CERTIFICATION TEST REPORT

Report Number. : 4791083081-E2V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SC-53E, SCG27
FCC ID	:	A3LSMA556JPN
EUT Description	:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC.
Test Standard(s)	:	FCC 47 CFR PART 22 SUBPART H

Date Of Issue:
2024-02-01

Prepared by:
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Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
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IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-01-30	Initial issue	Yeonhee Lim
V2	2024-02-01	Updated to address TCB's question	Yeonhee Lim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC.
MODEL NUMBER:	SC-53E, SCG27
SERIAL NUMBER:	R3CWC03BL8N, R3CWC03BL7H (CONDUCTED); R3CWC03BRHJ, R3CWC03BRAY (RADIATED);
DATE TESTED:	2023-12-20 - 2024-02-01;

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H	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 47 CFR Part 2.
2. FCC 47 CFR Part 22.
3. ANSI TIA-603-E, 2016
4. ANSI C63.26, 2015
5. KDB 971168 D01 Power Meas License Digital Systems v03r01
6. KDB 971168 D02 Misc Rev Approv License Devices v02r02
7. KDB 412172 D01 Determining ERP and EIRP v01r01

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:

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 Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC. This test report addresses the WWAN operational mode.

Representative model	Difference	Derivative model
		SCG27
SC-53E	Hardware	Same as SC-53E
	Software	Different UI

The model SC-53E was used for final testing and is representative of the test results in this report.

5.2. MAXIMUM OUTPUT POWER

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

GSM

FCC Part 22							
Band	ANT	Frequency Range [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
GSM 850	Antenna A Main 1	824.20 ~ 848.80	GPRS	**33.98**	**2500.35**	**31.01**	1261.83
			EGPRS	27.47	558.47	26.37	433.51

WCDMA

FCC Part 22							
Band	ANT	Frequency Range [MHz]	Modulation	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 5	Antenna A Main 1	826.40 ~ 846.60	Rel. 99	**24.68**	**293.76**	**20.38**	109.14
			HSDPA	23.51	224.39	19.29	84.92

LTE Band 5

FCC Part 22								
Band	ANT	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Conducted		Radiated	
					Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 5	Antenna A Main 1	829.00 ~ 844.00	10	QPSK	**25.07**	**321.37**	**20.27**	**106.41**
				16QAM	24.19	262.42	19.12	81.66
				64QAM	23.06	202.30		
		826.50 ~ 846.50	5	QPSK	25.01	316.96	20.21	104.95
				16QAM	24.02	252.35	18.95	78.52
				64QAM	22.44	175.39		
		825.50 ~ 847.50	3	QPSK	25.03	318.42	20.17	103.99
				16QAM	23.99	250.61	18.92	77.98
				64QAM	22.45	175.79		
		824.70 ~ 848.30	1.4	QPSK	25.04	319.15	20.24	105.68
				16QAM	23.87	243.78	18.80	75.86
				64QAM	22.42	174.58		

NR Band n5

FCC Part 22									
Band	ANT	Frequency Range [MHz]	BandWidth [MHz]	Modulation	Mode	Conducted		Radiated	
						Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
n5	Antenna A Main 1	834.00 - 839.00	20	DFT-s OFDM	π/2 BPSK	**24.88**	**307.61**	**18.75**	**74.99**
					QPSK	24.79	301.30		
					16QAM	23.88	244.34	18.24	66.68
					64QAM	22.16	164.44		
					256QAM	20.11	102.57		
				CP-OFDM	QPSK	23.15	206.54		
		831.50 - 841.50	15	DFT-s OFDM	π/2 BPSK	24.71	295.80	18.63	72.95
					QPSK	24.69	294.44		
					16QAM	23.81	240.44	18.25	66.83
					64QAM	22.26	168.27		
					256QAM	20.10	102.33		
				CP-OFDM	QPSK	23.20	208.93		
		829.00 - 844.00	10	DFT-s OFDM	π/2 BPSK	24.65	291.74	18.52	71.12
					QPSK	24.56	285.76		
					16QAM	23.59	228.56	18.03	63.53
					64QAM	22.07	161.06		
					256QAM	19.92	98.17		
				CP-OFDM	QPSK	22.95	197.24		
		826.50 - 846.50	5	DFT-s OFDM	π/2 BPSK	24.73	297.17	18.67	73.62
					QPSK	24.72	296.48		
					16QAM	23.76	237.68	18.18	65.77
					64QAM	22.34	171.40		
					256QAM	20.18	104.23		
				CP-OFDM	QPSK	23.24	210.86		

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)	ANT	Peak Gain (dBi)
GSM850 / WCDMA Band 5 / LTE Band 5 / NR Band n5 824 - 849 MHz	Antenna A Main 1	-4.0

5.4. WORST-CASE ORIENTATION

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

- GSM GPRS/EGPRS
- UMTS REL 99/HSDPA

For LTE Band 5 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 modulations. It was found QPSK and 16QAM results were worst case.

For 5G NR n5 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 π/2 BPSK and 16QAM results were worst case.

This device supports NSA and SA Mode. Output Power measurements were measured on entire Mode and worst case is reported. worst case is SA Mode. So the test case is as below.

NR Band	NSA	SA
n5	LTE B2, B66	**Standard alone**

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- Conducted Spurious Emission

Highest conducted output power setting for each bands					
LTE Band	**ANT**	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
5	Antenna A Main 1	829.00	10	1	25
		836.50		1	0
		844.00		1	0
NR Band	**ANT**	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
5	Antenna A Main 1	834.00	20	1	52
		836.50		1	52
		839.00		1	52

- Radiated Spurious Emission

Highest ERP setting for each bands					
LTE Band	**ANT**	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
5	Antenna A Main 1	829.00	10	1	25
		836.50		1	0
		844.00		1	0
NR Band	**ANT**	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
5	Antenna A Main 1	834.00	20	1	53
		836.50		1	53
		839.00		1	53

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

Band	**ANT**	**ERP**			**RSE**		
		X	**Y**	**Z**	**X**	**Y**	**Z**
GSM 850	Antenna A Main 1	-	-	O	-	-	O
WCDMA B5	Antenna A Main 1	-	-	O	-	-	O
LTE B5	Antenna A Main 1	-	-	O	-	O	-
NR n5	Antenna A Main 1	-	-	O	-	-	O

Note : For the 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	R37W61WENTASEA	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02117A	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.

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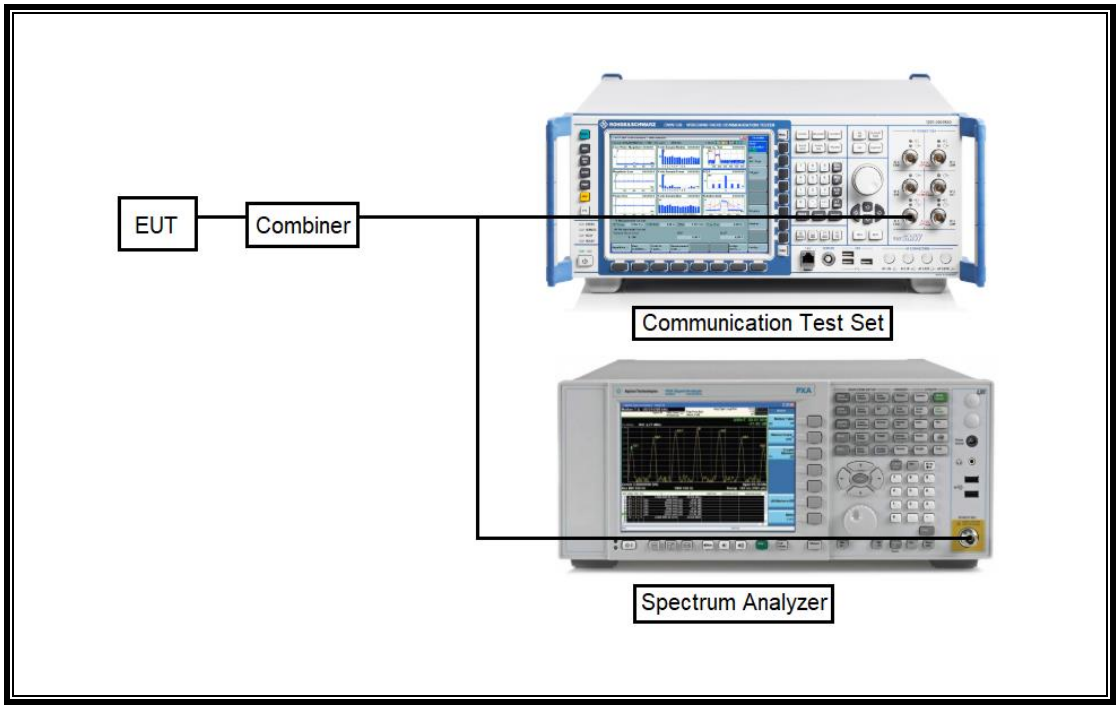
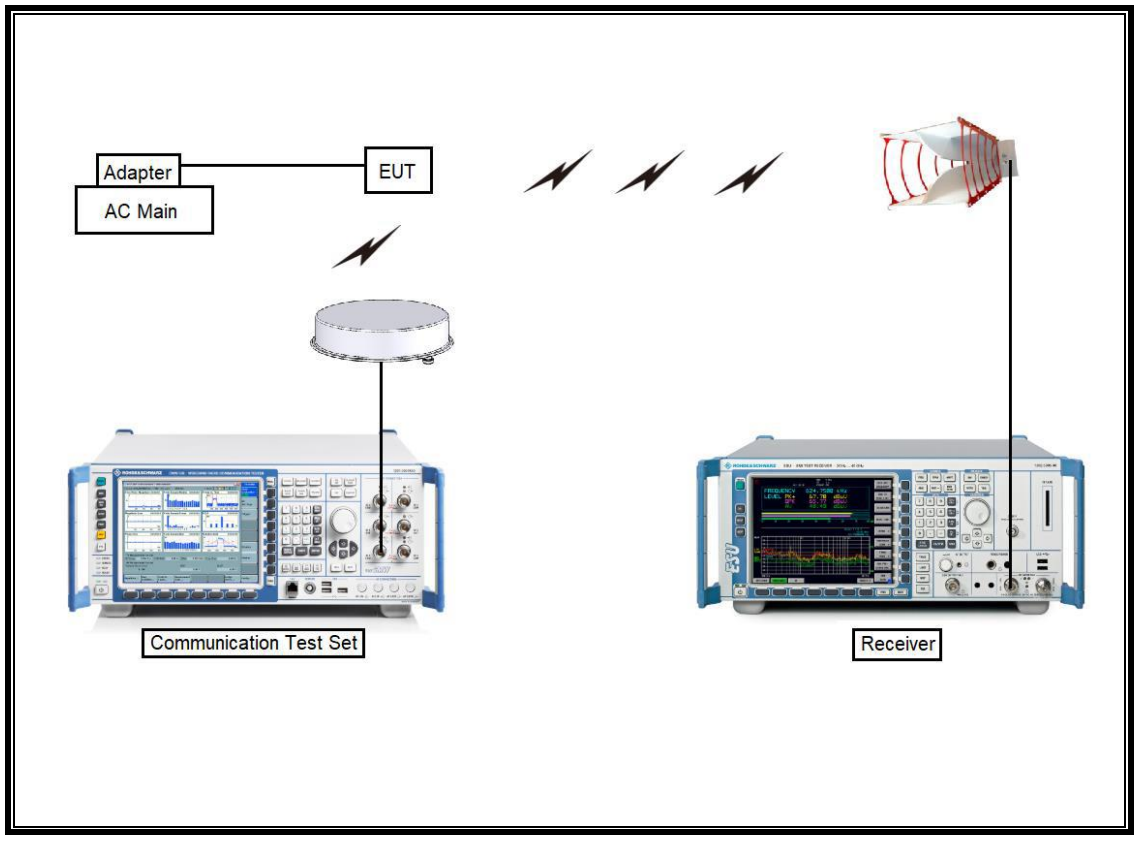
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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	00166155	2024-08-02
Antenna, Horn, 40 GHz	ETS	3116C	00168645	2025-10-05
Preamplifier	ETS	3115-PA	00167475	2024-07-25
Preamplifier	ETS	3116C-PA	00168841	2024-07-25
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	00167211	2024-08-04
Antenna, Horn, 18 GHz	ETS	3115	00161451	2024-08-21
Antenna, Horn, 18 GHz	ETS	3117	00168724	2024-08-04
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Communications Test Set	R&S	CMW500	169797	2024-07-23
DC Power Supply	Agilent / HP	E3640A	MY54226395	2024-07-24
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24
Preamplifier, 1000 MHz	Sonoma	310N	370599	2024-07-24
Preamplifier, 1000 MHz	Sonoma	310N	351741	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2024-07-25
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2024-07-25
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2024-07-24
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY57143717	2024-07-24
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2024-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2024-07-24
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	2024-07-23
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	2024-07-23
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	2024-07-24
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	2024-07-24
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G001	2024-07-24
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G002	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A009	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A001	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A008	2024-07-27
Attenuator	PASTERNACK	PE7004-10	2	2024-07-23
Attenuator	PASTERNACK	PE7395-10	A011	2024-07-25
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-06
Temperature Chamber	ESPEC	SH-642	93001109	2024-07-24
Power Splitter	MINI-CIRCUITS	WA1534	UL003	2025-01-02
Power Splitter	MINI-CIRCUITS	WA1534	UL004	2025-01-02
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY57510655	2025-01-03

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 Results
2.1046	Conducted Output Power	N/A	Conducted	Pass
2.1049	Occupied Bandwidth (99%)	N/A		Pass
22.917(a)	Conducted Band Edge / Conducted Spurious Emission	-13 dBm		Pass
22.355	Frequency Stability	2.5 ppm		Pass
22.913(a)(5)	Effective Radiated Power	38.5 dBm	Radiated	Pass
22.917(a)	Radiated Spurious Emission	-13 dBm		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.

