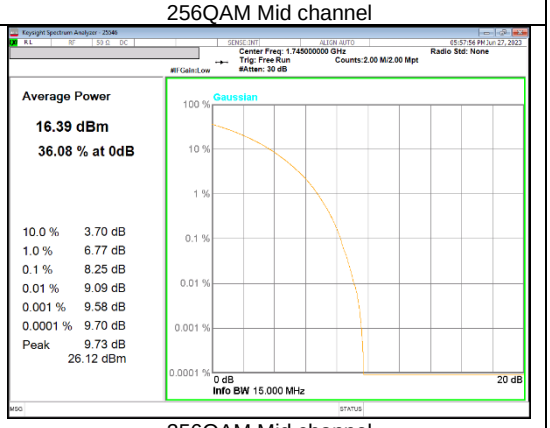
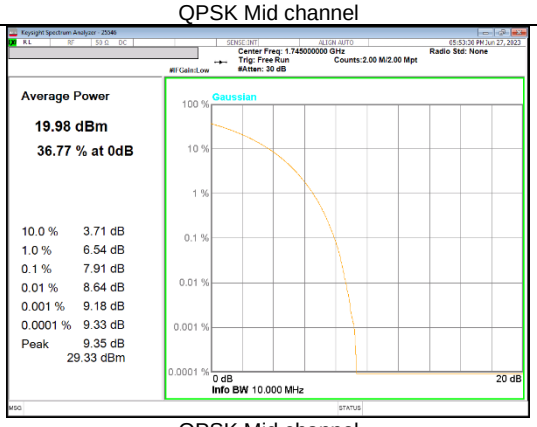
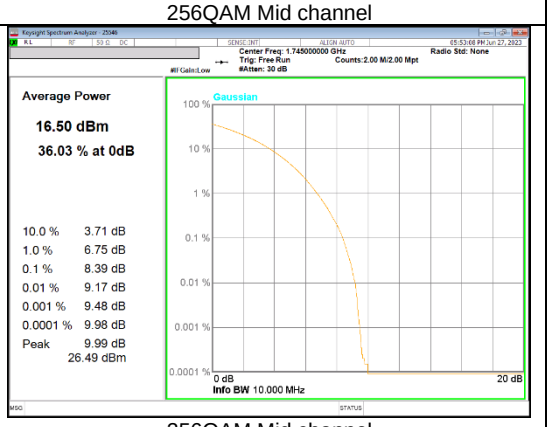
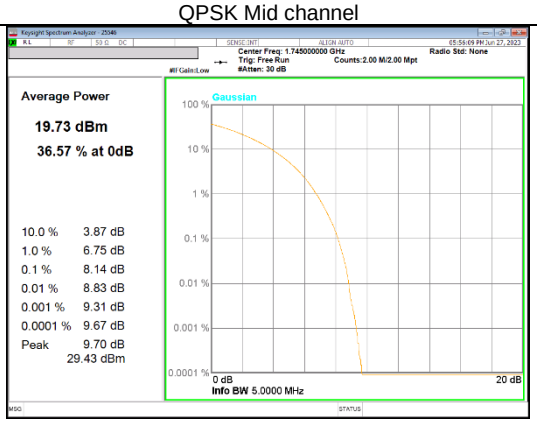
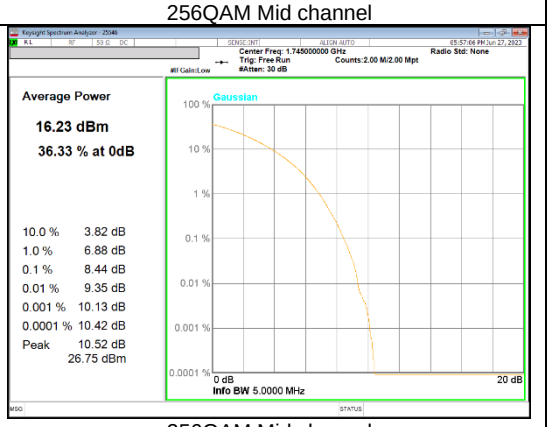
20 MHz	 QPSK Mid channel	 16QAM Mid channel
15 MHz	 QPSK Mid channel	 16QAM Mid channel
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 66

20 MHz	 QPSK Mid channel	 16QAM Mid channel
15 MHz	 QPSK Mid channel	 16QAM Mid channel
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel

3 MHz	 QPSK Mid channel	 16QAM Mid channel
1.4 MHz	 QPSK Mid channel	 16QAM Mid channel

NR Band n66 CP-OFDM

20 MHz	 QPSK Mid channel	 256QAM Mid channel
15 MHz	 QPSK Mid channel	 256QAM Mid channel
10 MHz	 QPSK Mid channel	 256QAM Mid channel
5 MHz	 QPSK Mid channel	 256QAM Mid channel

8.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at middle channel in each band. The -26dB bandwidth was also measured and recorded.

(KDB 971168 D01 Power Meas License Digital Systems v03r01)

RESULTS

See the following pages.

- **WCDMA**

Band	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
B4	Rel.99	1732.6	4.168	4.724
	HSDPA		4.173	4.730

- LTE Band 12

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B12	10M	QPSK	707.5	8.970	10.280
		16QAM		8.971	10.280
	5M	QPSK		4.504	5.167
		16QAM		4.499	5.251
	3M	QPSK		2.696	3.095
		16QAM		2.701	3.071
	1.4M	QPSK		1.089	1.303
		16QAM		1.088	1.296

- LTE Band 13

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B13	10M	QPSK	782.0	8.978	10.390
		16QAM		8.981	10.250
	5M	QPSK		4.504	5.292
		16QAM		4.503	5.280

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_27(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

- LTE Band 41

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B41	20M	QPSK	2593.0	17.894	19.830
		16QAM		17.903	19.740
	15M	QPSK		13.404	15.020
		16QAM		13.413	15.200
	10M	QPSK		8.966	10.230
		16QAM		8.967	10.200
	5M	QPSK		4.497	5.261
		16QAM		4.498	5.343

- LTE Band 66

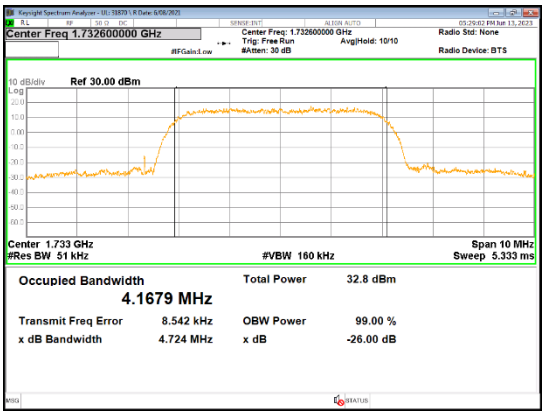
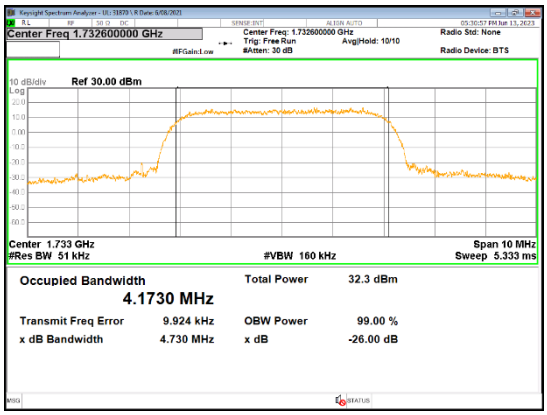
Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B66	20M	QPSK	1745.0	17.893	19.920
		16QAM		17.898	19.760
	15M	QPSK		13.417	15.110
		16QAM		13.415	15.120
	10M	QPSK		8.984	10.210
		16QAM		8.966	10.190
	5M	QPSK		4.500	5.240
		16QAM		4.500	5.230
	3M	QPSK		2.704	3.113
		16QAM		2.696	3.059
	1.4M	QPSK		1.086	1.286
		16QAM		1.090	1.270

- NR Band n66 CP-OFDM

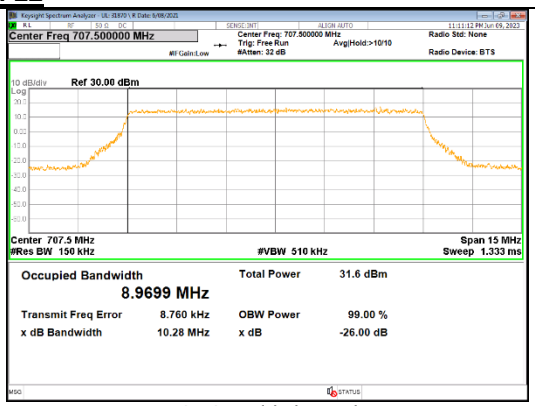
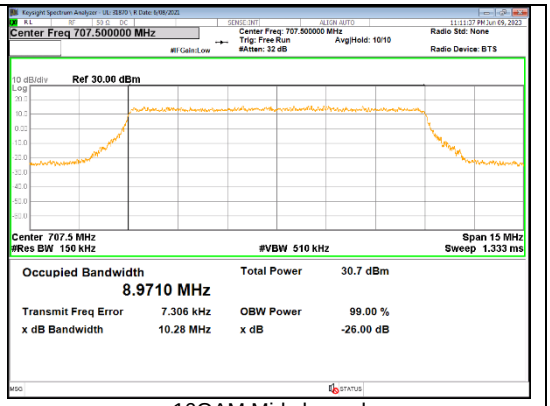
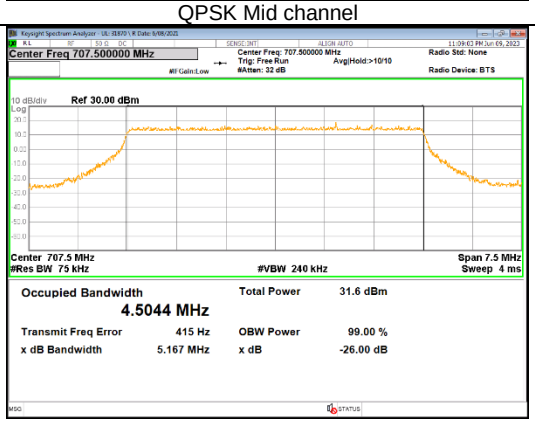
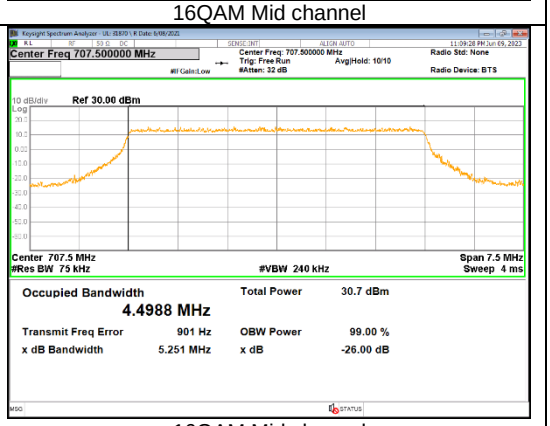
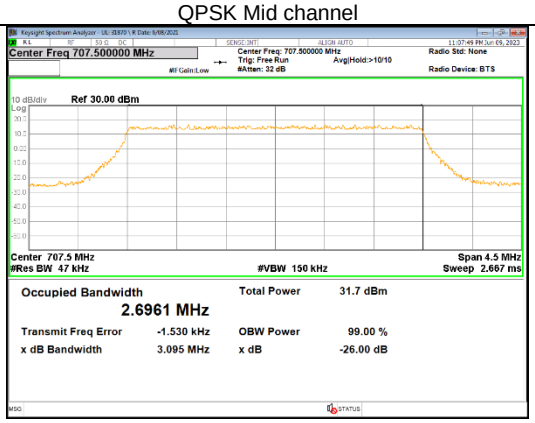
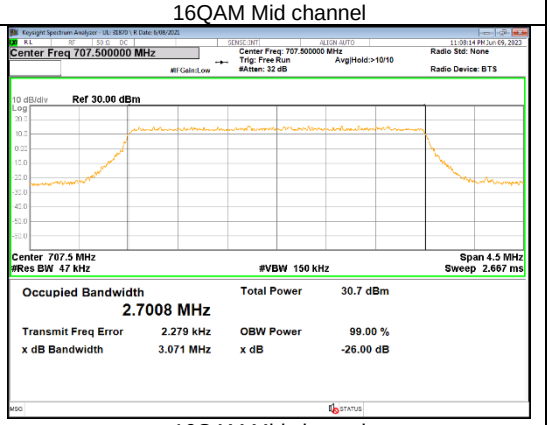
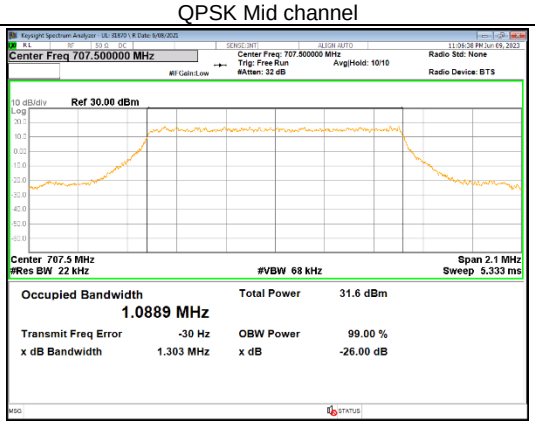
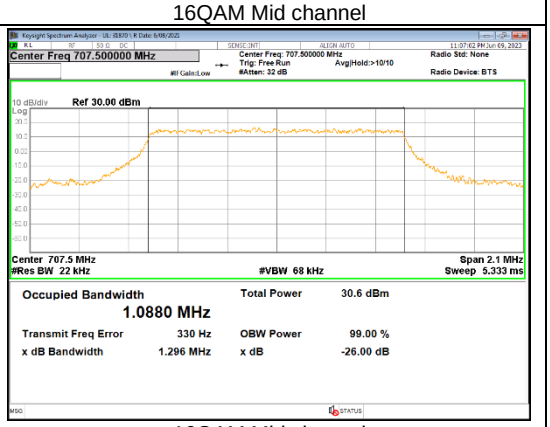
Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n66	20M	QPSK	1745.0	18.936	20.180
		16QAM		18.971	20.570
	15M	QPSK		14.130	15.360
		16QAM		14.126	15.060
	10M	QPSK		9.338	10.290
		16QAM		9.296	10.040
	5M	QPSK		4.508	5.371
		16QAM		4.499	5.260