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8.1.1. CONDUCTED AVERAGE OUTPUT POWER

GSM (Antenna A, Main 1)

Mode	Coding Scheme	Time Slots	Maximum Average Power (dBm)			
			Measured		Tune-up Limit	
			Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	33.97	24.94	34.0	25.0
			33.87	24.84		
			33.66	24.63		
GPRS (GMSK)	CS1	1	33.98	24.95	34.0	25.0
			33.39	24.36		
			33.42	24.39		
		2	31.08	25.06	32.0	26.0
			31.33	25.31		
			31.28	25.26		
		3	29.98	25.72	31.0	26.7
			30.17	25.91		
			29.86	25.60		
		4	28.59	25.58	29.5	26.5
			28.80	25.79		
			28.72	25.71		
EGPRS (8PSK)	MCS5	1	27.12	18.09	28.0	19.0
			27.47	18.44		
			27.10	18.07		
		2	25.32	19.30	26.5	20.5
			25.50	19.48		
			25.17	19.15		
		3	23.79	19.53	25.0	20.7
			24.25	19.99		
			23.96	19.70		
		4	22.60	19.59	23.5	20.5
			22.99	19.98		
			22.69	19.68		

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WCDMA (Antenna A, Main 1)

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	24.68	N/A	25.5
		4183	836.6	24.68		
		4233	846.6	24.63		
HSDPA	Subtest 1	4132	826.4	23.51	0	24.0
		4183	836.6	23.42		
		4233	846.6	23.37		
	Subtest 2	4132	826.4	22.86	0	24.0
		4183	836.6	22.84		
		4233	846.6	22.81		
	Subtest 3	4132	826.4	22.37	0.5	23.5
		4183	836.6	22.38		
		4233	846.6	22.34		
	Subtest 4	4132	826.4	21.86	0.5	23.5
		4183	836.6	21.85		
		4233	846.6	21.83		
HSUPA	Subtest 1	4132	826.4	22.36	0	23.5
		4183	836.6	22.34		
		4233	846.6	22.29		
	Subtest 2	4132	826.4	19.01	2	21.5
		4183	836.6	19.04		
		4233	846.6	19.07		
	Subtest 3	4132	826.4	21.37	1	22.5
		4183	836.6	21.35		
		4233	846.6	21.28		
	Subtest 4	4132	826.4	20.35	2	21.5
		4183	836.6	20.33		
		4233	846.6	20.30		
	Subtest 5	4132	826.4	23.44	0	23.5
		4183	836.6	23.45		
		4233	846.6	23.38		
DC-HSDPA	Subtest 1	4132	826.4	23.44	0	24.0
		4183	836.6	23.43		
		4233	846.6	23.27		
	Subtest 2	4132	826.4	22.85	0	24.0
		4183	836.6	22.86		
		4233	846.6	22.73		
	Subtest 3	4132	826.4	21.41	0.5	23.5
		4183	836.6	21.40		
		4233	846.6	21.24		
	Subtest 4	4132	826.4	21.82	0.5	23.5
		4183	836.6	21.86		
		4233	846.6	21.71		

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LTE Band 5 (Antenna A, Main 1)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				20450	20525	20600		
				829.00 MHz	836.50 MHz	844.00 MHz		
10 MHz	QPSK	1	0	23.51	25.07	25.01	0.0	25.5
		1	25	25.07	24.88	24.96	0.0	25.5
		1	49	24.90	24.92	24.34	0.0	25.5
		25	0	23.93	24.01	24.01	1.0	24.5
		25	12	23.90	23.98	23.97	1.0	24.5
		25	25	23.85	23.95	23.88	1.0	24.5
		50	0	23.88	23.99	23.94	1.0	24.5
	16QAM	1	0	23.88	24.19	24.09	1.0	24.5
		1	25	23.72	23.97	23.93	1.0	24.5
		1	49	23.77	24.05	23.62	1.0	24.5
		25	0	22.86	23.01	22.97	2.0	23.5
		25	12	22.81	23.01	22.90	2.0	23.5
		25	25	22.76	22.99	22.82	2.0	23.5
		50	0	22.81	22.93	22.90	2.0	23.5
	64QAM	1	0	23.06	22.81	22.83	2.0	23.5
		1	25	22.91	22.82	22.78	2.0	23.5
		1	49	22.95	22.84	22.68	2.0	23.5
		25	0	21.83	21.82	21.86	3.0	22.5
		25	12	21.75	21.80	21.77	3.0	22.5
		25	25	21.72	21.81	21.71	3.0	22.5
		50	0	21.70	21.79	21.76	3.0	22.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20425	20525	20625		
				826.50 MHz	836.50 MHz	846.50 MHz		
5 MHz	QPSK	1	0	24.85	25.01	24.93	0.0	25.5
		1	12	24.80	24.85	24.79	0.0	25.5
		1	24	24.89	24.93	24.90	0.0	25.5
		12	0	23.88	23.95	23.91	1.0	24.5
		12	7	23.84	23.92	23.86	1.0	24.5
		12	13	23.81	23.91	23.86	1.0	24.5
		25	0	23.80	23.91	23.87	1.0	24.5
	16QAM	1	0	23.88	24.02	23.92	1.0	24.5
		1	12	23.79	23.75	23.71	1.0	24.5
		1	24	23.82	23.97	23.81	1.0	24.5
		12	0	22.76	22.85	22.79	2.0	23.5
		12	7	22.73	22.83	22.76	2.0	23.5
		12	13	22.70	22.87	22.77	2.0	23.5
		25	0	22.76	22.85	22.74	2.0	23.5
	64QAM	1	0	22.28	22.44	22.27	2.0	23.5
		1	12	22.21	22.24	22.17	2.0	23.5
		1	24	22.22	22.36	22.28	2.0	23.5
		12	0	21.64	21.69	21.69	3.0	22.5
		12	7	21.58	21.68	21.63	3.0	22.5
		12	13	21.58	21.66	21.67	3.0	22.5
		25	0	21.61	21.69	21.60	3.0	22.5

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BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20415	20525	20635		
				825.50 MHz	836.50 MHz	847.50 MHz		
3 MHz	QPSK	1	0	24.94	24.97	25.03	0.0	25.5
		1	8	24.72	24.72	24.91	0.0	25.5
		1	14	24.98	24.86	24.99	0.0	25.5
		8	0	23.93	24.00	24.01	1.0	24.5
		8	4	23.89	24.00	23.99	1.0	24.5
		8	7	23.92	23.97	23.98	1.0	24.5
		15	0	23.85	23.94	23.84	1.0	24.5
	16QAM	1	0	23.72	23.94	23.85	1.0	24.5
		1	8	23.55	23.77	23.68	1.0	24.5
		1	14	23.60	23.99	23.77	1.0	24.5
		8	0	22.86	23.02	22.85	2.0	23.5
		8	4	22.80	22.98	22.82	2.0	23.5
		8	7	22.80	22.98	22.79	2.0	23.5
		15	0	22.74	22.86	22.77	2.0	23.5
	64QAM	1	0	22.31	22.36	22.26	2.0	23.5
		1	8	22.06	22.27	22.17	2.0	23.5
		1	14	22.32	22.45	22.17	2.0	23.5
		8	0	21.81	21.86	21.69	3.0	22.5
		8	4	21.77	21.83	21.62	3.0	22.5
		8	7	21.82	21.81	21.69	3.0	22.5
		15	0	21.60	21.77	21.72	3.0	22.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20407	20525	20643		
				824.70 MHz	836.50 MHz	848.30 MHz		
1.4 MHz	QPSK	1	0	24.88	25.04	25.03	0.0	25.5
		1	3	24.73	24.76	24.69	0.0	25.5
		1	5	24.83	24.96	24.91	0.0	25.5
		3	0	24.87	24.98	24.76	0.0	25.5
		3	1	24.85	24.93	24.81	0.0	25.5
		3	3	24.80	24.80	24.82	0.0	25.5
		6	0	23.89	24.03	23.97	1.0	24.5
	16QAM	1	0	23.65	23.78	23.59	1.0	24.5
		1	3	23.75	23.87	23.68	1.0	24.5
		1	5	23.73	23.85	23.68	1.0	24.5
		3	0	23.82	23.84	23.80	1.0	24.5
		3	1	23.75	23.83	23.76	1.0	24.5
		3	3	23.75	23.85	23.80	1.0	24.5
		6	0	22.80	22.84	22.78	2.0	23.5
	64QAM	1	0	22.42	22.36	22.14	2.0	23.5
		1	3	22.22	22.22	22.20	2.0	23.5
		1	5	22.34	22.27	22.25	2.0	23.5
		3	0	22.26	22.34	22.25	2.0	23.5
		3	1	22.21	22.33	22.17	2.0	23.5
		3	3	22.27	22.31	22.24	2.0	23.5
		6	0	21.76	21.89	21.77	3.0	22.5

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NR Band n5 (Antenna A, Main 1)

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					166800	167300	167800		
					834.00 MHz	836.50 MHz	839.00 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1	24.52	24.68	24.64	0.0	25.5
			1	52	24.53	24.88	24.74	0.0	25.5
			1	104	24.53	24.62	24.58	0.0	25.5
			50	0	23.64	23.72	23.70	0.5	25.0
			50	28	24.65	24.72	24.72	0.0	25.5
			50	56	23.65	23.69	23.70	0.5	25.0
			100	0	23.65	23.74	23.58	0.5	25.0
		QPSK	1	1	24.59	24.66	24.17	0.0	25.5
			1	52	24.71	**24.79**	24.46	0.0	25.5
			1	104	24.57	24.63	24.57	0.0	25.5
			50	0	23.64	23.72	23.69	1.0	24.5
			50	28	24.65	**24.72**	24.70	0.0	25.5
			50	56	23.66	23.71	23.68	1.0	24.5
			100	0	23.66	23.75	23.66	1.0	24.5
		16QAM	1	1	23.58	23.68	23.45	1.0	24.5
			1	52	23.73	23.76	23.88	1.0	24.5
			1	104	23.62	23.65	23.53	1.0	24.5
		64QAM	1	1	22.15	22.16	22.01	2.5	23.0
		256QAM	1	1	20.00	20.08	20.11	4.5	21.0
	CP-OFDM	QPSK	1	1	23.12	23.15	23.10	1.5	24.0

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					166300	167300	168300		
					831.50 MHz	836.50 MHz	841.50 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1	24.62	24.71	24.65	0.0	25.5
			1	39	24.56	24.65	24.59	0.0	25.5
			1	77	24.65	24.62	24.58	0.0	25.5
			36	0	23.65	23.64	23.71	0.5	25.0
			36	21	24.64	24.67	24.68	0.0	25.5
			36	43	23.69	23.62	23.67	0.5	25.0
			75	0	23.68	23.43	23.70	0.5	25.0
		QPSK	1	1	24.61	24.67	**24.69**	0.0	25.5
			1	39	24.59	24.64	24.59	0.0	25.5
			1	77	24.63	23.38	24.61	0.0	25.5
			36	0	23.68	23.11	23.71	1.0	24.5
			36	21	24.66	23.73	**24.69**	0.0	25.5
			36	43	23.69	22.89	23.68	1.0	24.5
			75	0	23.69	23.70	23.70	1.0	24.5
		16QAM	1	1	23.65	23.81	23.66	1.0	24.5
			1	39	23.62	23.06	23.55	1.0	24.5
			1	77	23.70	23.74	23.54	1.0	24.5
		64QAM	1	1	22.11	22.24	22.26	2.5	23.0
		256QAM	1	1	20.06	20.10	20.10	4.5	21.0
	CP-OFDM	QPSK	1	1	23.13	23.20	23.18	1.5	24.0

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					165800	167300	168800		
					829.00 MHz	836.50 MHz	844.00 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	24.43	24.43	23.64	0.0	25.5
			1	25	24.53	24.55	24.06	0.0	25.5
			1	50	24.46	24.46	24.04	0.0	25.5
			25	0	23.46	23.48	23.09	0.5	25.0
			25	13	24.43	24.48	24.65	0.0	25.5
			25	27	23.45	23.50	22.92	0.5	25.0
			50	0	23.44	23.52	22.65	0.5	25.0
		QPSK	1	1	24.42	24.45	23.69	0.0	25.5
			1	25	24.50	**24.56**	24.06	0.0	25.5
			1	50	24.44	24.48	23.25	0.0	25.5
			25	0	23.46	23.49	23.02	1.0	24.5
			25	13	24.44	**24.49**	24.00	0.0	25.5
			25	27	23.47	23.50	22.95	1.0	24.5
			50	0	23.44	23.52	22.95	1.0	24.5
		16QAM	1	1	23.44	23.47	22.87	1.0	24.5
			1	25	23.59	23.56	23.19	1.0	24.5
			1	50	23.52	23.59	22.71	1.0	24.5
		64QAM	1	1	21.97	22.07	21.24	2.5	23.0
		256QAM	1	1	19.90	19.92	19.56	4.5	21.0
	CP-OFDM	QPSK	1	1	22.94	22.95	22.62	1.5	24.0

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BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					165300	167300	169300		
					826.50 MHz	836.50 MHz	846.50 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	24.69	24.70	24.73	0.0	25.5
			1	12	24.60	24.61	24.53	0.0	25.5
			1	23	24.71	24.72	24.58	0.0	25.5
			12	0	23.71	23.72	23.68	0.5	25.0
			12	6	24.68	24.72	24.65	0.0	25.5
			12	13	23.69	23.73	23.63	0.5	25.0
			25	0	23.70	23.74	23.67	0.5	25.0
		QPSK	1	1	24.70	24.71	**24.72**	0.0	25.5
			1	12	24.63	24.61	24.55	0.0	25.5
			1	23	**24.72**	24.71	24.63	0.0	25.5
			12	0	23.71	23.72	23.71	1.0	24.5
			12	6	24.67	**24.71**	**24.71**	0.0	25.5
			12	13	23.69	23.73	23.59	1.0	24.5
			25	0	23.71	23.74	23.61	1.0	24.5
		16QAM	1	1	23.76	23.74	23.74	1.0	24.5
			1	12	23.56	23.68	23.60	1.0	24.5
			1	23	23.76	23.70	23.61	1.0	24.5
		64QAM	1	1	22.34	22.29	22.25	2.5	23.0
		256QAM	1	1	20.14	20.14	20.18	4.5	21.0
	CP-OFDM	QPSK	1	1	23.20	23.21	23.24	1.5	24.0

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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

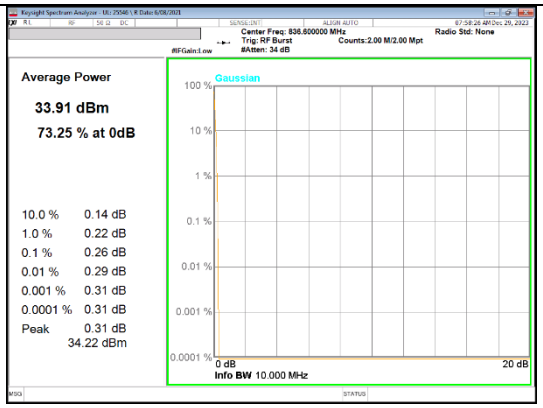
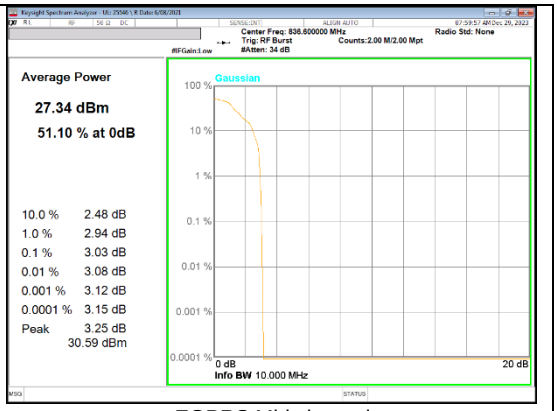
5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

RESULTS

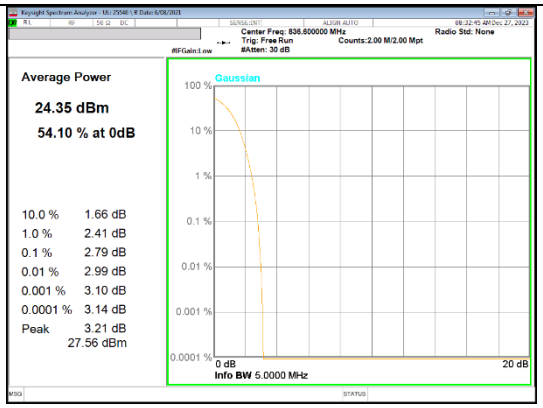
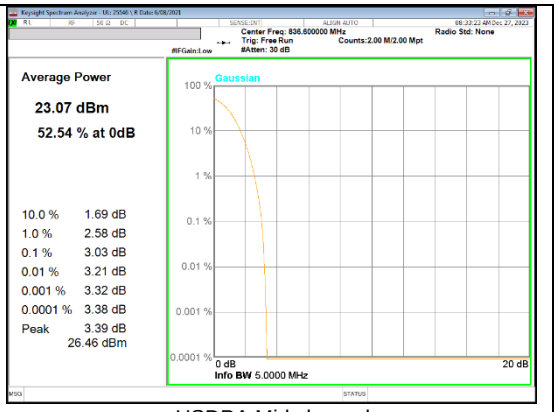
See the following pages.