8.3.1. OCCUPIED BANDWIDTH RESULTS

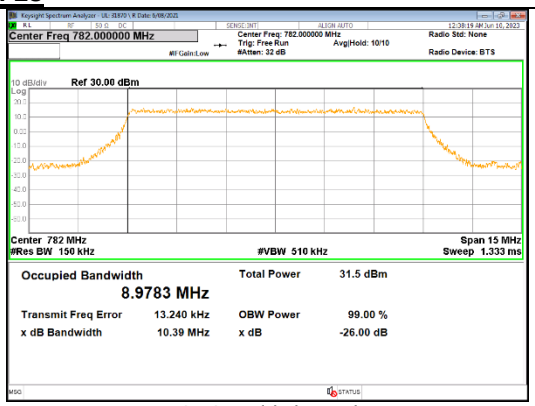
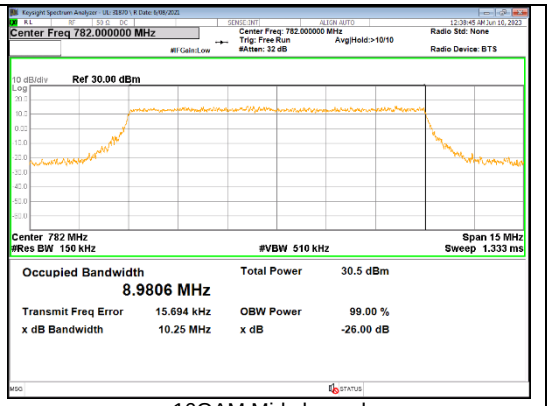
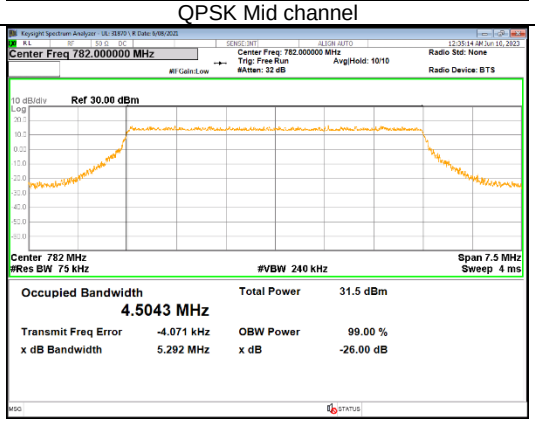
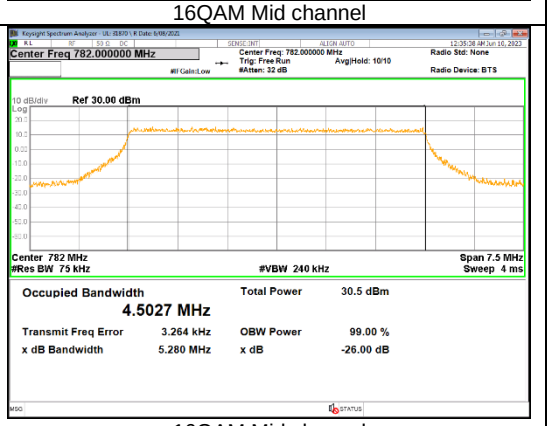
WCDMA Band 4

Band 4	 REL99 Mid channel	 HSDPA Mid channel

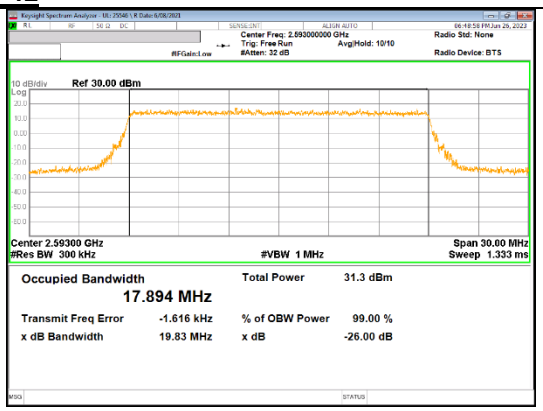
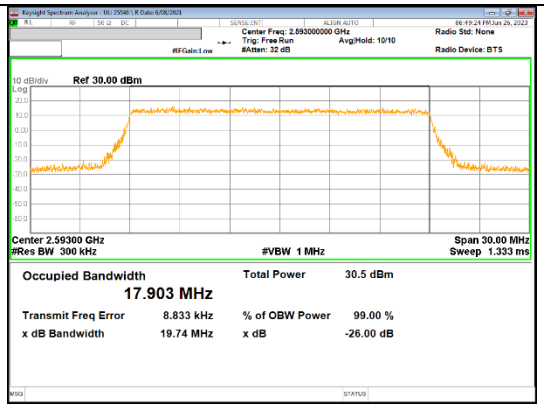
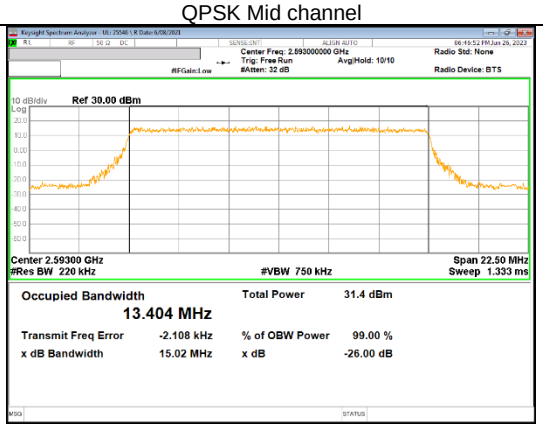
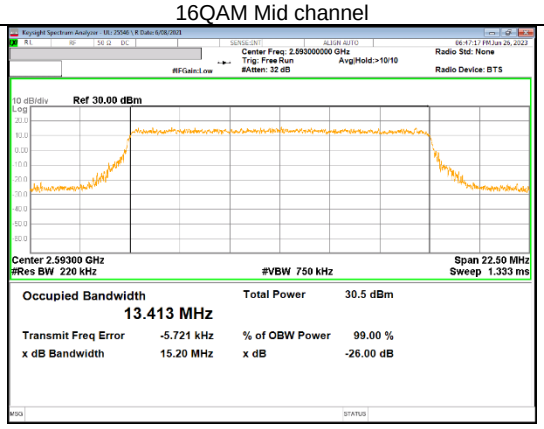
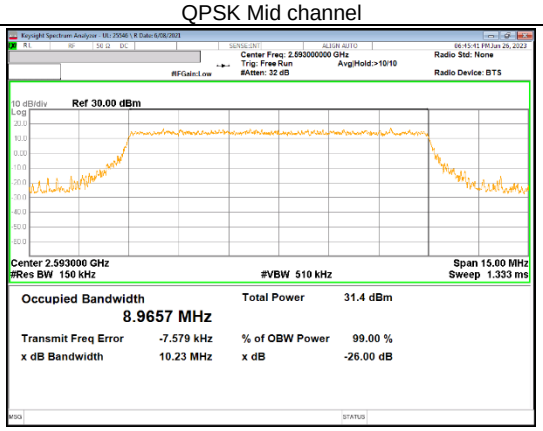
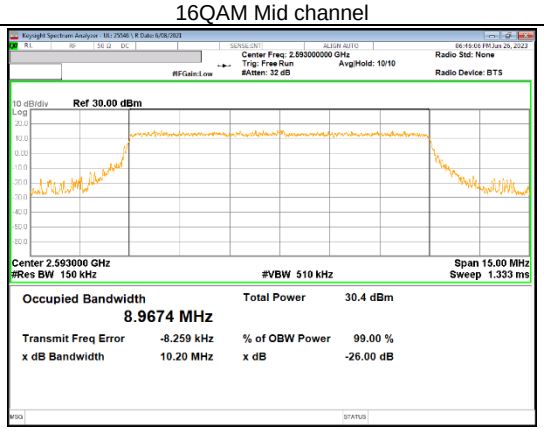
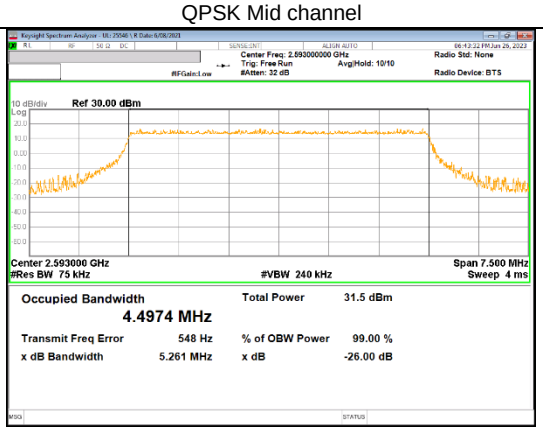
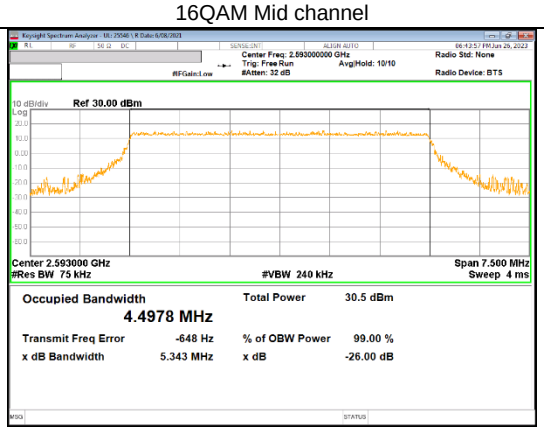
LTE Band 12