8.2.1. CONDUCTED PEAK TO AVERAGE RESULT

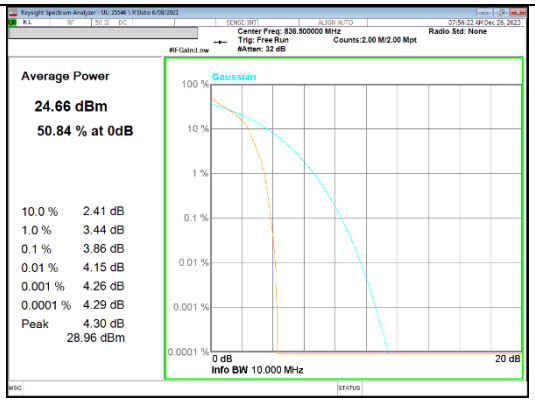
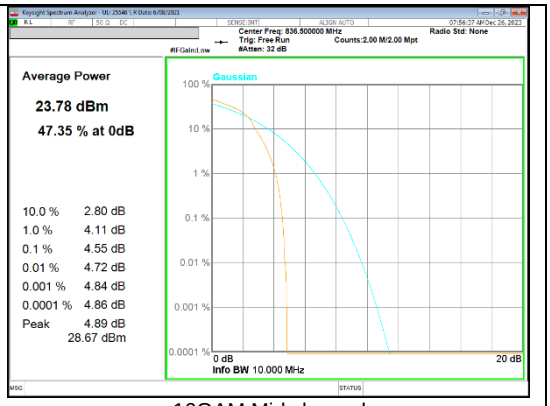
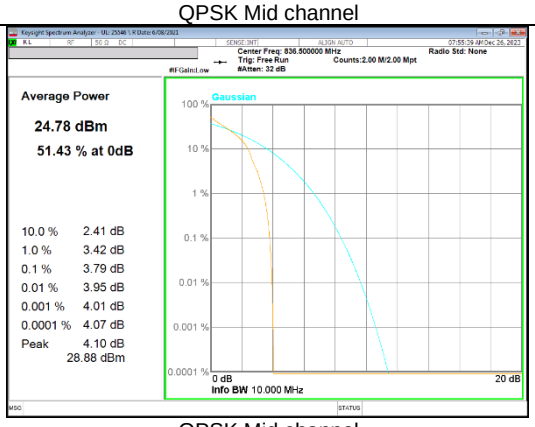
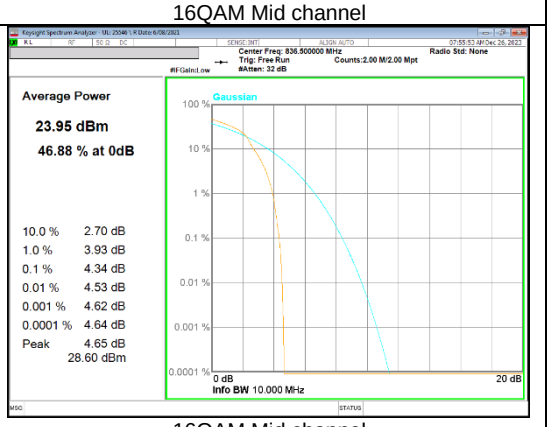
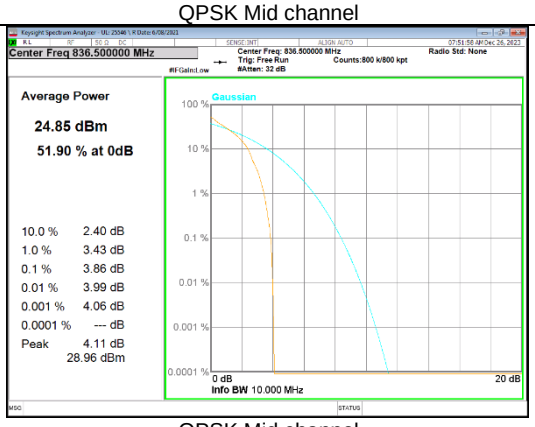
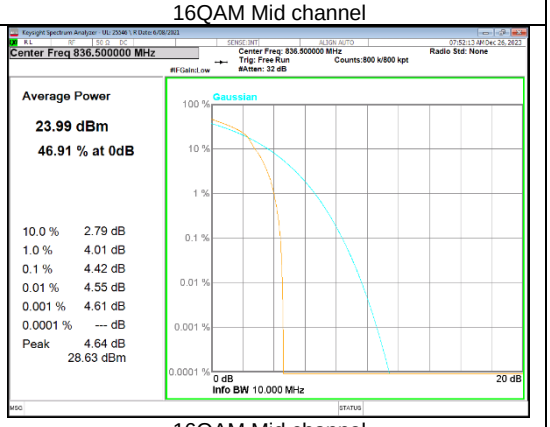
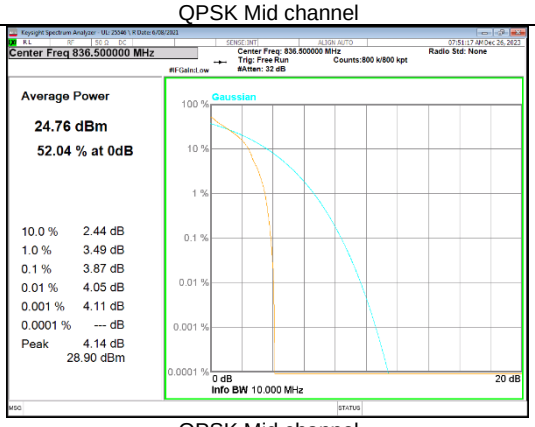
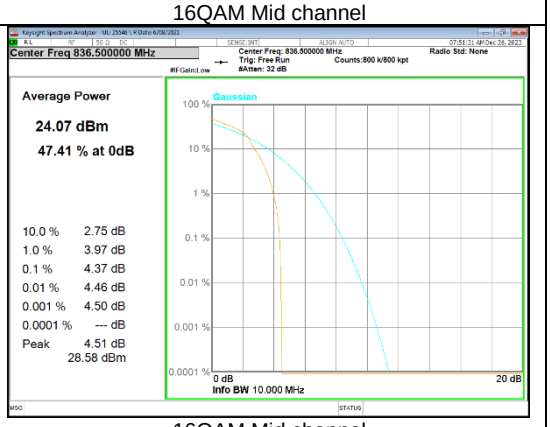
GSM

GSM 850	 GPRS Mid channel	 EGPRS Mid channel

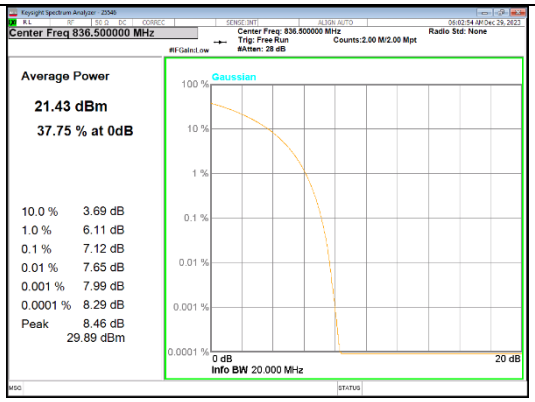
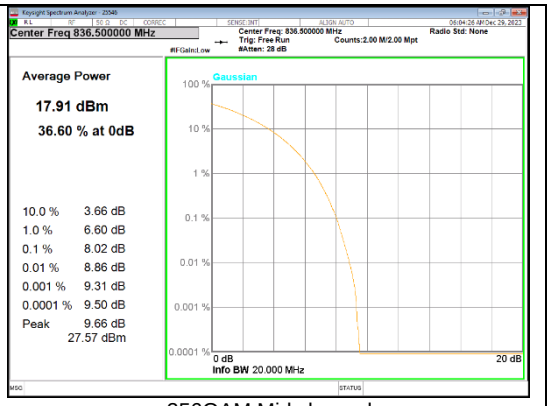
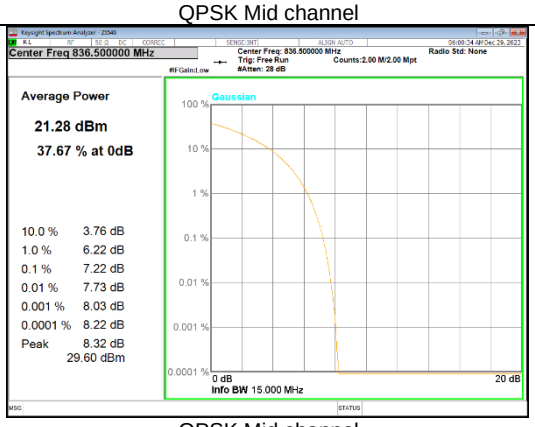
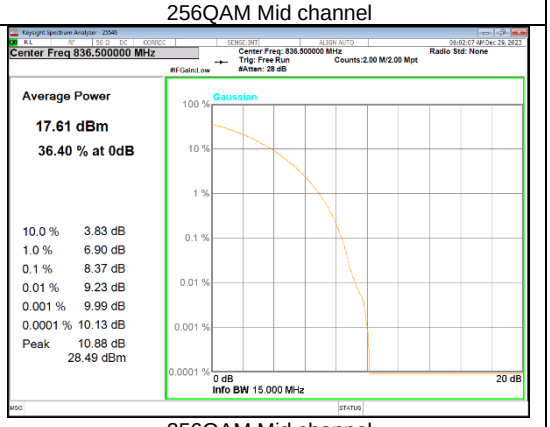
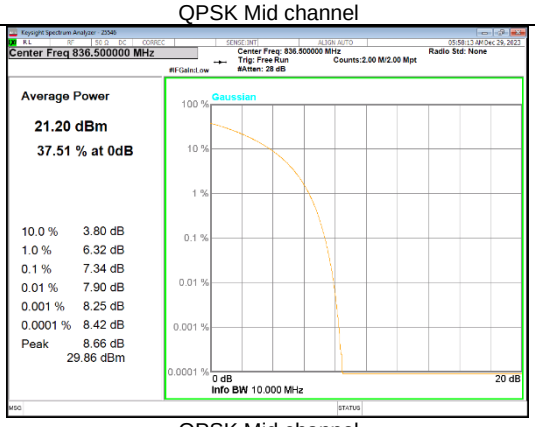
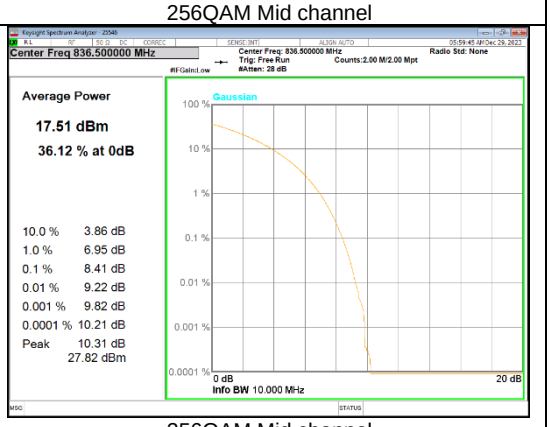
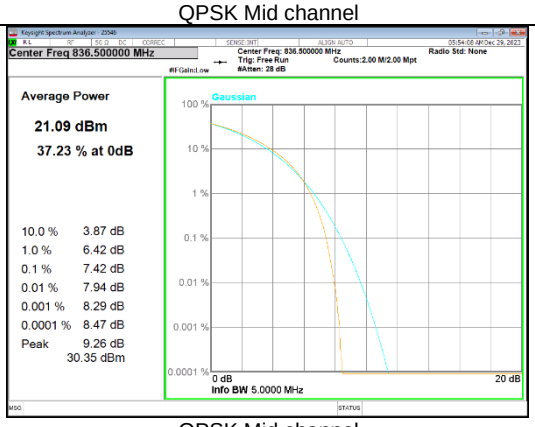
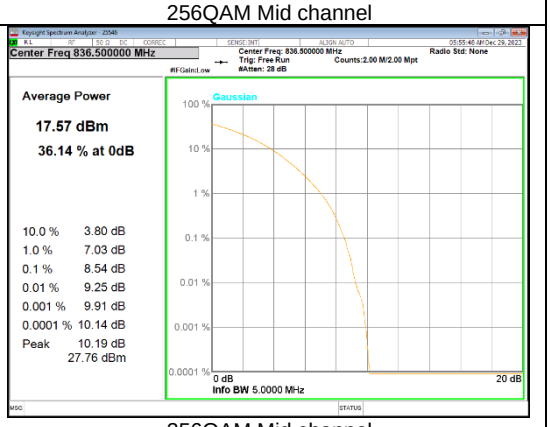
WCDMA

Band 5	 REL99 Mid channel	 HSDPA Mid channel

LTE Band 5

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 n5 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.

- **GSM**

Band	Modulation	f [MHz]	99% BW (kHz)	-26dB BW (kHz)
850	GPRS	836.60	243.67	316.0
	EGPRS		245.63	316.6

- **WCDMA**

Band	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
B5	Rel.99	836.60	4.158	4.714
	HSDPA		4.156	4.695

- **LTE Band 5**

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B5	10M	QPSK	836.50	8.991	10.38
		16QAM		9.006	10.32
	5M	QPSK		4.523	5.342
		16QAM		4.505	5.289
	3M	QPSK		2.714	3.098
		16QAM		2.710	3.120
	1.4M	QPSK		1.089	1.327
		16QAM		1.093	1.331

- **NR Band n5**

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n5	20M	QPSK	836.50	18.988	20.45
		16QAM		18.997	20.60
	15M	QPSK		14.151	16.17
		16QAM		14.127	15.13
	10M	QPSK		9.324	10.05
		16QAM		9.315	10.19
	5M	QPSK		4.494	5.297
		16QAM		4.492	5.291

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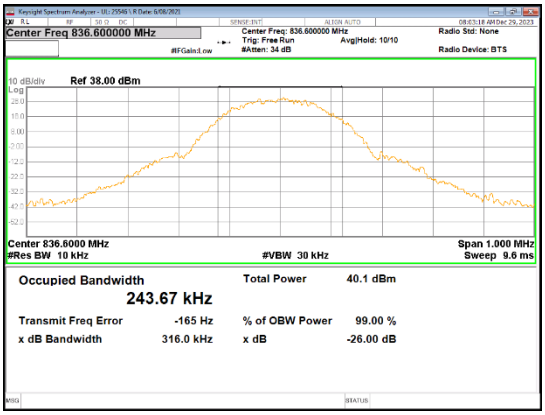
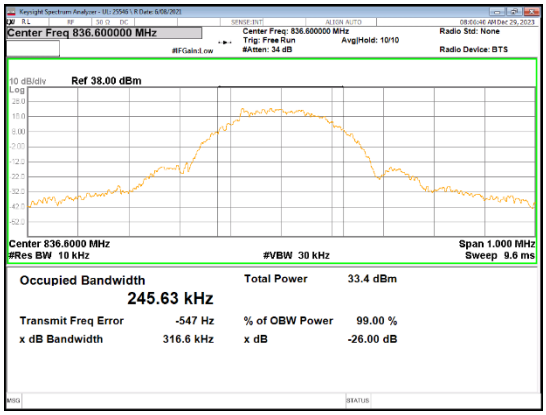
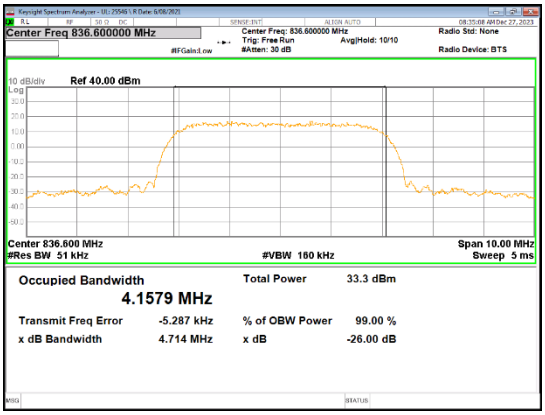
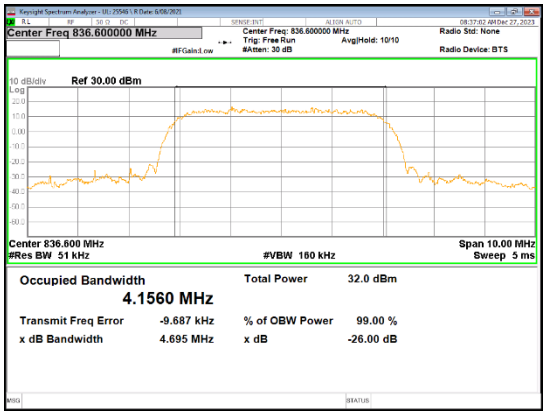
8.3.1. OCCUPIED BANDWIDTH RESULTS

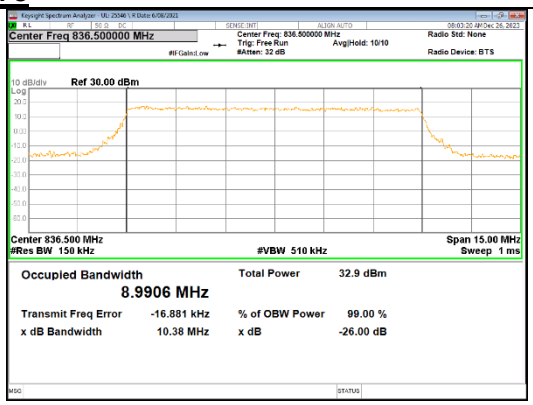
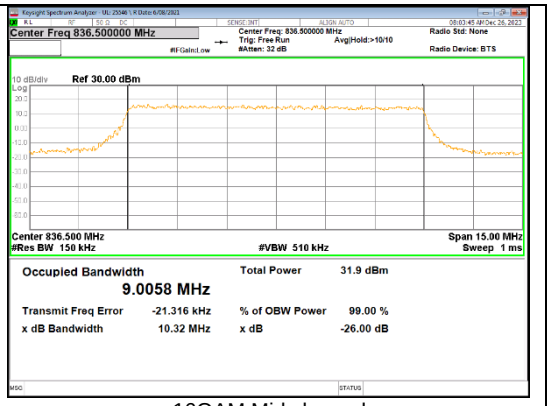
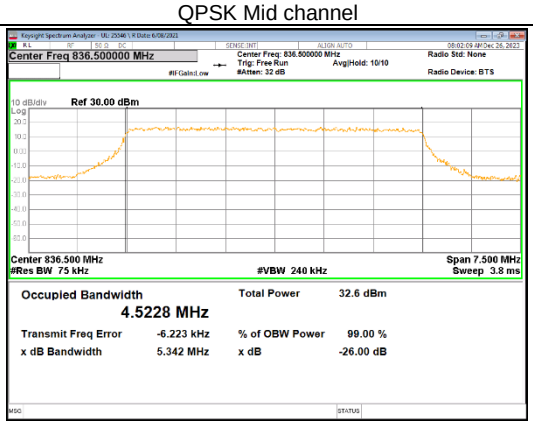
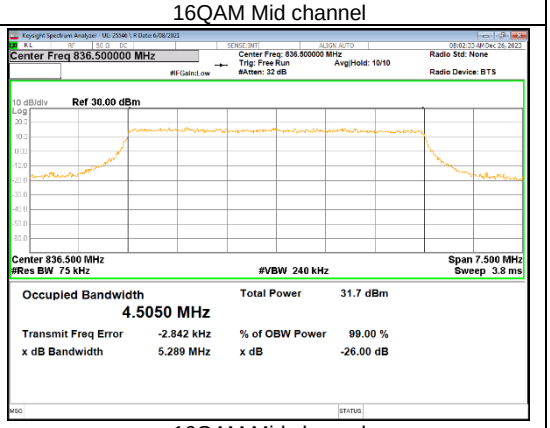
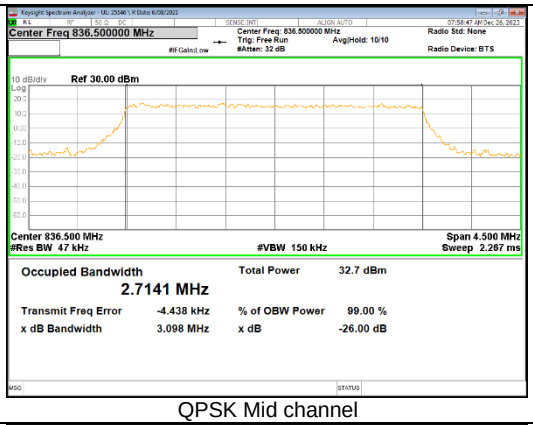
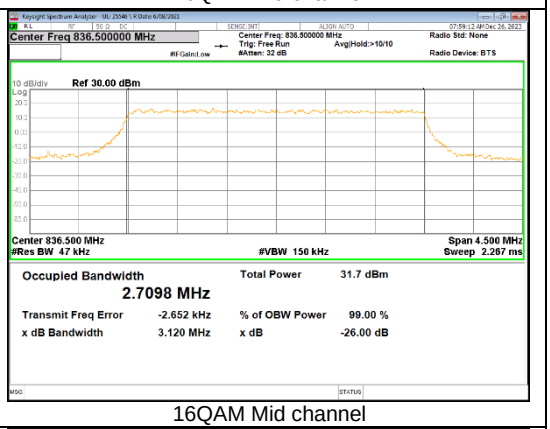
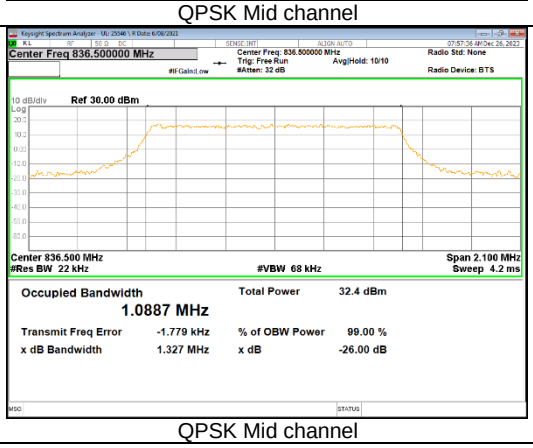
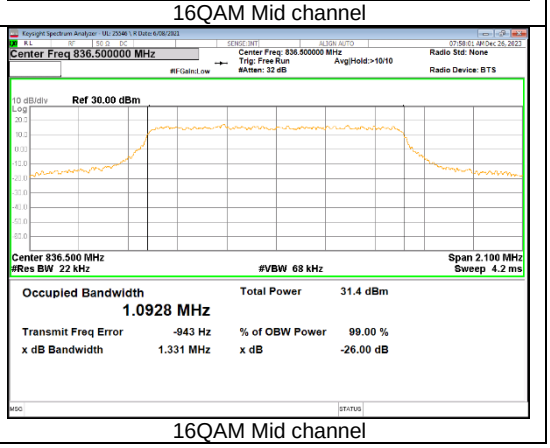
GSM 850

GSM 850	 GPRS Mid channel	 EGPRS Mid channel

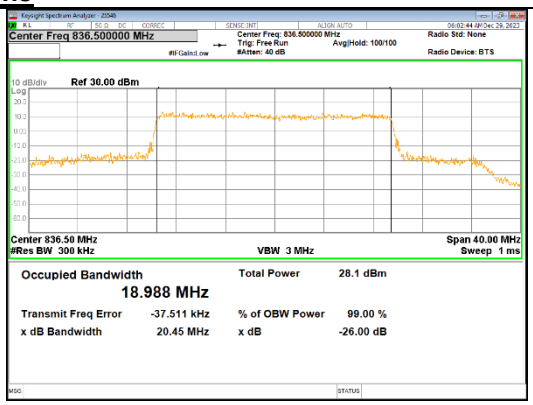
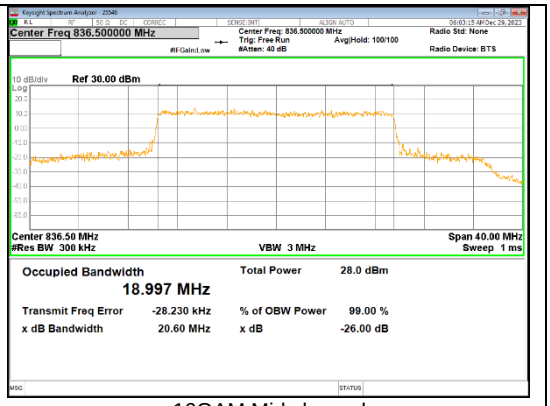
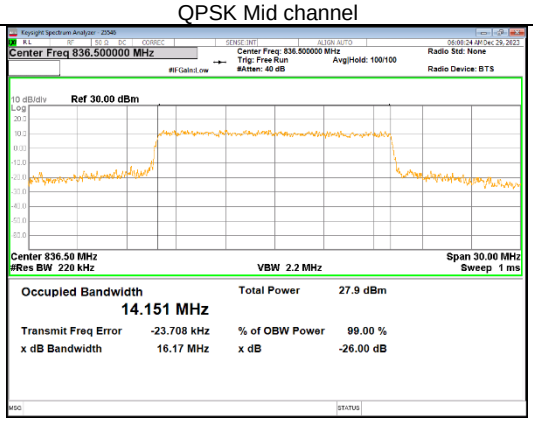
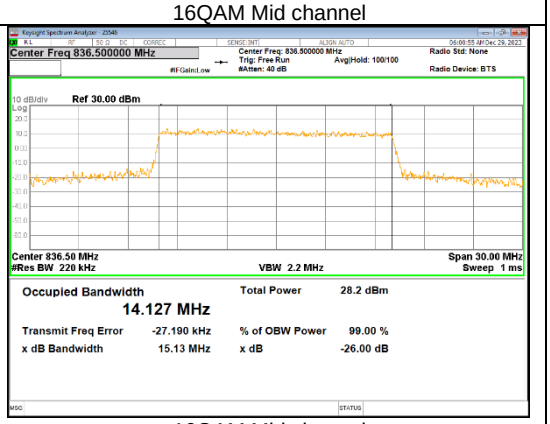
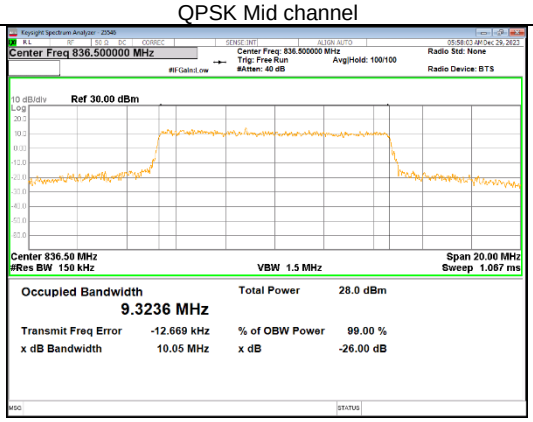
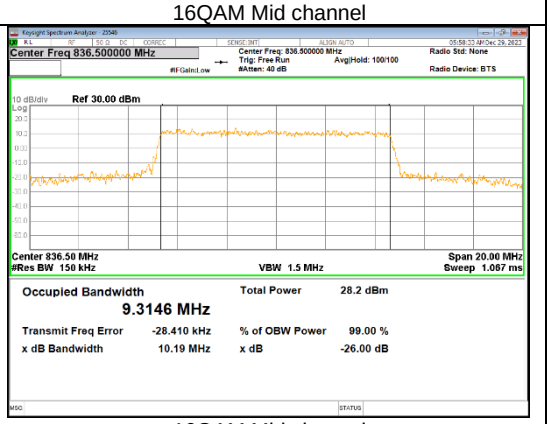
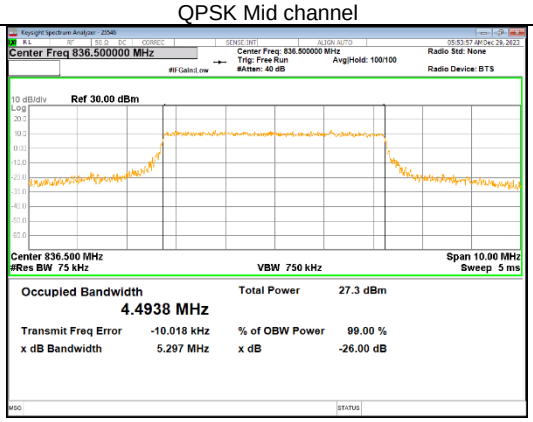
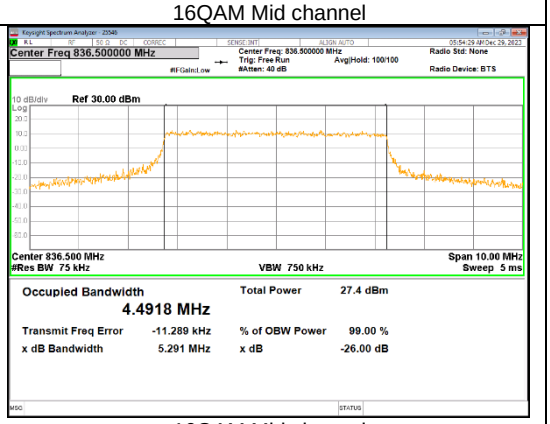
WCDMA Band 5

Band 5	 REL99 Mid channel	 HSDPA Mid channel

LTE Band 5

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 n5

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: §22.359, §22.917

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

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.

GSM

a) Set the RBW = 1 - 5% of OBW(GSM850 – 8.2KHz)
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 1.5 times the OBW;
d) Sweep time = 1S ;
e) Detector = RMS;
f) Ensure that the number of measurement points ≥ 2*Span/RBW;
g) Trace mode = Average(100);
h) Add duty cycle correction factor (9dB)

WCDMA/LTE/5G NR

a) Set the RBW = 1 - 1.5 % of OBW(Typically limited to a RBW 100 kHz of Below 1GHz)
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);

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NOTE1

Note that the spurious emissions outside of the channel include narrowband signals. These signals are all below the -13dBm 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.

NOTE2

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.

NOTE3

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.