10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel
3MHz	 QPSK Mid channel	 16QAM Mid channel
1.4MHz	 QPSK Mid channel	 16QAM Mid channel

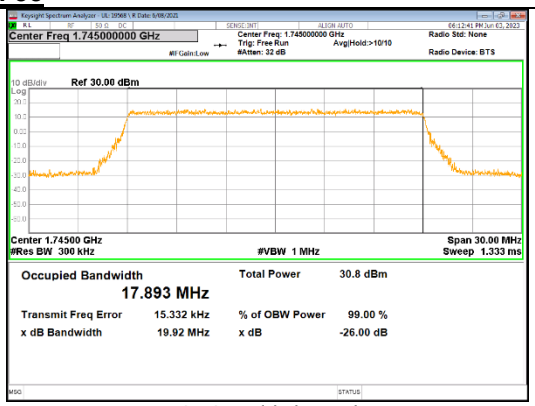
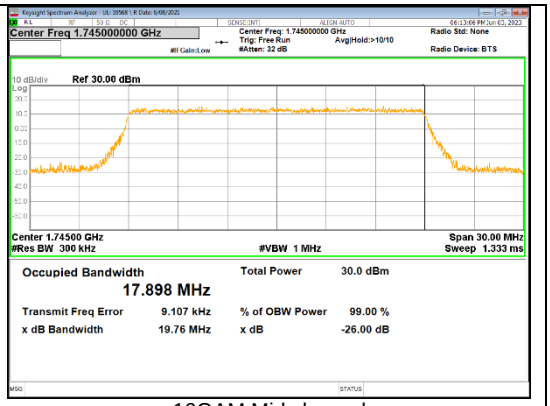
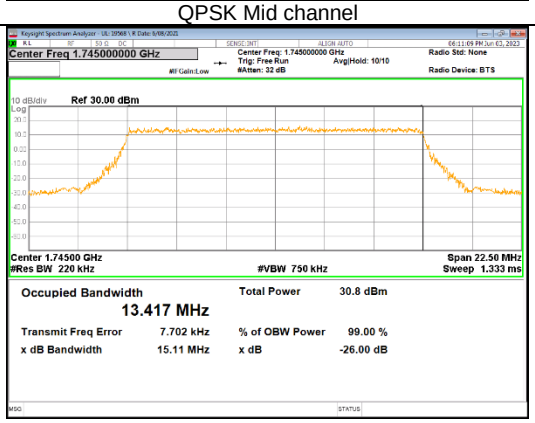
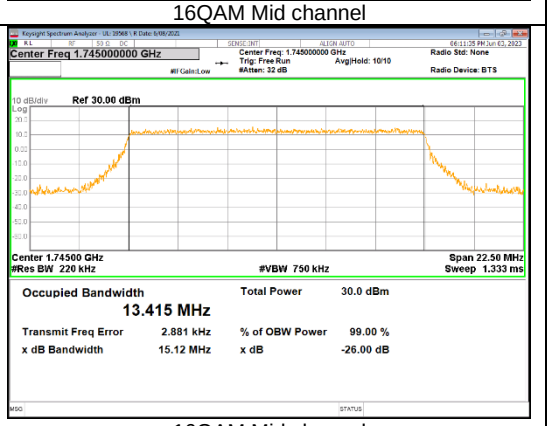
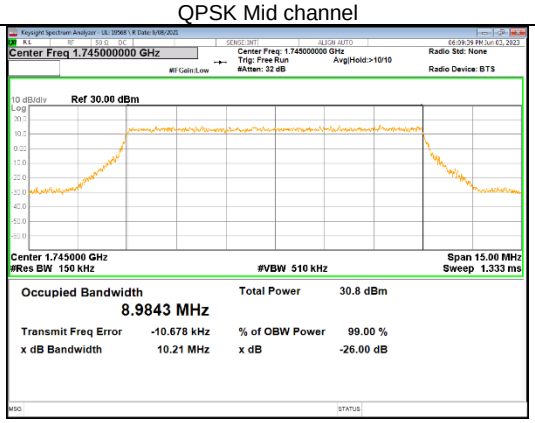
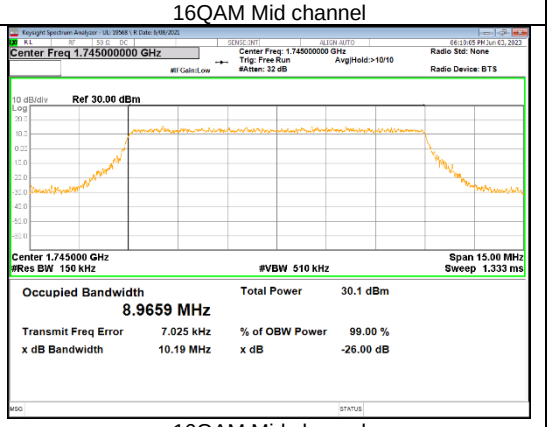
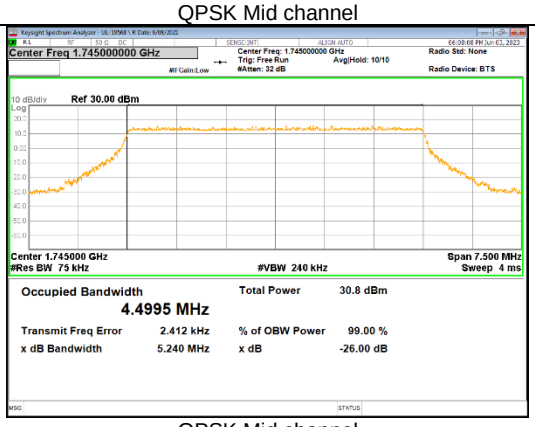
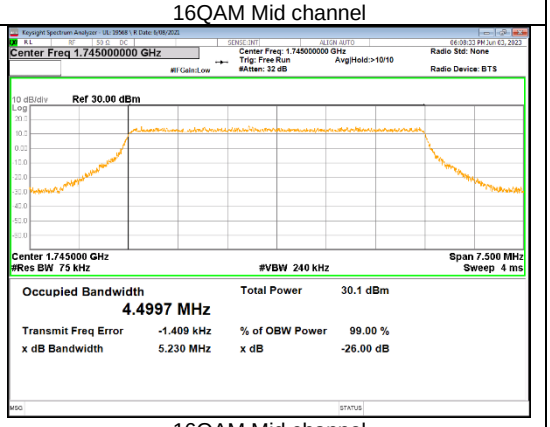
LTE Band 13