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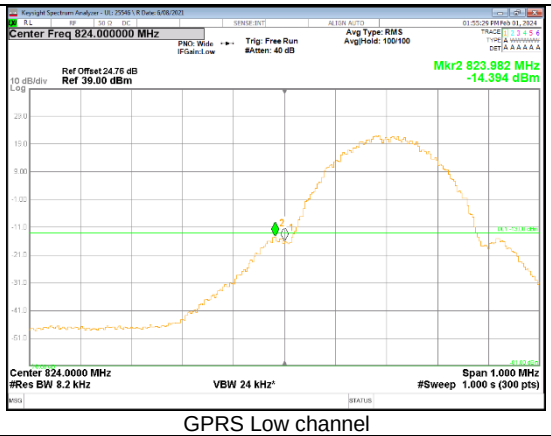
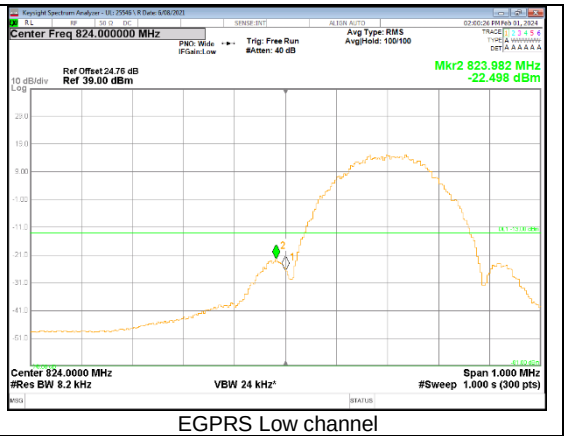
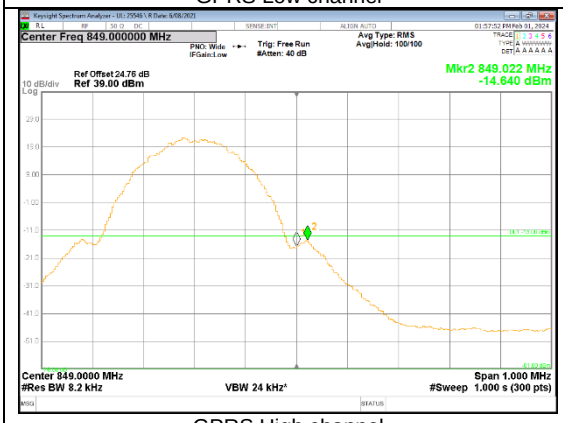
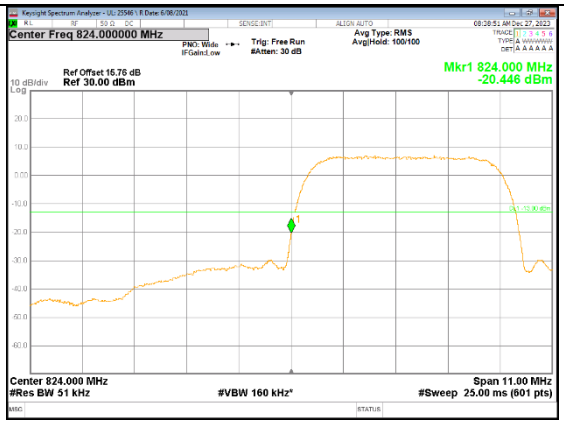
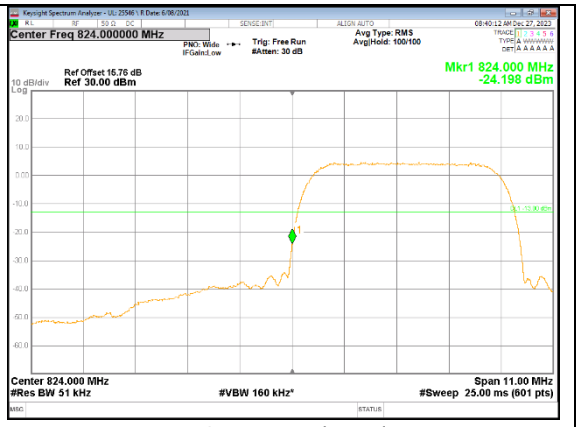
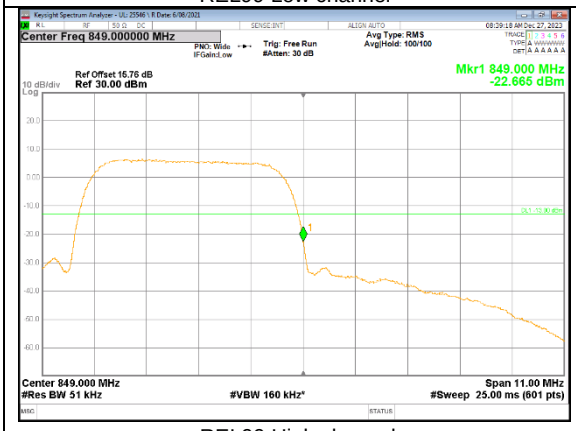
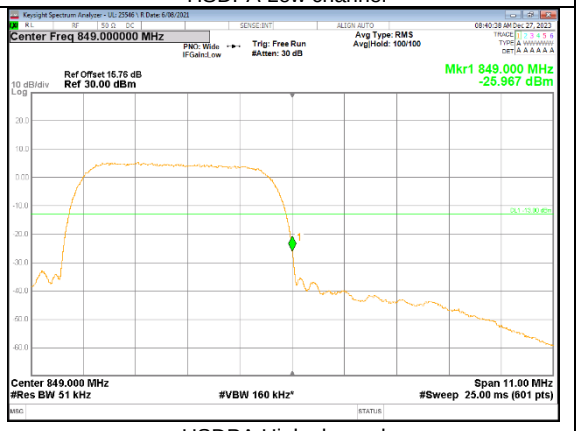
8.4.1. BAND EDGE RESULT

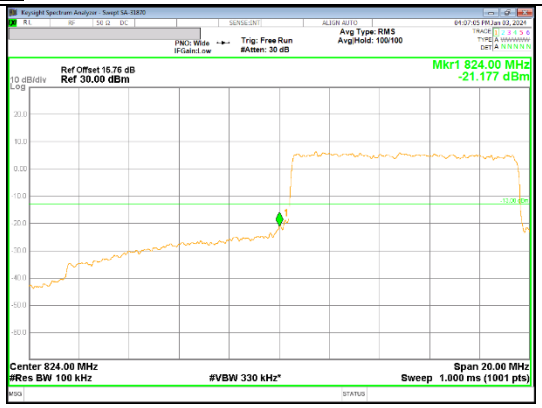
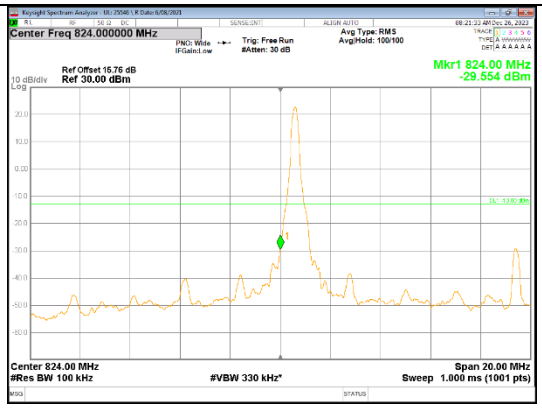
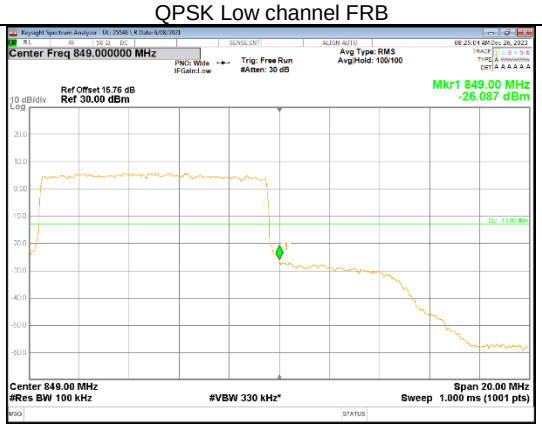
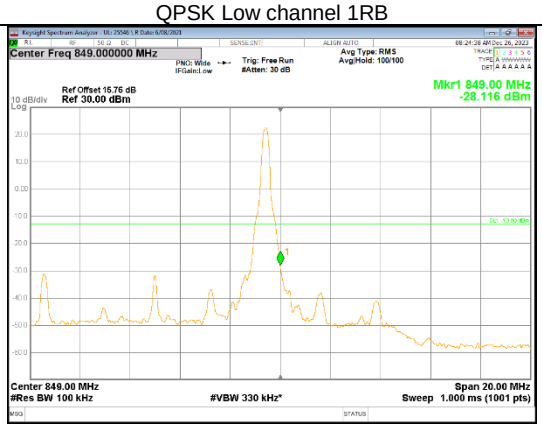
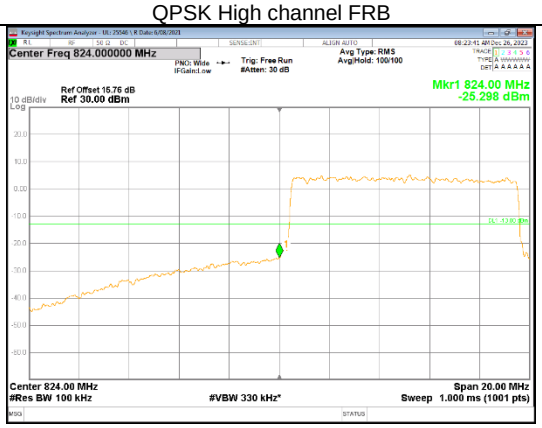
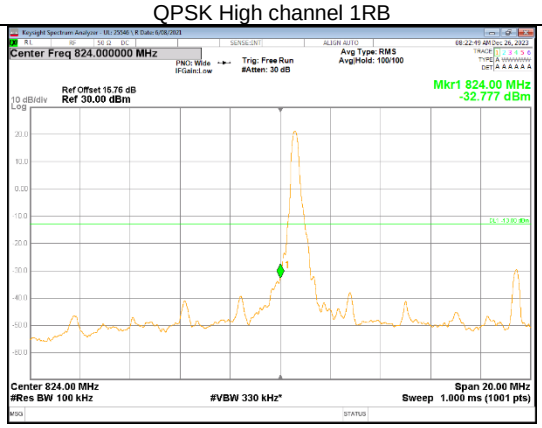
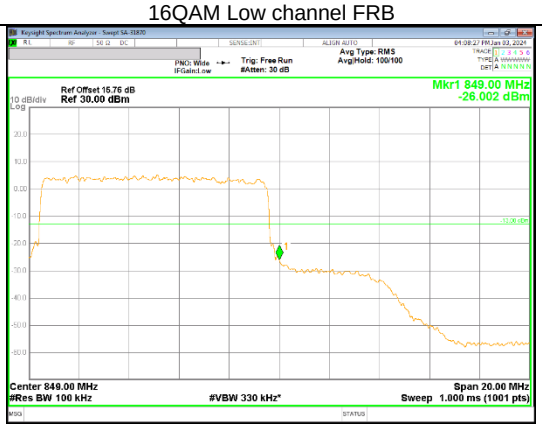
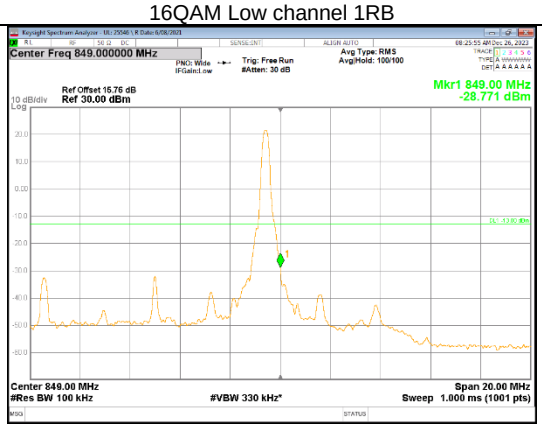
GSM

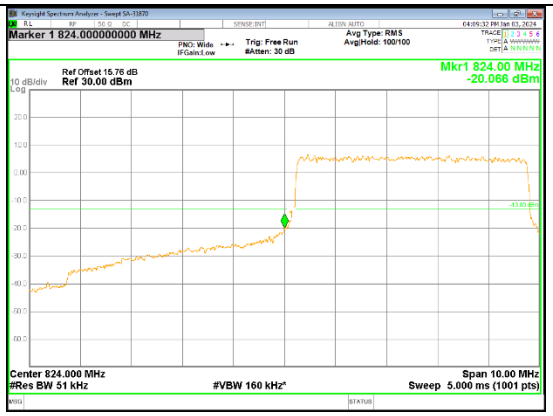
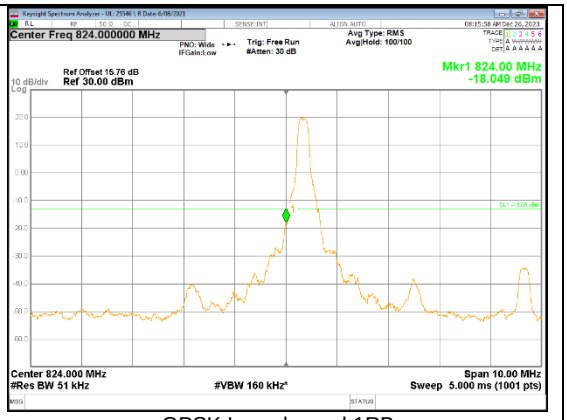
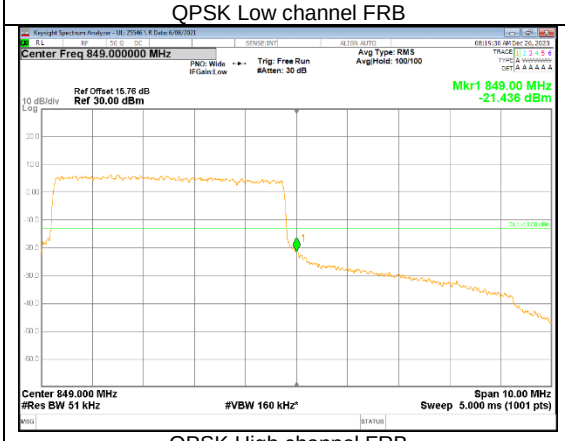
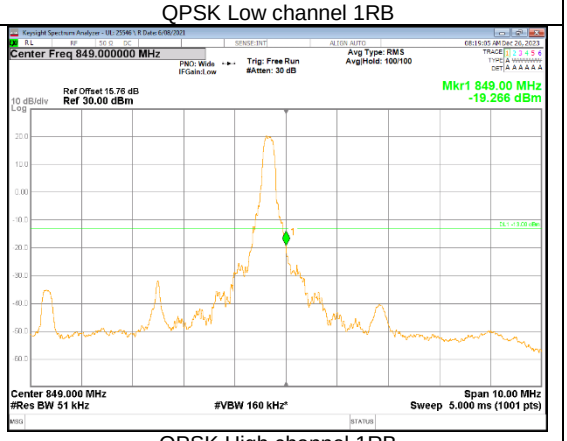
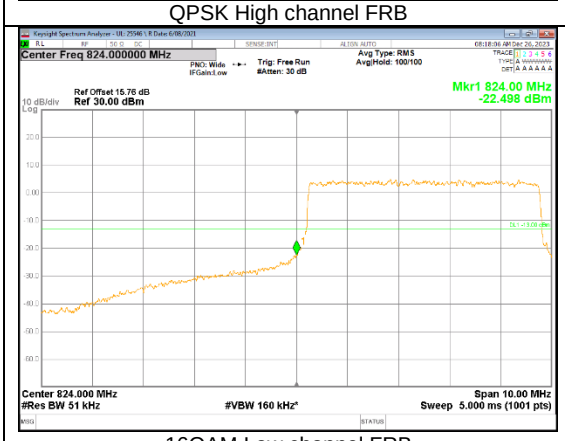
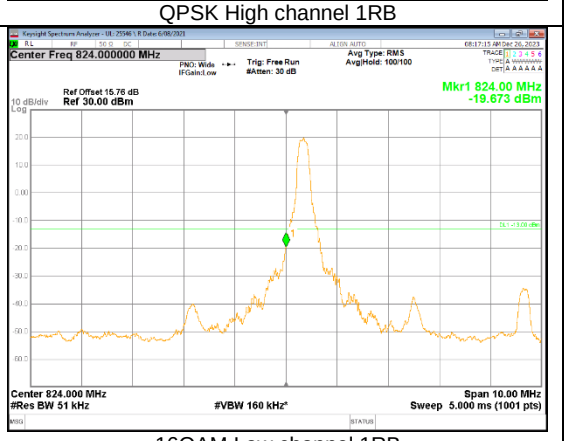
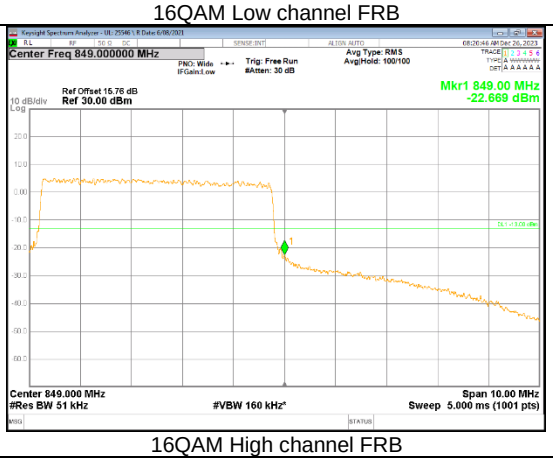
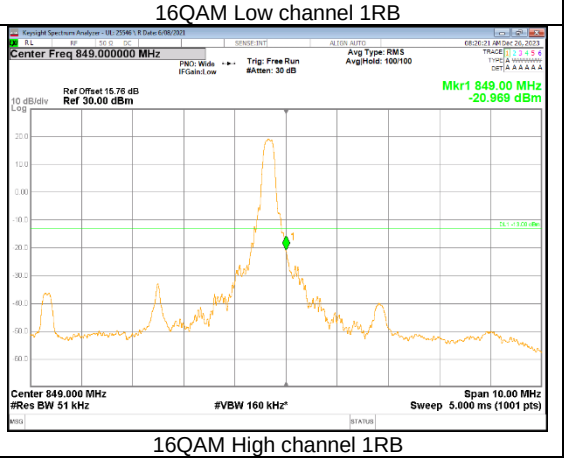
GSM 850	 GPRS Low channel	 EGPRS Low channel
	 GPRS High channel	 EGPRS High channel