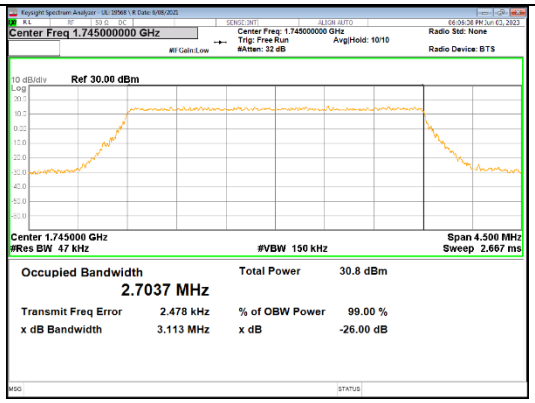
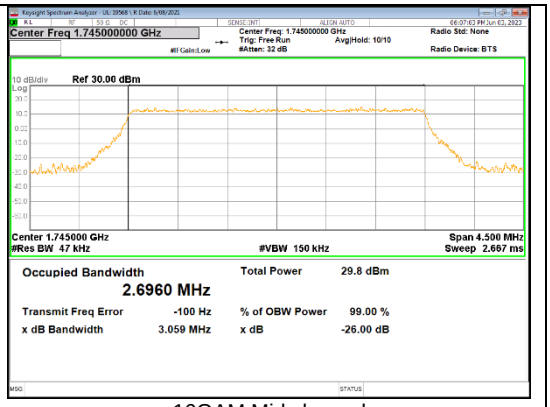
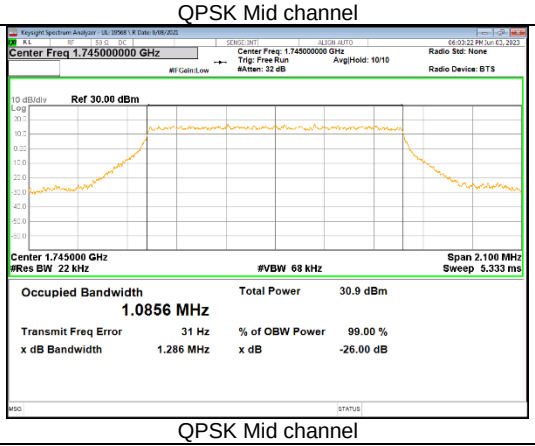
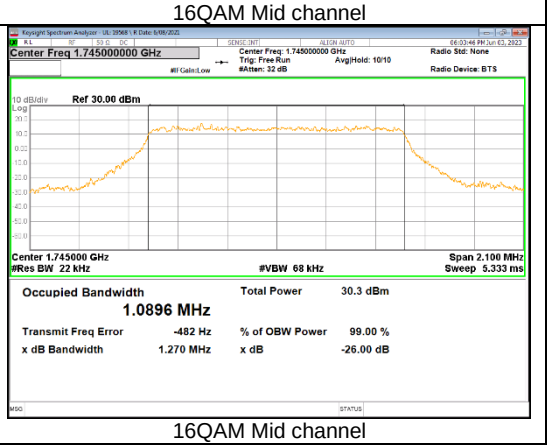
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 41

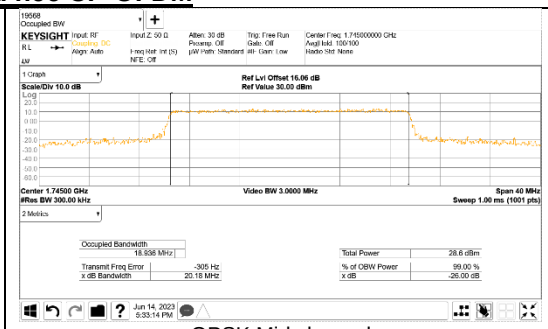
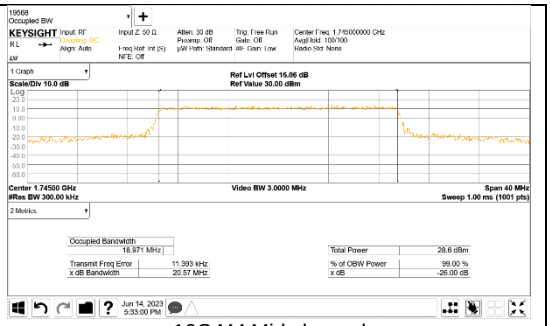
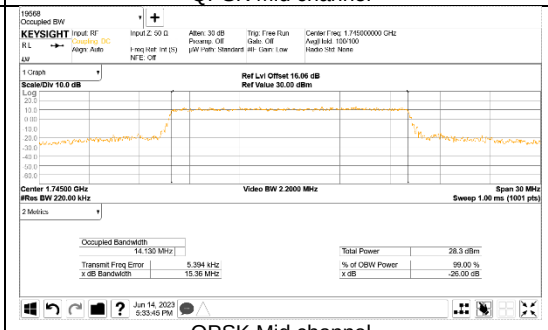
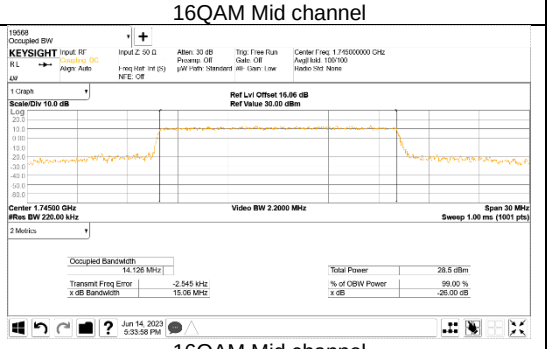
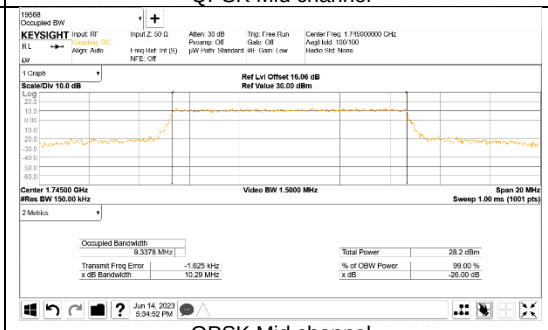
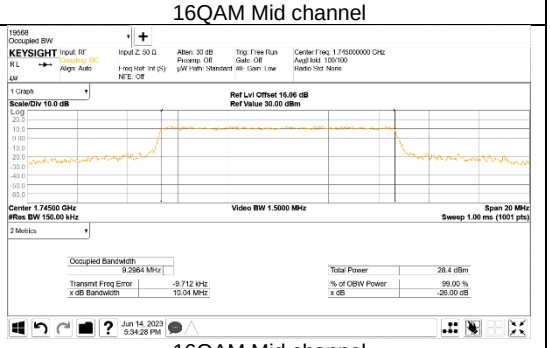
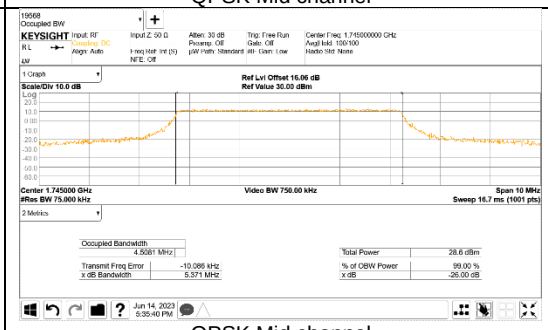
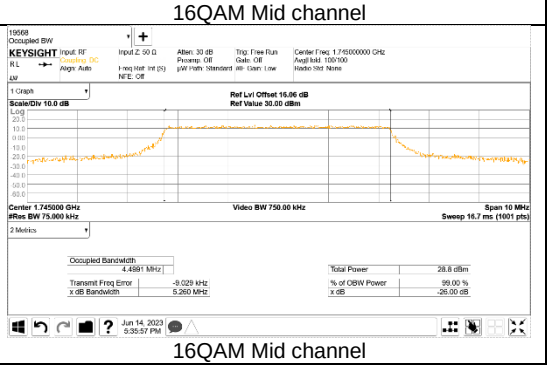
20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 66

20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

3MHz	 QPSK Mid channel	 16QAM Mid channel
1.4MHz	 QPSK Mid channel	 16QAM Mid channel

NR Band n66 CP-OFDM

20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

8.4. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §27. 53

LIMITS

Part 27.53:
(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(4) On all frequencies between 763-775 MHz and 793-806 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}$ (P) dB.

(m) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 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.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01
The transmitter output was connected to either CMW500 Test Set or E7515B Test set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

WCDMA/LTE/5G NR

a) Set the RBW = 1 - 1.5 % of OBW(Typically limited to a minimum RBW of 1% of the OBW)

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = Auto;

e) Detector = RMS;

f) Ensure that the number of measurement points ≥ 2*Span/RBW;

g) Trace Mode = Average (100);

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_27(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

NOTE1

For frequency range of 763-775 MHz and 793-806 MHz, 769-775 MHz and 799-805 MHz.(LTE Band 13)

a) Set the RBW = 6.2 kHz
b) Set VBW ≥ 3 × RBW;
c) Sweep time = 1 second ;
d) Detector = RMS;
e) Ensure that the number of measurement points ≥ 2*Span/RBW;
f) Trace Mode = Average;

NOTE2

Note that the spurious emissions outside of the channel include narrowband signals. These signals are all below the -13dBm / -25dBm limits. Although the measurement bandwidth is less than the reference bandwidth of 1MHz no addental correction is applied as ANSI C63.26 section 4.2.3 only requires the correction to be applied when the OBW of the emission being measured is wider than the measurement bandwidth (Where the OBW of the signal under measurement is less than the RBW of the measuring instrument, no bandwidth correction or integration will be required.) Plots for low and high channels show the level of the emission measured with the reduced bandwidth and the level of the same emission measured using the integration method over the 1MHz reference bandwidth are very close, indicating the emissions are narrowband.

NOTE3

For Band-Edge extended:

CH BW (MHz)	RB Used (kHz)	CF for emissions more than 100kHz	CF for emissions more than 1MHz
1.4	15	+8.2 dB	+18.2 dB
3	30	+5.2 dB	+15.2 dB
5	51	+2.9 dB	+12.9 dB
10	100	N/A	+10.0 dB
15	150	N/A	+8.2 dB
20	200	N/A	+7.0 dB

For the band edge value measured in [RB Used], even if [CF for emissions reference bandwidth 100kHz/1MHz] is applied, it is below -13dBm.

NOTE4

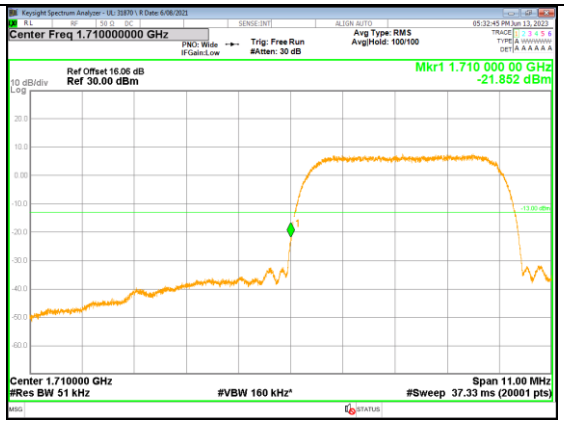
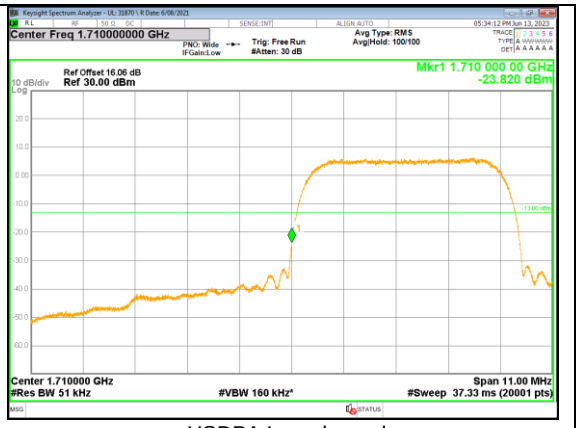
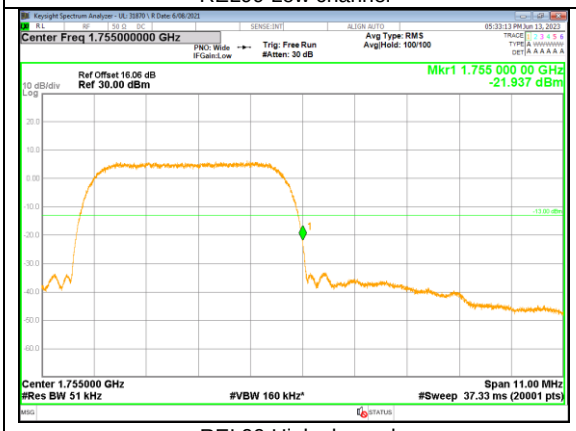
5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