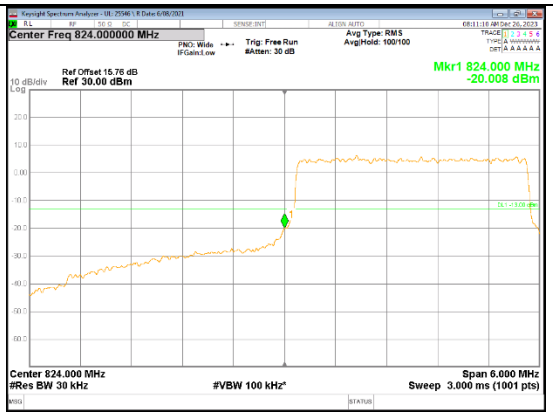
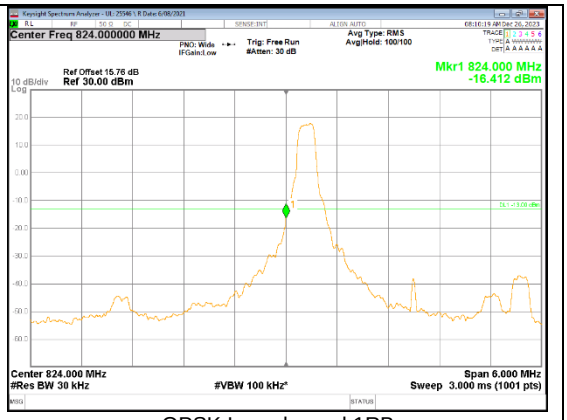
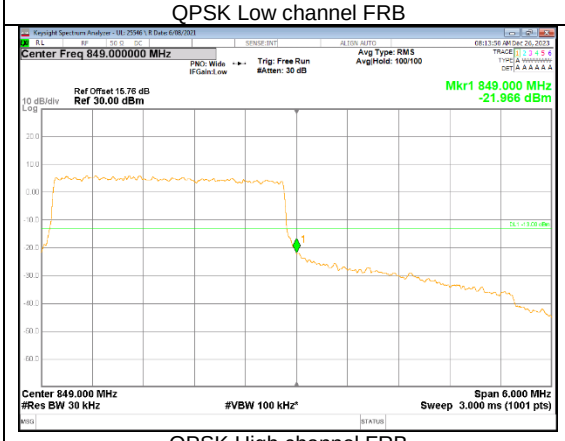
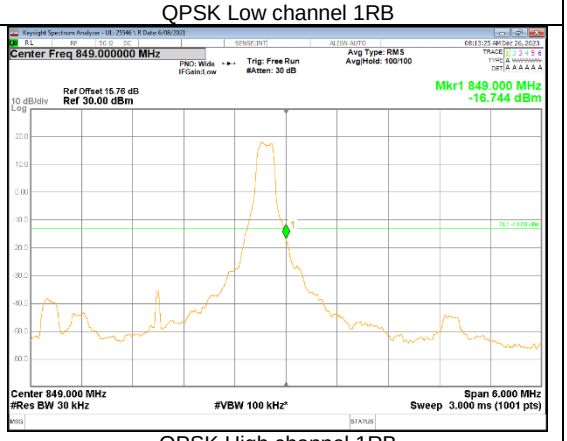
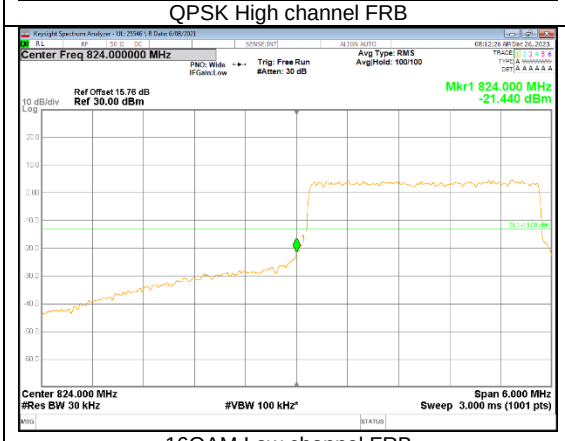
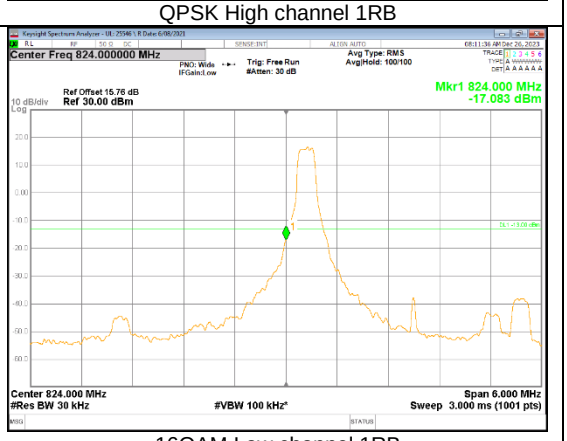
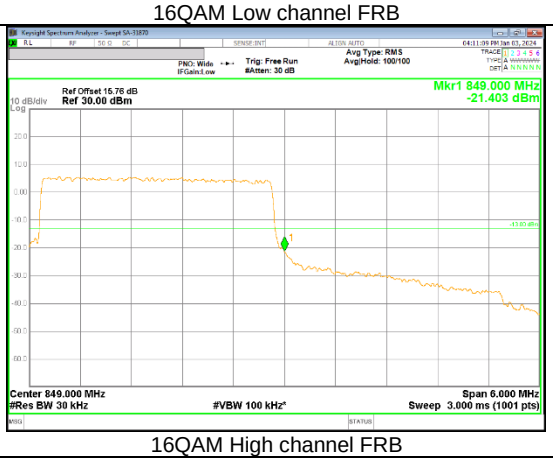
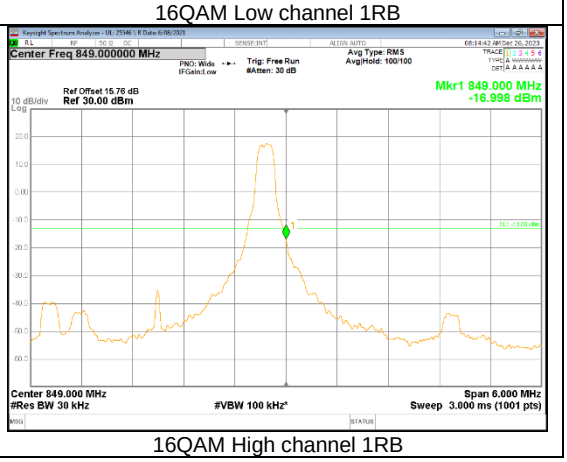
WCDMA

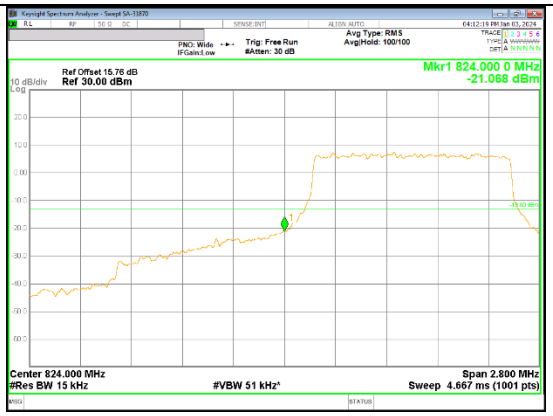
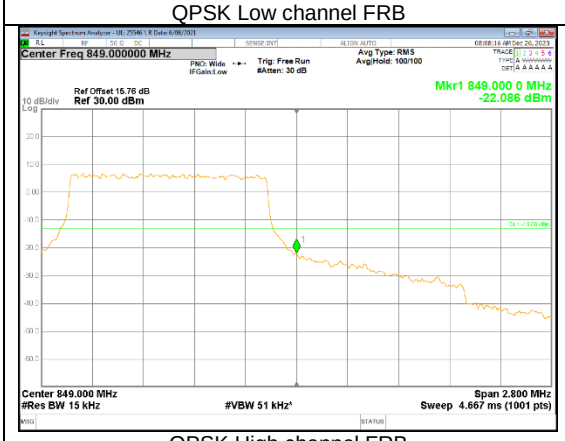
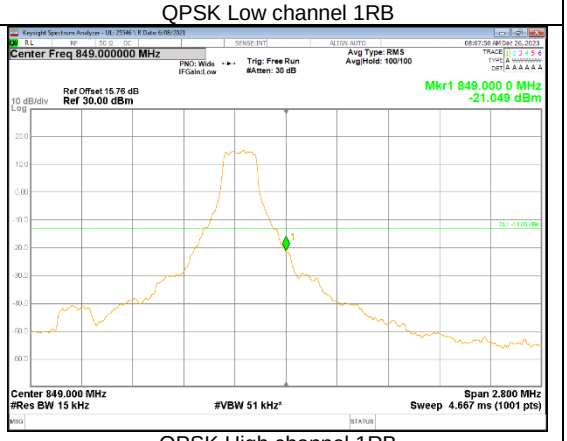
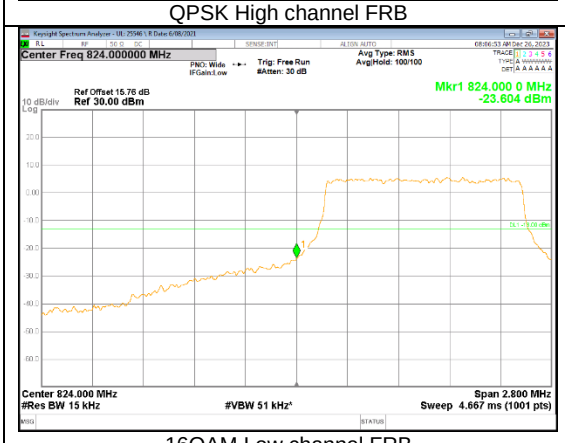
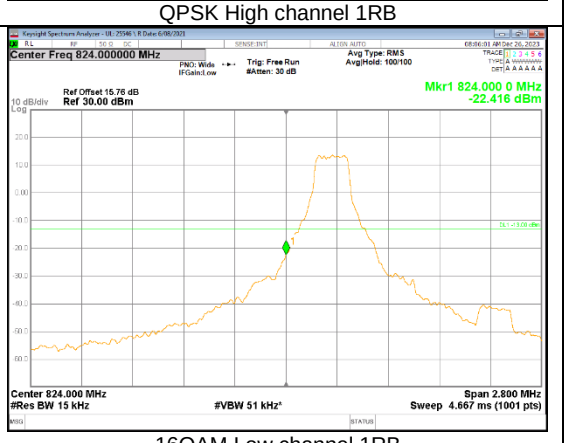
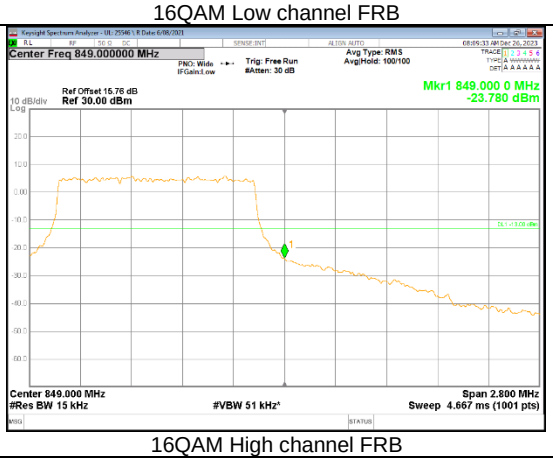
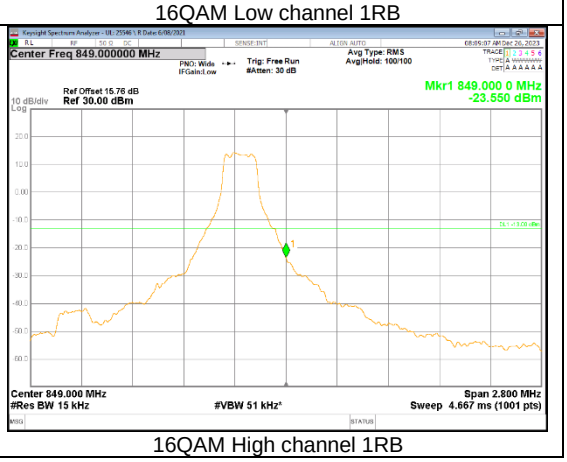
Band 5	 REL99 Low channel	 HSDPA Low channel
	 REL99 High channel	 HSDPA High channel

LTE Band 5

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

1.4MHz	 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

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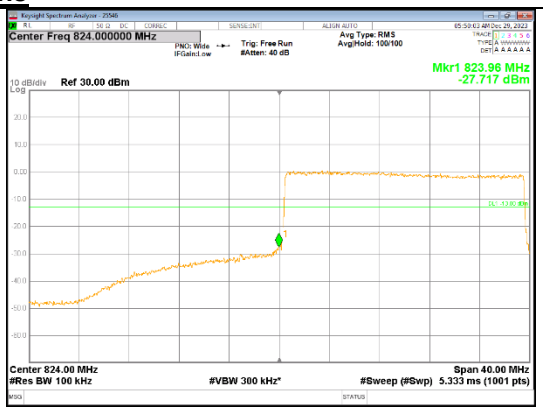
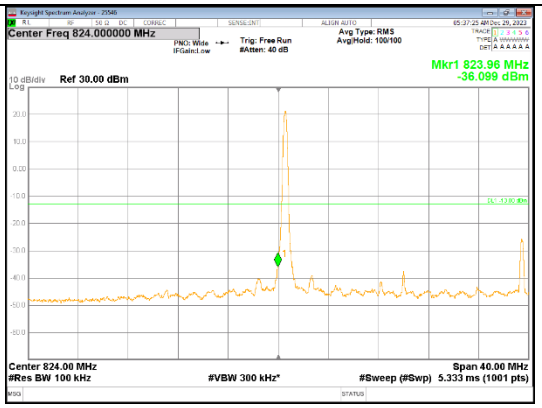
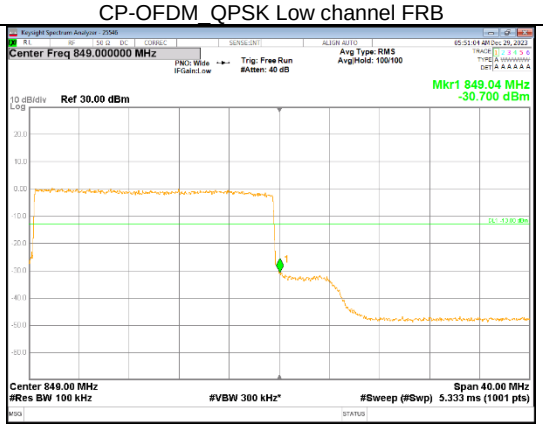
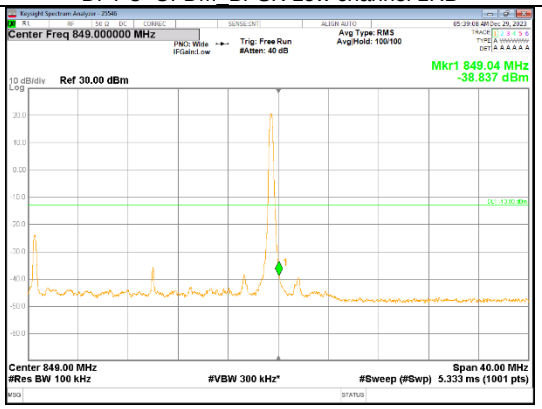
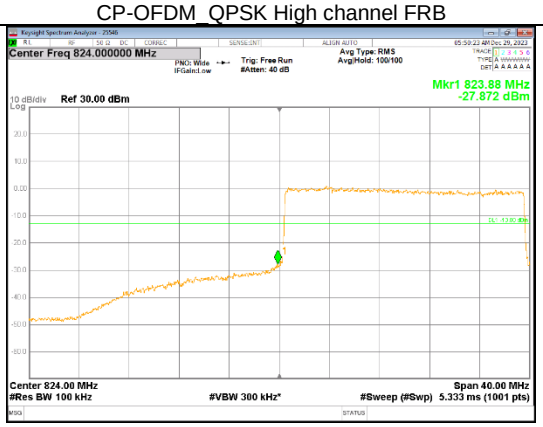
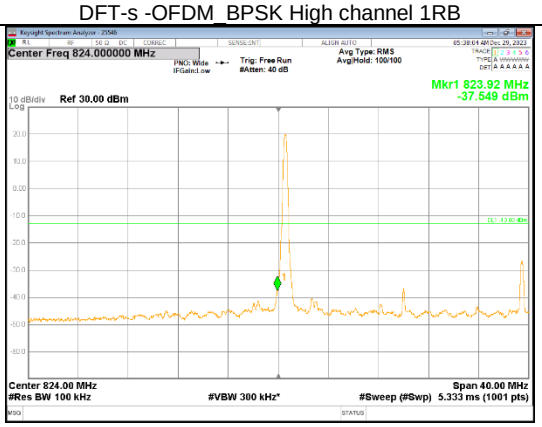
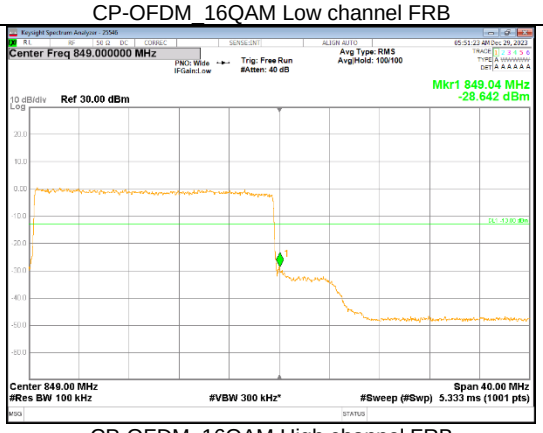
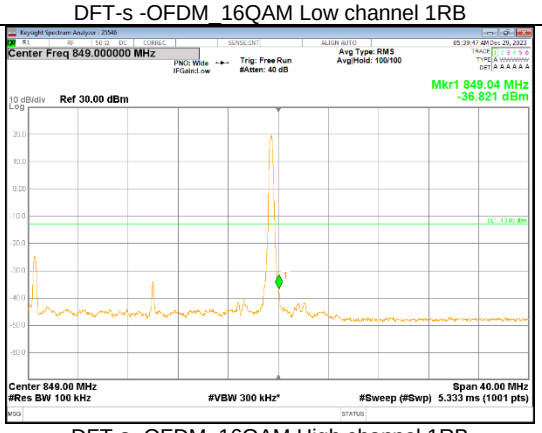
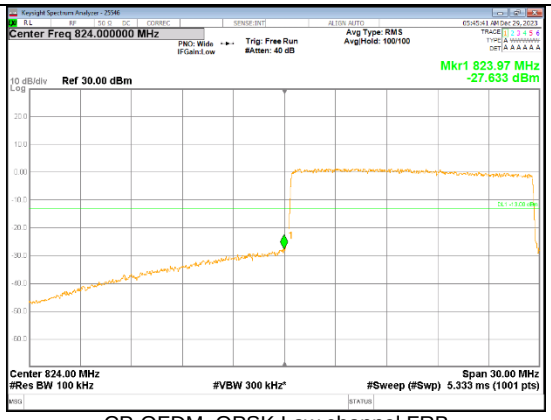
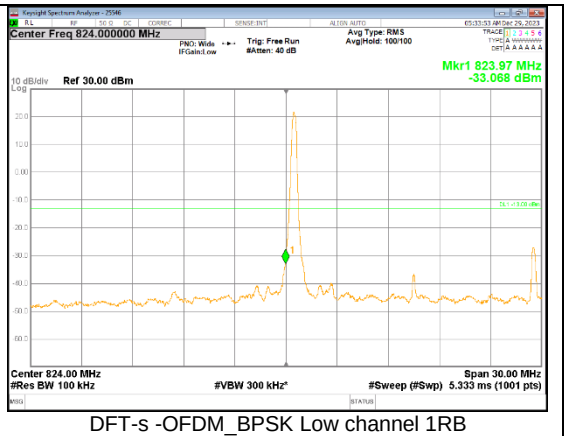
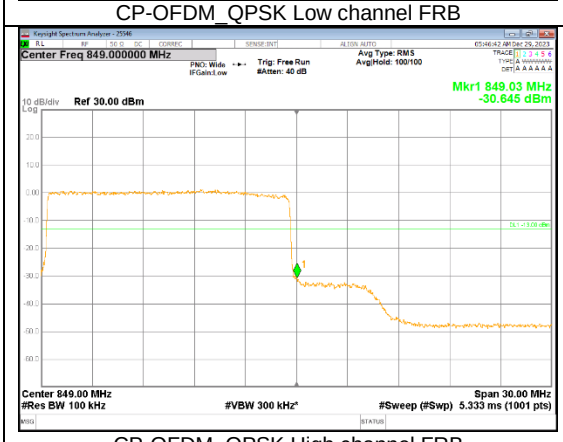
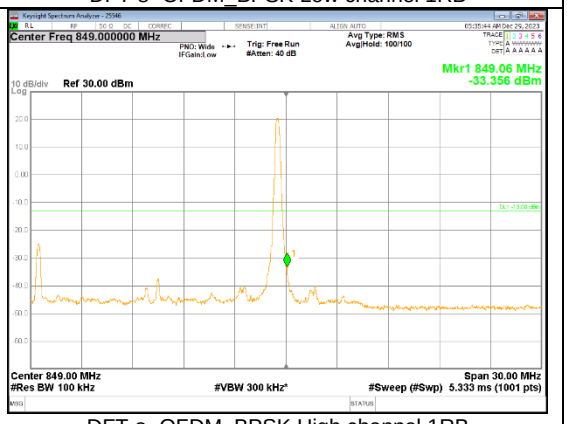
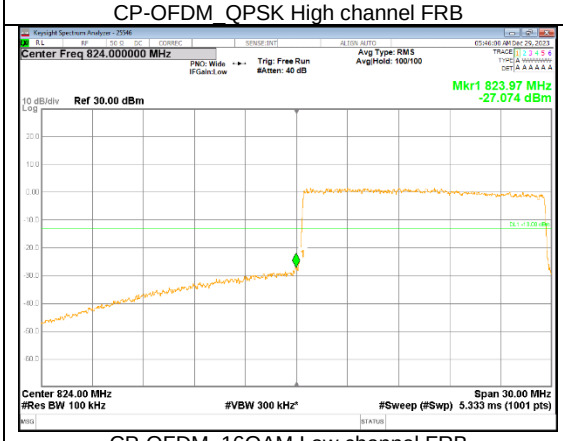
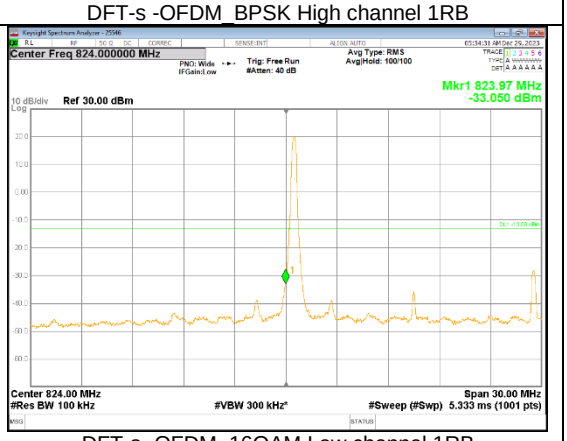
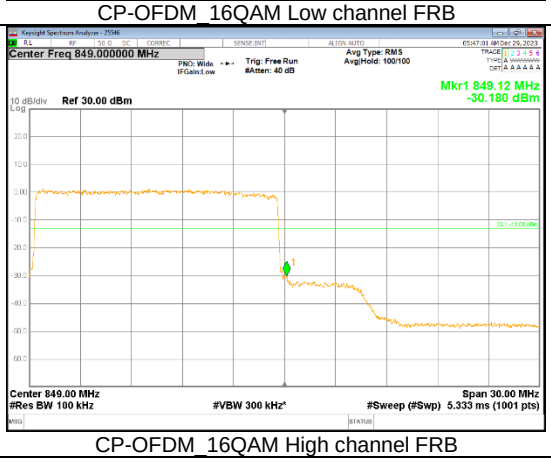
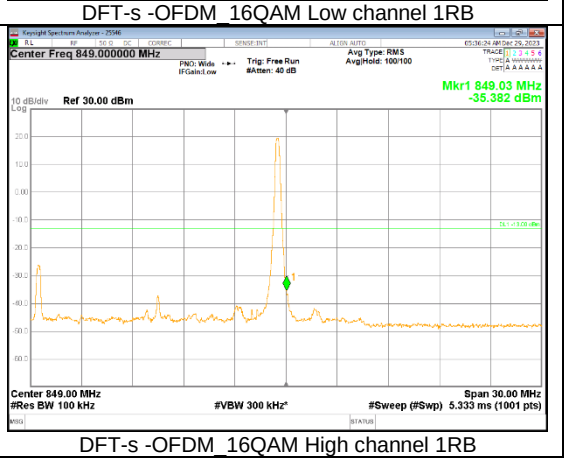
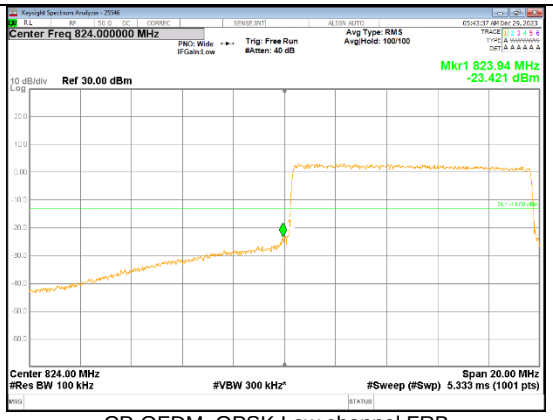
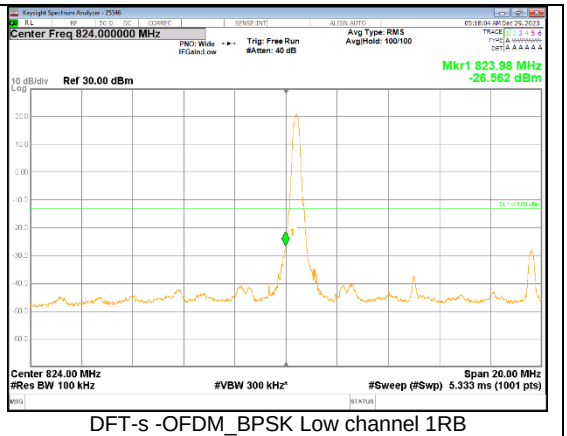
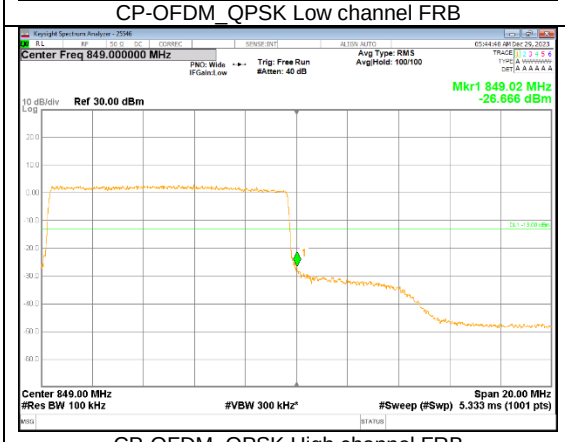
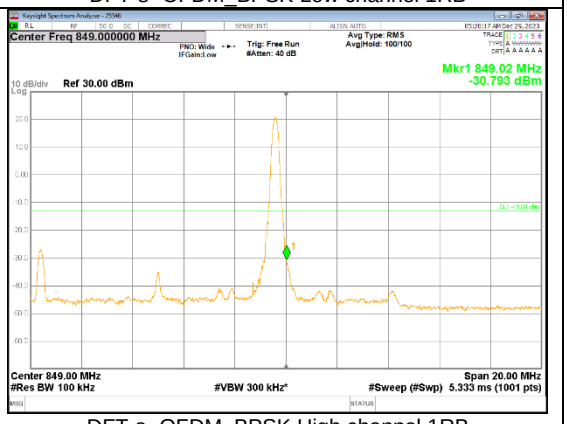
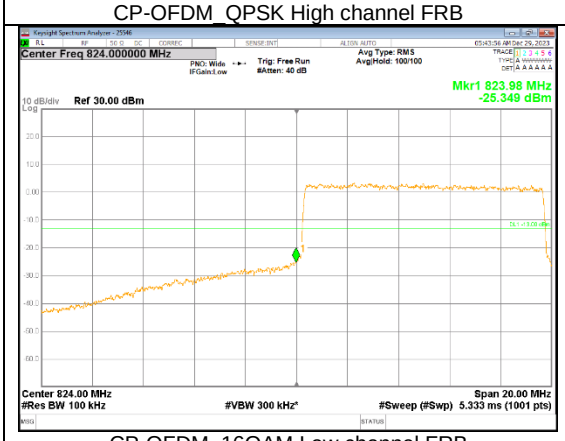
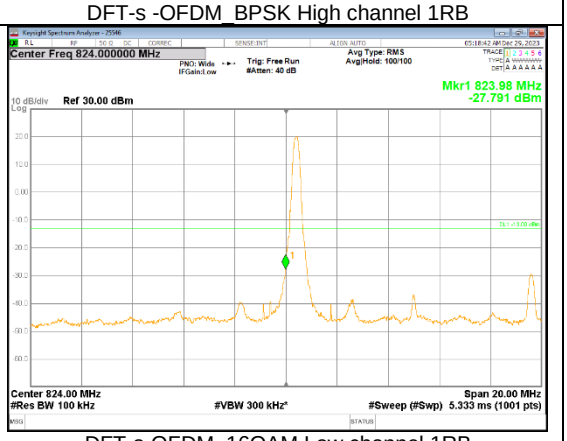
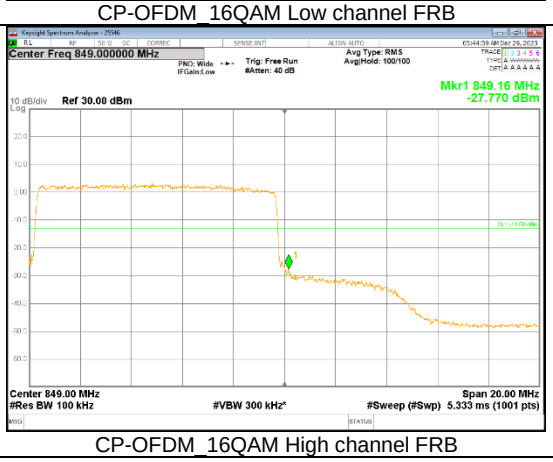
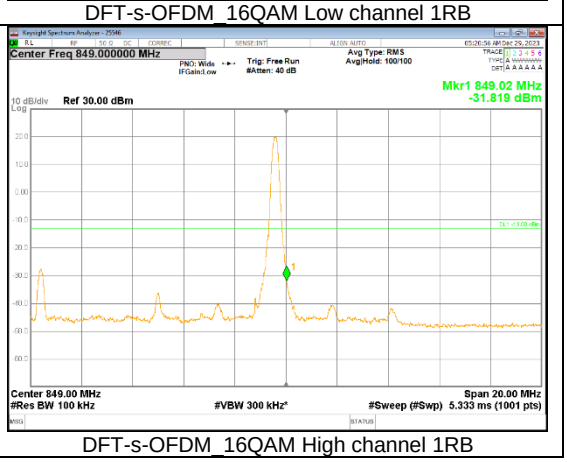
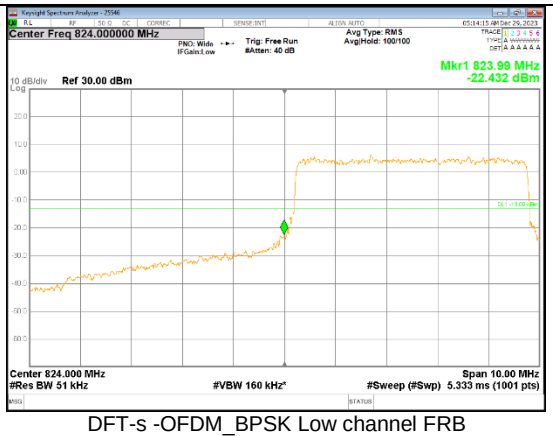
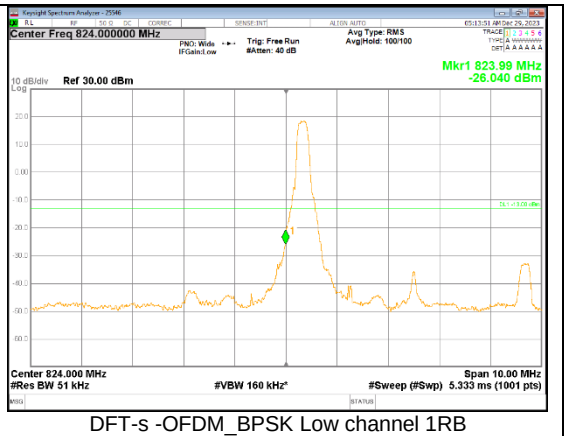
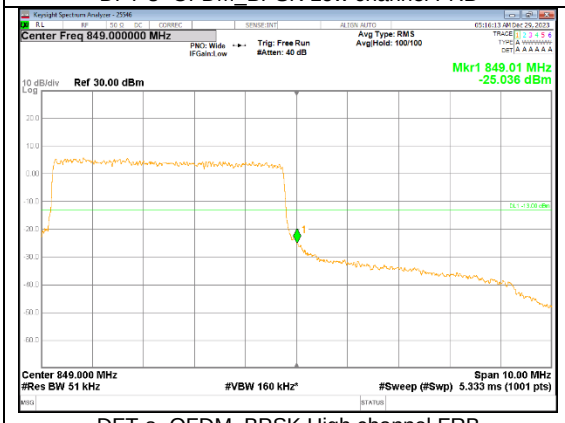
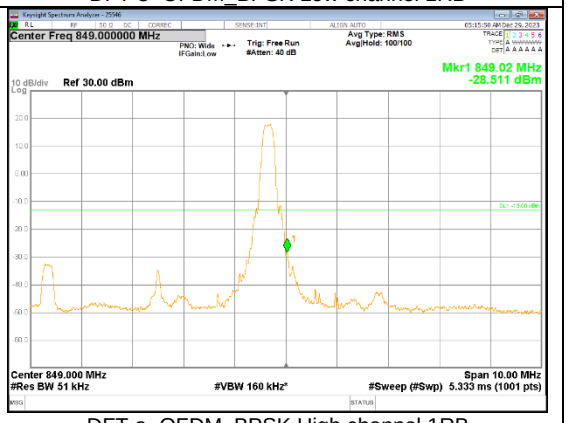
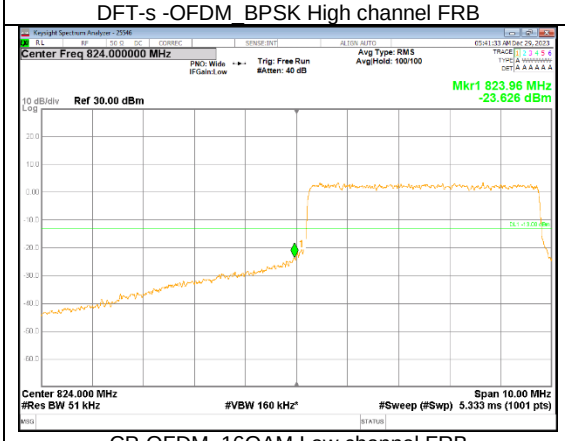
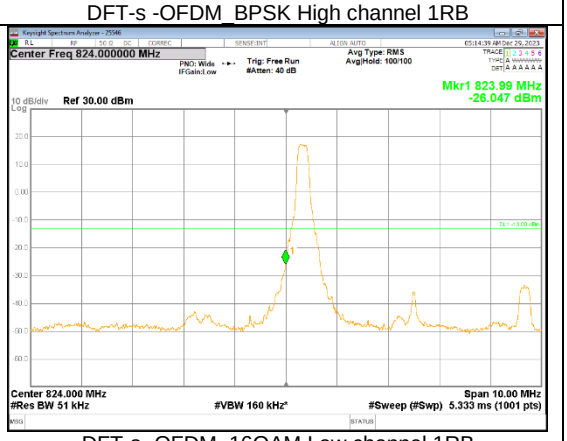
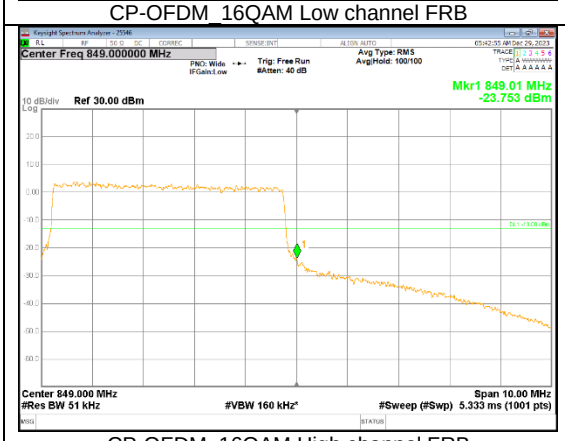
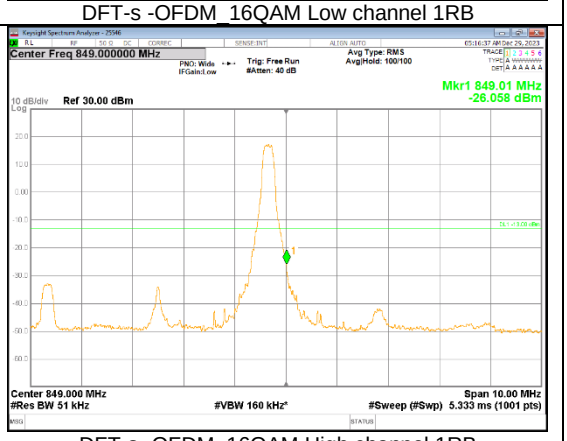
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

NR Band n5

20MHz	 CP-OFDM_QPSK Low channel FRB	 DFT-s -OFDM_BPSK Low channel 1RB
	 CP-OFDM_QPSK High channel FRB	 DFT-s -OFDM_BPSK High channel 1RB
	 CP-OFDM_16QAM Low channel FRB	 DFT-s -OFDM_16QAM Low channel 1RB
	 CP-OFDM_16QAM High channel FRB	 DFT-s -OFDM_16QAM High channel 1RB

15MHz	 CP-OFDM_QPSK Low channel FRB	 DFT-s -OFDM_BPSK Low channel 1RB
	 CP-OFDM_QPSK High channel FRB	 DFT-s -OFDM_BPSK High channel 1RB
	 CP-OFDM_16QAM Low channel FRB	 DFT-s -OFDM_16QAM Low channel 1RB
	 CP-OFDM_16QAM High channel FRB	 DFT-s -OFDM_16QAM High channel 1RB

10MHz	 CP-OFDM_QPSK Low channel FRB	 DFT-s -OFDM_BPSK Low channel 1RB
	 CP-OFDM_QPSK High channel FRB	 DFT-s -OFDM_BPSK High channel 1RB
	 CP-OFDM_16QAM Low channel FRB	 DFT-s-OFDM_16QAM Low channel 1RB
	 CP-OFDM_16QAM High channel FRB	 DFT-s-OFDM_16QAM High channel 1RB

5MHz	 DFT-s -OFDM_BPSK Low channel FRB	 DFT-s -OFDM_BPSK Low channel 1RB
	 DFT-s -OFDM_BPSK High channel FRB	 DFT-s -OFDM_BPSK High channel 1RB
	 CP-OFDM_16QAM Low channel FRB	 DFT-s -OFDM_16QAM Low channel 1RB
	 CP-OFDM_16QAM High channel FRB	 DFT-s -OFDM_16QAM High channel 1RB

8.5. CONDUCTED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

a) Set the RBW = 100 kHz for emission below 1 GHz.

   (Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = auto couple;

e) Detector = rms;

f) Ensure that the number of measurement points = Max (40001);

g) Trace mode = average(WCDMA, LTE, 5G NR), Max hold(GSM);

NOTE1

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.

NOTE2

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

See the following pages.

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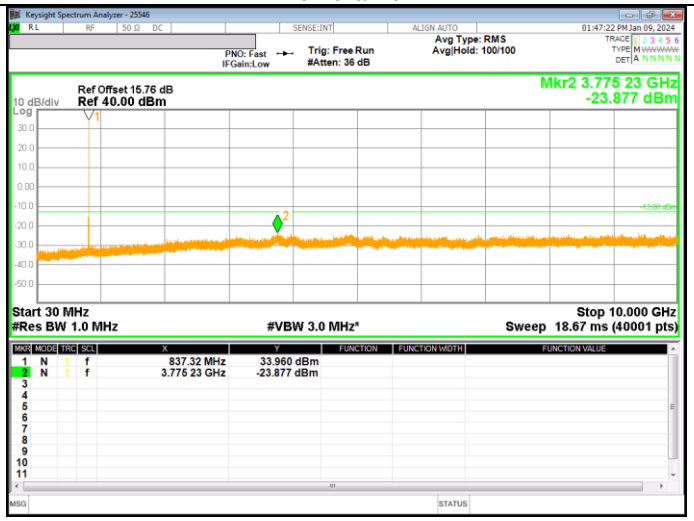
8.5.1. OUT OF BAND EMISSIONS RESULT

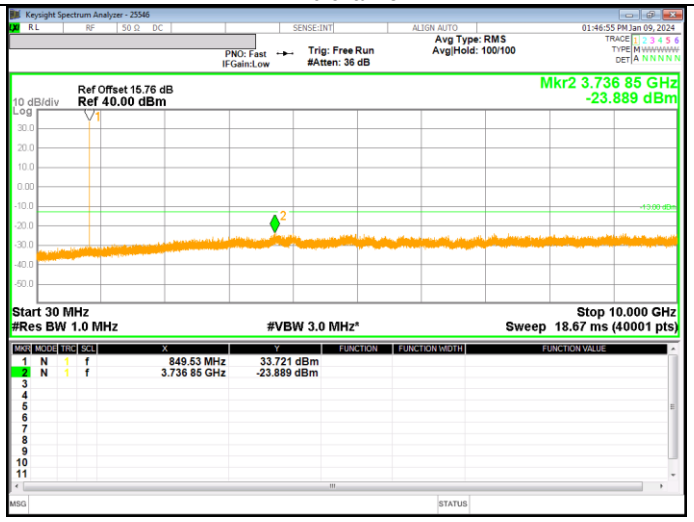
GSM 850

GPRS

Low channel



Mid channel



High channel