RESULTS

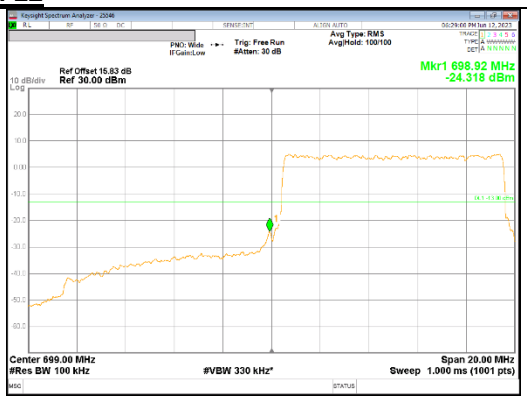
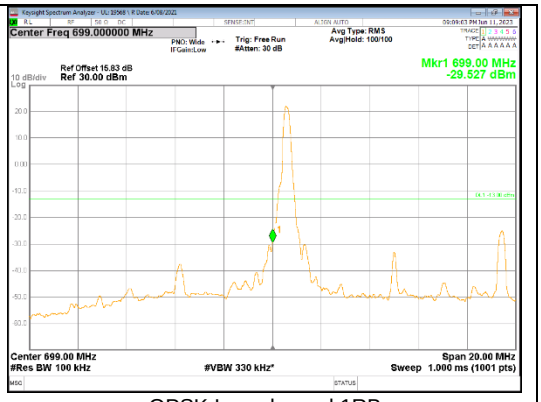
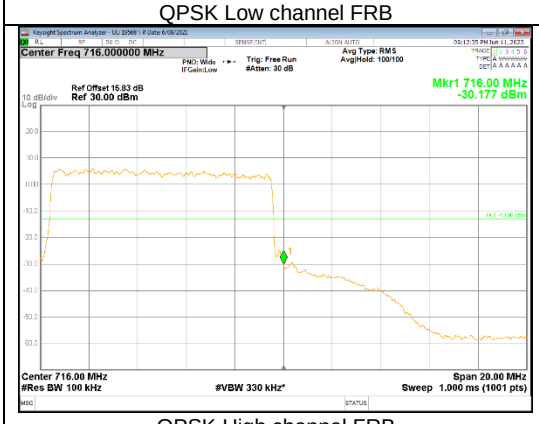
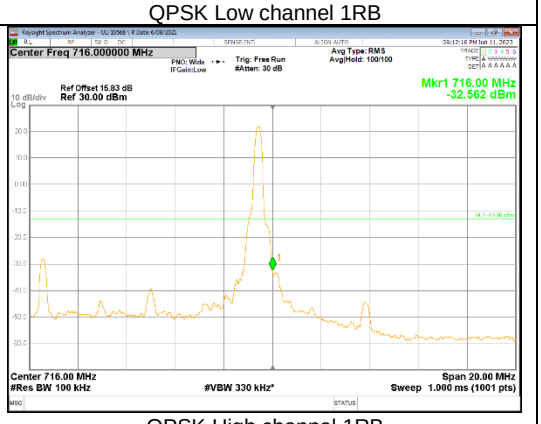
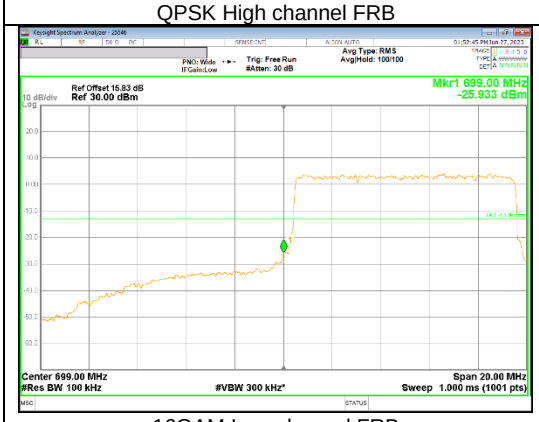
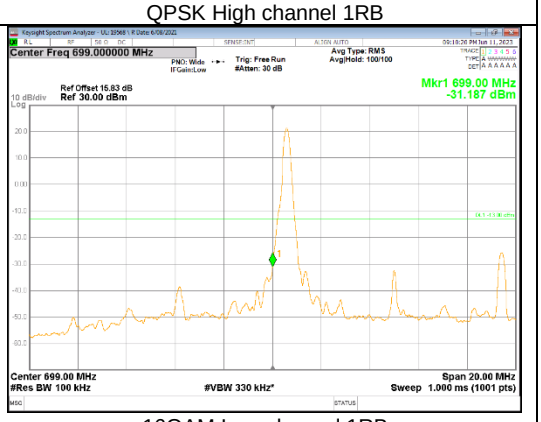
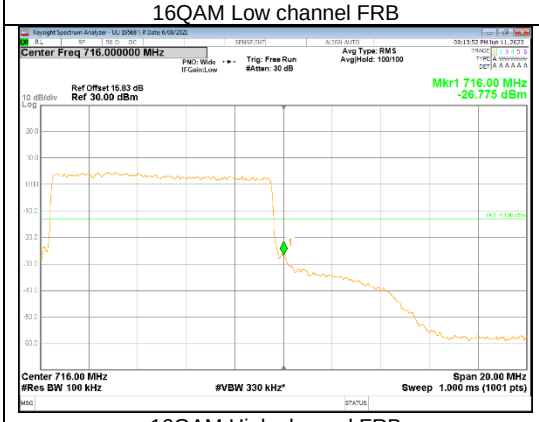
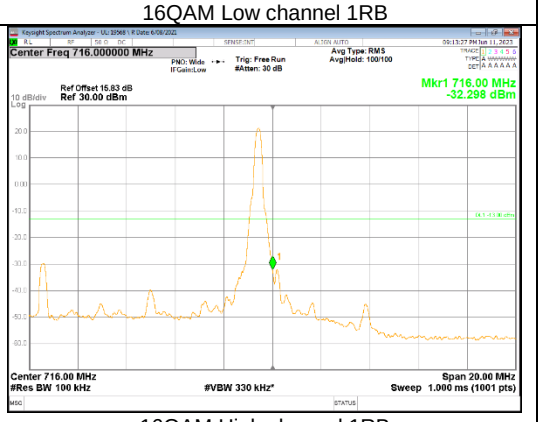
See the following pages.

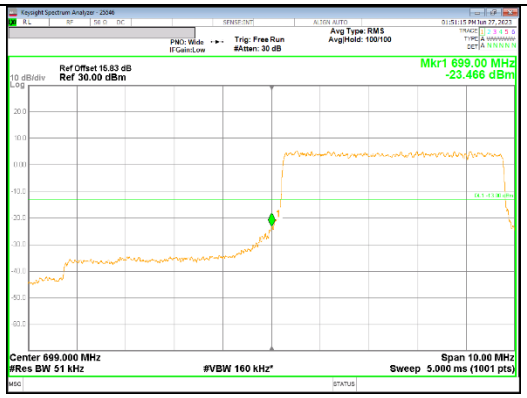
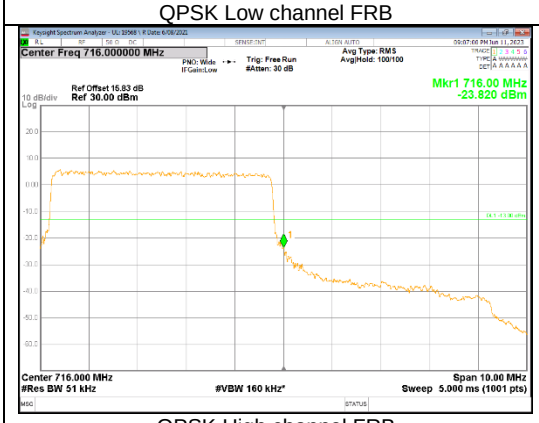
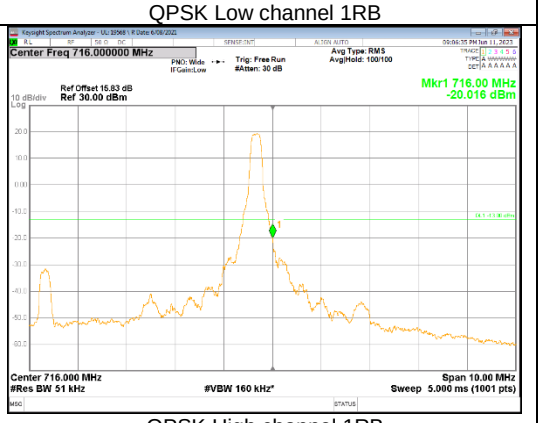
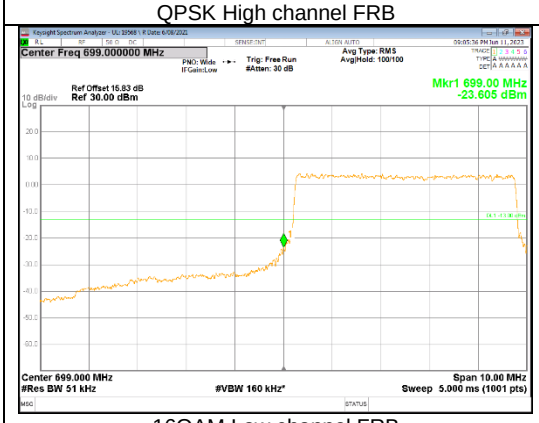
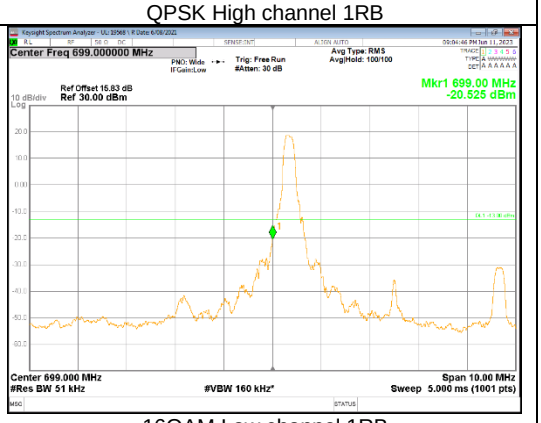
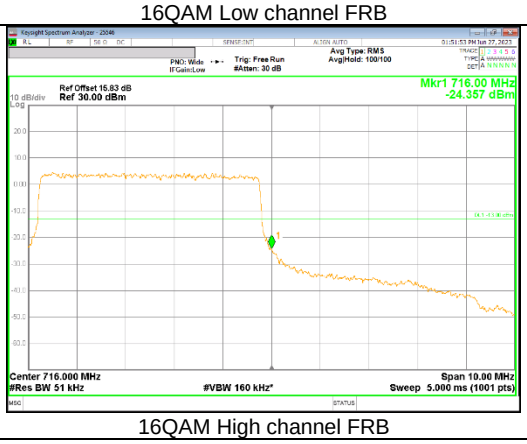
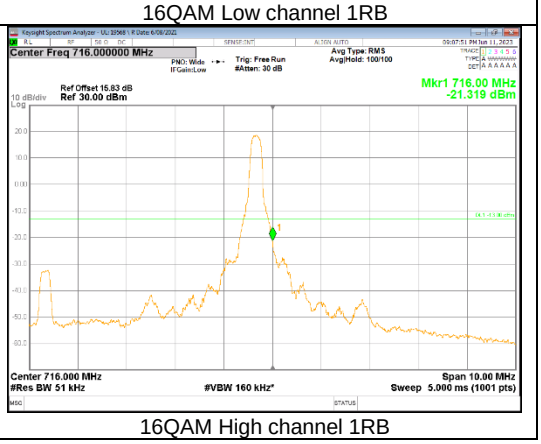
8.4.1. BAND EDGE RESULT

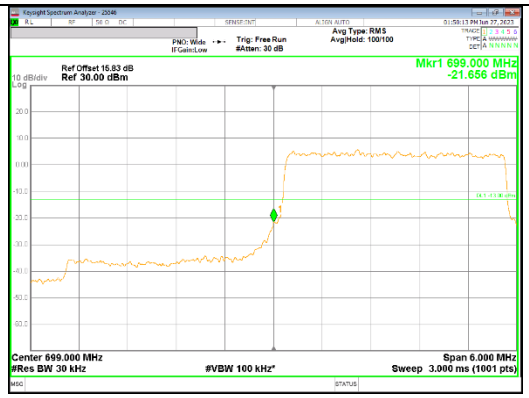
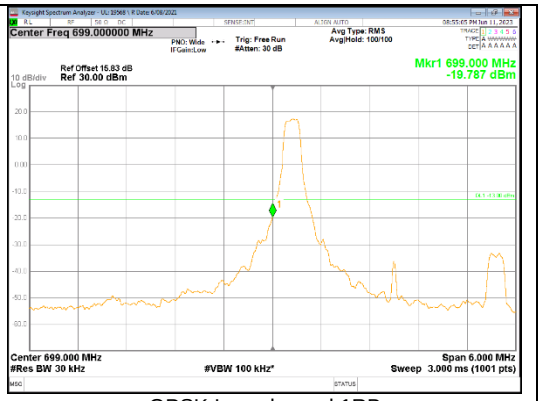
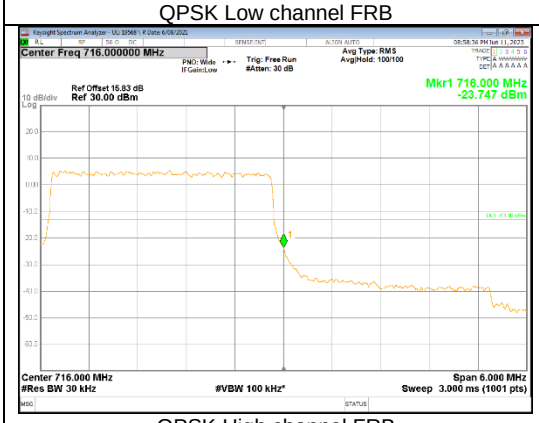
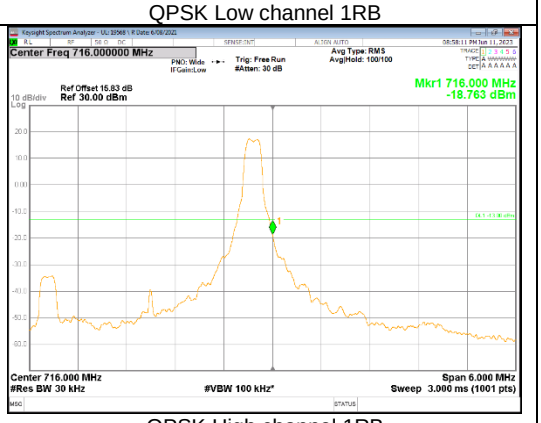
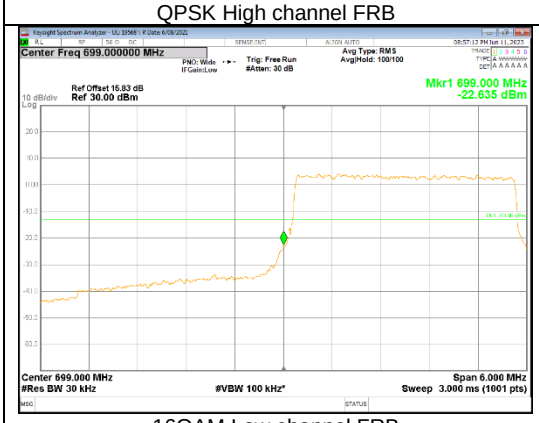
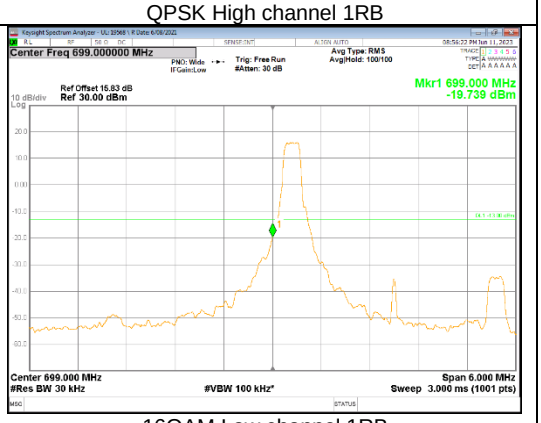
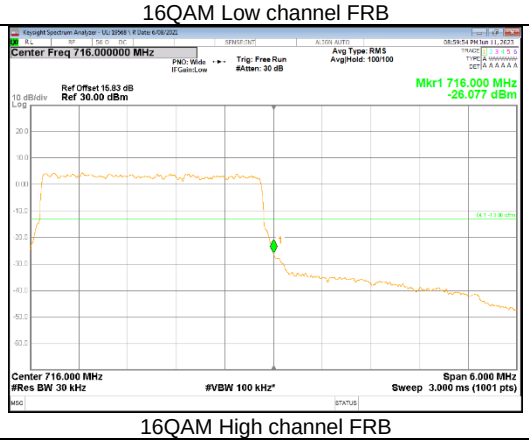
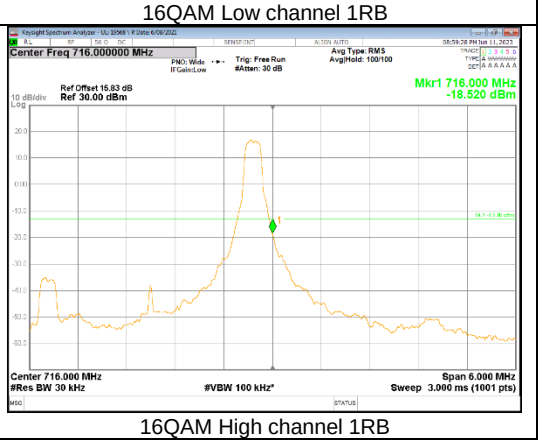
WCDMA

Band 4	 REL99 Low channel	 HSDPA Low channel
	 REL99 High channel	 HSDPA High channel

LTE Band 12

10MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

5MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

3MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB