CERTIFICATION TEST REPORT

Report Number. : 4789864400-FR1V4

Applicant	:	AM TELECOM Co., Ltd. 608, Yatap Leaders Building, 42, Jangmi-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13496, South Korea
Model	:	AMM5500
FCC ID	:	2AZDW-AML550
IC	:	27086-AML550
EUT Description	:	Communication Module
Test Standard(s)	:	FCC CFR47 PART 22 SUBPART H / IC RSS-132 ISSUE 3 FCC CFR47 PART 24 SUBPART E / IC RSS-133 ISSUE 6 FCC CFR47 PART 27 SUBPART H / IC RSS-130 ISSUE 2 FCC CFR47 PART 27 SUBPART L / IC RSS-139 ISSUE 3 FCC CFR47 PART 27 SUBPART M / IC RSS-199 ISSUE 3 FCC CFR47 PART 90 SUBPART S

Date Of Issue:
May 03, 2021

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	04/20/21	Initial issue	Robby Lee
V2	04/29/21	Updated to address about the TCB's comments	Robby Lee
V3	04/29/21	Updated to address about test model	Robby Lee
V4	05/03/21	Updated to add the RSS-132 EIRP Limit	Robby Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: AM TELECOM Co., Ltd.

EUT DESCRIPTION: Communication Module

MODEL NUMBER: AMM5500

ADDITIONAL MODEL NUMBER: AML550

SERIAL NUMBER: #4 (CONDUCTED)
#7 (RADIATED);

DATE TESTED: March 22, 2021 – April 14, 2021;

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H, 24E, 27H, 27L, 27M and 90S	Pass
IC RSS-GEN, 130, 132, 133, 139, 199	Pass

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:

CY Choi
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Robby Lee
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 22.
3. FCC CFR 47 Part 24.
4. FCC CFR 47 Part 27.
5. FCC CFR 47 Part 90.
6. IC RSS-132 ISSUE 3
7. IC RSS-133 ISSUE 6
8. IC RSS-130 ISSUE 2
9. IC RSS-139 ISSUE 3
10. IC RSS-199 ISSUE 3
11. IC RSS-GEN ISSUE 5
12. ANSI TIA-603-E, 2016
13. ANSI C63.26, 2015
14. 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
☒ Chamber 2
☐ Chamber 3
☐ 10m 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
Radiated Disturbance, 30 MHz to 1 GHz	4.26 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.90 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.49 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 1, Clause 4.4.2 in IEC Guide 115:2007.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27/90(04)
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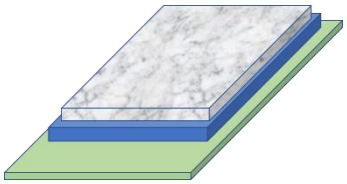
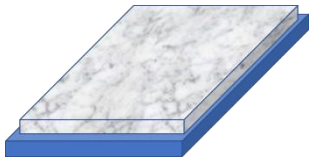
5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Communication Module.

AMM5500 was selected for final test.

Model “AMM5500” is original model. EUT has a additional model “AML550”.
The differences between the two models are as follows:

AMM5500	AML550
	
Model ”AMM5500” is a combination of M.2 interface board and "AML550". This Model meets all modluar approval conditions.	Model “AML550” is the model with the M.2 interface board removed from the “AMM5500”. This Model also meets all modluar approval conditions.
There are no differences in RF performance and characteristics between the two models.	

5.2. CONDUCTED OUTPUT POWER

The transmitter has a conducted output powers as follows:

GSM 850

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		Maximum Average Power (mW)	
					Measured		Measured	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM	CS1	1	128	824.2	32.8	23.8	1907.0	238.4
			190	836.6	32.9	23.9	1943.4	242.9
			251	848.8	32.9	23.9	1958.3	244.8
GPRS	CS1	1	128	824.2	32.8	23.7	1893.2	236.6
			190	836.6	32.9	23.8	1931.0	241.4
			251	848.8	33.3	24.3	**2130.7**	266.3
		2	128	824.2	30.3	24.3	1068.7	267.2
			190	836.6	30.4	24.4	1090.4	272.6
			251	848.8	30.5	24.4	1114.2	**278.5**
		3	128	824.2	28.5	24.3	714.1	267.8
			190	836.6	28.5	24.2	704.6	264.2
			251	848.8	28.6	24.3	725.7	272.1
		4	128	824.2	26.4	23.4	437.6	218.8
			190	836.6	26.5	23.5	444.8	222.4
			251	848.8	26.5	23.5	448.4	224.2

GSM 1900

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		Maximum Average Power (mW)	
					Measured		Measured	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM	CS1	1	512	1850.2	28.1	19.1	644.2	80.5
			661	1880.0	28.1	19.1	651.6	81.5
			810	1909.8	28.1	19.0	638.3	79.8
GPRS	CS1	1	512	1850.2	28.2	19.1	**656.1**	82.0
			661	1880.0	28.1	19.1	648.6	81.1
			810	1909.8	28.1	19.0	641.2	80.2
		2	512	1850.2	26.1	20.1	411.1	102.8
			661	1880.0	26.1	20.1	408.3	102.1
			810	1909.8	26.1	20.1	409.3	102.3
		3	512	1850.2	25.8	21.5	379.3	**142.2**
			661	1880.0	25.7	21.5	372.4	139.6
			810	1909.8	25.7	21.5	373.3	140.0
		4	512	1850.2	23.3	20.3	212.8	106.4
			661	1880.0	23.1	20.1	203.2	101.6
			810	1909.8	23.2	20.2	207.5	103.7

WCDMA B2

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power	
				Measured Pwr	
				(dBm)	(mW)
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.3	216.2
		9400	1880.0	23.4	**221.3**
		9538	1907.6	23.4	221.0
HSDPA	Subtest 1	9262	1852.4	22.5	179.0
		9400	1880.0	22.5	178.2
		9538	1907.6	22.5	178.2
	Subtest 2	9262	1852.4	22.5	175.8
		9400	1880.0	22.5	176.4
		9538	1907.6	22.5	178.0
	Subtest 3	9262	1852.4	22.0	157.2
		9400	1880.0	22.0	157.0
		9538	1907.6	22.0	159.1
	Subtest 4	9262	1852.4	22.0	159.7
		9400	1880.0	22.0	158.0
		9538	1907.6	22.0	160.2

WCDMA B4

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power	
				Measured Pwr	
				(dBm)	(mW)
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	23.5	226.2
		1413	1732.6	23.6	227.5
		1513	1752.6	23.7	**234.3**
HSDPA	Subtest 1	1312	1712.4	22.7	185.4
		1413	1732.6	22.7	188.1
		1513	1752.6	22.8	190.2
	Subtest 2	1312	1712.4	22.7	185.9
		1413	1732.6	22.7	187.5
		1513	1752.6	22.8	189.2
	Subtest 3	1312	1712.4	22.1	163.3
		1413	1732.6	22.2	165.7
		1513	1752.6	22.1	164.0
	Subtest 4	1312	1712.4	22.2	164.6
		1413	1732.6	22.1	162.2
		1513	1752.6	22.1	164.0

WCDMA B5

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power	
				Measured Pwr	
				(dBm)	(mW)
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.6	226.5
		4183	836.6	23.7	232.0
		4233	846.6	23.7	**232.9**
HSDPA	Subtest 1	4132	826.4	22.7	184.8
		4183	836.6	22.7	187.8
		4233	846.6	22.7	186.9
	Subtest 2	4132	826.4	22.7	185.6
		4183	836.6	22.7	187.1
		4233	846.6	22.7	184.3
	Subtest 3	4132	826.4	22.2	165.0
		4183	836.6	22.1	163.6
		4233	846.6	22.1	162.7
	Subtest 4	4132	826.4	22.1	164.0
		4183	836.6	22.1	162.1
		4233	846.6	22.1	161.8

LTE Band 2

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power Measured Pwr (dBm)			
				Measured Pwr			
				Measured Pwr (dBm)			Measured Pwr (mW)
				18700	18900	19100	Worst CH
				1860 MHz	1880 MHz	1900 MHz	
20 MHz	QPSK	1	0	21.6	22.1	21.7	162.2
		1	49	21.8	22.2	22.0	**166.0**
		1	99	21.6	22.0	21.4	158.5
		50	0	21.2	20.8	20.8	131.8
		50	24	21.2	20.8	20.7	131.8
		50	50	21.1	20.7	20.6	128.8
		100	0	21.2	20.8	20.7	131.8
	16QAM	1	0	20.9	20.8	20.6	123.0
		1	49	21.2	20.7	20.4	**131.8**
		1	99	20.6	20.1	20.3	114.8
		50	0	20.2	19.7	19.8	104.7
		50	24	20.2	19.5	19.7	104.7
		50	50	20.1	19.4	19.5	102.3
		100	0	20.2	19.7	20.0	104.7
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				18675	18900	19125	Worst CH
				1857.5 MHz	1880 MHz	1902.5 MHz	
15 MHz	QPSK	1	0	22.3	22.2	22.1	169.8
		1	37	22.5	22.2	22.3	**177.8**
		1	74	22.1	22.0	22.0	162.2
		36	0	21.2	21.1	21.0	131.8
		36	20	21.3	21.1	21.0	134.9
		36	39	21.1	21.0	21.0	128.8
		75	0	21.2	21.0	21.0	131.8
	16QAM	1	0	21.0	21.6	21.0	144.5
		1	37	21.5	21.9	21.4	**154.9**
		1	74	20.7	21.7	20.9	147.9
		36	0	20.3	20.0	20.0	107.2
		36	20	20.3	20.1	19.9	107.2
		36	39	20.2	20.0	19.8	104.7
		75	0	20.1	19.9	19.9	102.3

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				18650	18900	19150	Worst CH
				1855 MHz	1880 MHz	1905 MHz	
10 MHz	QPSK	1	0	22.2	21.7	21.6	164.9
		1	25	22.3	22.0	21.9	**171.1**
		1	49	22.1	21.5	21.4	161.8
		25	0	21.0	20.7	20.6	125.8
		25	12	20.9	20.7	20.5	122.6
		25	25	20.8	20.5	20.5	119.5
		50	0	20.8	20.6	20.5	120.8
	16QAM	1	0	21.1	20.7	20.7	129.7
		1	25	21.3	20.6	20.8	**133.5**
		1	49	20.6	20.1	20.6	115.6
		25	0	20.0	19.7	19.6	100.7
		25	12	19.8	19.7	19.6	95.9
		25	25	20.0	19.5	19.6	99.9
		50	0	20.0	19.6	19.6	100.4
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				18625	18900	19175	Worst CH
				1852.5 MHz	1880 MHz	1907.5 MHz	
5 MHz	QPSK	1	0	21.9	21.2	21.4	154.9
		1	12	22.1	21.4	21.7	**162.2**
		1	24	22.0	21.2	21.6	158.5
		12	0	21.0	20.6	20.5	125.9
		12	7	21.0	20.7	20.5	125.9
		12	13	20.9	20.6	20.5	123.0
		25	0	20.9	20.7	20.5	123.0
	16QAM	1	0	20.9	20.4	20.4	123.0
		1	12	21.0	20.4	20.6	**125.9**
		1	24	20.9	20.5	20.3	123.0
		12	0	19.8	19.4	19.5	95.5
		12	7	19.8	19.5	19.5	95.5
		12	13	19.9	19.5	19.5	97.7
		25	0	20.0	19.7	19.4	100.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				18615	18900	19185	Worst CH
				1851.5 MHz	1880 MHz	1908.5 MHz	
3 MHz	QPSK	1	0	21.9	21.7	21.4	**154.9**
		1	8	21.7	21.9	21.8	**154.9**
		1	14	21.8	21.5	21.6	151.4
		8	0	20.9	20.7	20.6	123.0
		8	4	20.9	20.6	20.5	123.0
		8	7	20.8	20.6	20.6	120.2
		15	0	20.8	20.6	20.6	120.2
	16QAM	1	0	20.9	20.7	20.5	**123.0**
		1	8	20.9	20.6	20.7	**123.0**
		1	14	20.8	20.1	20.6	120.2
		8	0	19.8	19.5	19.5	95.5
		8	4	19.8	19.5	19.4	95.5
		8	7	19.8	19.5	19.6	95.5
		15	0	19.7	19.6	19.6	93.3
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				18607	18900	19193	Worst CH
				1850.7 MHz	1880 MHz	1909.3 MHz	
1.4 MHz	QPSK	1	0	22.0	21.6	21.4	**158.5**
		1	3	21.9	21.8	21.7	154.9
		1	5	21.8	21.6	21.6	151.4
		3	0	22.0	21.7	21.6	**158.5**
		3	1	22.0	21.7	21.7	**158.5**
		3	3	21.9	21.8	21.7	154.9
		6	0	20.9	20.7	20.7	123.0
	16QAM	1	0	20.8	20.7	20.5	**120.2**
		1	3	20.8	20.7	20.5	**120.2**
		1	5	20.8	20.5	20.6	**120.2**
		3	0	20.7	20.4	20.7	117.5
		3	1	20.8	20.4	20.8	**120.2**
		3	3	20.8	20.4	20.6	**120.2**
		6	0	19.8	19.2	19.7	95.5

LTE Band 4

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power			
				Measured Pwr (dBm)			Measured Pwr (mW)
				20050	20175	20300	Worst CH
				1720 MHz	1732.5 MHz	1745 MHz	
20 MHz	QPSK	1	0	22.0	22.1	22.4	**173.8**
		1	49	22.1	22.0	22.4	**173.8**
		1	99	22.1	21.9	22.1	162.2
		50	0	21.3	21.4	21.4	138.0
		50	24	21.4	21.3	21.3	138.0
		50	50	21.4	21.2	21.2	138.0
		100	0	21.4	21.3	21.3	138.0
	16QAM	1	0	21.1	21.4	21.2	**138.0**
		1	49	21.1	21.2	21.2	131.8
		1	99	20.9	20.8	21.0	125.9
		50	0	20.3	20.3	20.4	109.6
		50	24	20.2	20.5	20.3	112.2
		50	50	20.2	20.2	20.2	104.7
		100	0	20.4	20.2	20.3	109.6
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				20025	20175	20325	Worst CH
				1717.5 MHz	1732.5 MHz	1747.5 MHz	
15 MHz	QPSK	1	0	22.2	22.4	22.4	173.8
		1	37	22.6	22.8	22.4	**190.5**
		1	74	22.4	22.4	22.0	173.8
		36	0	21.3	21.4	21.3	138.0
		36	20	21.4	21.3	21.3	138.0
		36	39	21.3	21.3	21.1	134.9
		75	0	21.3	21.2	21.2	134.9
	16QAM	1	0	22.0	21.5	21.6	158.5
		1	37	22.1	21.7	21.5	**162.2**
		1	74	22.1	21.3	20.7	**162.2**
		36	0	20.2	20.2	20.3	107.2
		36	20	20.1	20.3	20.2	107.2
		36	39	20.2	20.3	20.1	107.2
		75	0	20.2	20.2	20.2	104.7

BW(MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				20000	20175	20350	Worst CH
				1715 MHz	1732.5 MHz	1750 MHz	
10 MHz	QPSK	1	0	22.4	22.3	22.1	173.8
		1	25	22.6	22.7	22.2	**186.2**
		1	49	22.4	22.2	22.2	173.8
		25	0	21.3	21.4	21.3	138.0
		25	12	21.4	21.3	21.3	138.0
		25	25	21.4	21.3	21.2	138.0
		50	0	21.3	21.3	21.2	134.9
	16QAM	1	0	21.6	21.4	21.3	144.5
		1	25	21.5	21.7	21.3	**147.9**
		1	49	21.1	21.2	20.9	131.8
		25	0	20.4	20.3	20.3	109.6
		25	12	20.5	20.4	20.5	112.2
		25	25	20.6	20.3	20.2	114.8
		50	0	20.2	20.3	20.2	107.2
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				19975	20175	20375	Worst CH
				1712.5 MHz	1732.5 MHz	1752.5 MHz	
5 MHz	QPSK	1	0	22.2	22.3	21.8	169.8
		1	12	22.3	22.5	22.0	**177.8**
		1	24	22.4	22.4	21.9	173.8
		12	0	21.4	21.3	21.3	138.0
		12	7	21.3	21.4	21.2	138.0
		12	13	21.3	21.4	21.2	138.0
		25	0	21.3	21.4	21.2	138.0
	16QAM	1	0	21.3	21.2	21.3	134.9
		1	12	21.4	21.1	21.4	**138.0**
		1	24	21.4	20.8	21.4	**138.0**
		12	0	20.2	20.2	20.1	104.7
		12	7	20.4	20.3	20.3	109.6
		12	13	20.1	20.3	20.2	107.2
		25	0	20.1	20.4	20.5	112.2

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				19965	20175	20385	Worst CH
				1711.5 MHz	1732.5 MHz	1753.5 MHz	
3 MHz	QPSK	1	0	22.4	22.6	21.9	**182.0**
		1	8	22.5	22.5	22.0	177.8
		1	14	22.4	22.6	22.0	**182.0**
		8	0	21.3	21.4	21.1	138.0
		8	4	21.4	21.3	21.1	138.0
		8	7	21.4	21.3	21.0	138.0
		15	0	21.3	21.3	21.1	134.9
	16QAM	1	0	21.5	21.4	21.1	141.3
		1	8	21.4	21.6	21.0	**144.5**
		1	14	21.3	21.3	21.3	134.9
		8	0	20.0	20.7	20.1	117.5
		8	4	20.0	20.7	20.2	117.5
		8	7	20.0	20.7	20.2	117.5
		15	0	20.1	20.4	20.2	109.6
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				19957	20175	20393	Worst CH
				1710.7 MHz	1732.5 MHz	1754.3 MHz	
1.4 MHz	QPSK	1	0	22.3	22.0	22.0	169.8
		1	3	22.4	22.1	22.2	**173.8**
		1	5	22.3	22.1	22.2	169.8
		3	0	22.4	22.3	22.3	**173.8**
		3	1	22.4	22.3	22.2	**173.8**
		3	3	22.3	22.3	22.3	169.8
		6	0	21.5	21.3	21.3	141.3
	16QAM	1	0	21.4	21.4	21.1	138.0
		1	3	21.5	21.4	21.5	**141.3**
		1	5	21.3	21.3	21.2	134.9
		3	0	21.2	21.0	21.2	131.8
		3	1	21.2	21.1	21.2	131.8
		3	3	21.1	21.1	21.2	131.8
		6	0	20.4	20.1	20.2	109.6

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LTE Band 7

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power			
				Measured Pwr (dBm)			Measured Pwr (mW)
				20850	21100	21350	Worst CH
				2510 MHz	2535 MHz	2560 MHz	
20 MHz	QPSK	1	0	21.3	21.0	21.6	144.5
		1	49	21.4	21.3	21.9	**154.9**
		1	99	21.1	21.1	21.6	144.5
		50	0	20.5	20.5	20.6	114.8
		50	24	20.4	20.6	20.7	117.5
		50	50	20.5	20.4	20.7	117.5
		100	0	20.6	20.5	20.7	117.5
	16QAM	1	0	20.1	20.5	20.8	**120.2**
		1	49	20.0	20.7	20.6	117.5
		1	99	20.1	20.1	20.2	104.7
		50	0	19.2	19.4	19.6	91.2
		50	24	19.2	19.5	19.7	93.3
		50	50	19.4	19.4	19.7	93.3
		100	0	19.4	19.4	19.5	89.1
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				20825	21100	21375	Worst CH
				2507.5 MHz	2535 MHz	2562.5 MHz	
15 MHz	QPSK	1	0	21.6	21.7	21.6	147.9
		1	37	21.8	22.1	21.8	**162.2**
		1	74	21.6	21.5	21.6	144.5
		36	0	20.7	20.6	20.6	117.5
		36	20	20.7	20.5	20.6	117.5
		36	39	20.6	20.5	20.8	120.2
		75	0	20.6	20.5	20.6	114.8
	16QAM	1	0	21.3	20.5	20.8	**134.9**
		1	37	21.3	20.7	20.9	**134.9**
		1	74	21.1	20.2	20.2	128.8
		36	0	19.2	19.4	19.6	91.2
		36	20	19.4	19.3	19.7	93.3
		36	39	19.1	19.1	19.7	93.3
		75	0	19.3	19.3	19.6	91.2

BW(MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				20800	21100	21400	Worst CH
				2505 MHz	2535 MHz	2565 MHz	
10 MHz	QPSK	1	0	21.8	21.9	21.7	154.9
		1	25	22.1	22.2	21.9	**166.0**
		1	49	21.6	21.9	21.7	154.9
		25	0	20.8	20.7	20.7	120.2
		25	12	20.7	20.7	20.9	123.0
		25	25	20.6	20.6	20.9	123.0
		50	0	20.7	20.7	20.9	123.0
	16QAM	1	0	20.9	20.8	20.7	123.0
		1	25	20.9	21.1	20.9	**128.8**
		1	49	20.7	20.7	20.3	117.5
		25	0	19.8	19.6	19.7	95.5
		25	12	19.8	19.7	20.0	100.0
		25	25	19.7	19.6	19.9	97.7
		50	0	19.5	19.6	19.7	93.3
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				20775	21100	21425	Worst CH
				2502.5 MHz	2535 MHz	2567.5 MHz	
5 MHz	QPSK	1	0	21.5	21.1	21.6	144.5
		1	12	21.6	21.2	21.9	**154.9**
		1	24	21.4	21.3	21.5	141.3
		12	0	20.6	20.7	20.9	123.0
		12	7	20.6	20.6	20.9	123.0
		12	13	20.6	20.6	20.9	123.0
		25	0	20.6	20.7	20.8	120.2
	16QAM	1	0	20.1	20.6	20.9	**123.0**
		1	12	20.5	20.3	20.8	120.2
		1	24	20.0	20.1	20.3	107.2
		12	0	19.4	19.5	19.8	95.5
		12	7	19.7	19.6	19.8	95.5
		12	13	19.6	19.6	19.9	97.7
		25	0	19.6	19.6	19.7	93.3

LTE Band 12

BW(MHz)	Mode	RB Allocation	RB offset	Maximum Average Power			
				Measured Pwr (dBm)			Measured Pwr (mW)
				23060	23095	23130	Worst CH
				704 MHz	707.5 MHz	711 MHz	
10 MHz	QPSK	1	0	22.4	22.2	22.1	173.8
		1	25	22.2	22.7	22.5	**186.2**
		1	49	22.1	22.3	22.0	169.8
		25	0	21.3	21.3	21.4	138.0
		25	12	21.2	21.3	21.3	134.9
		25	25	21.2	21.3	21.3	134.9
		50	0	21.2	21.3	21.3	134.9
	16QAM	1	0	21.3	21.3	21.3	134.9
		1	25	21.5	22.0	21.4	**158.5**
		1	49	21.3	21.2	20.7	134.9
		25	0	20.4	20.3	20.2	109.6
		25	12	20.3	20.3	20.4	109.6
		25	25	20.2	20.3	20.4	109.6
		50	0	20.1	20.3	20.5	112.2
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				23035	23095	23155	Worst CH
				701.5 MHz	707.5 MHz	713.5 MHz	
5 MHz	QPSK	1	0	22.1	21.9	22.0	162.2
		1	12	22.1	22.3	22.3	**169.8**
		1	24	22.0	22.0	22.0	158.5
		12	0	21.2	21.3	21.2	134.9
		12	7	21.2	21.3	21.4	138.0
		12	13	21.2	21.3	21.3	134.9
		25	0	21.2	21.3	21.3	134.9
	16QAM	1	0	21.1	21.1	21.2	131.8
		1	12	21.3	21.0	21.5	**141.3**
		1	24	21.1	20.6	21.0	128.8
		12	0	20.0	20.1	20.2	104.7
		12	7	20.2	20.2	20.2	104.7
		12	13	20.2	20.3	20.1	107.2
		25	0	20.1	20.4	20.2	109.6

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				23025	23095	23165	Worst CH
				700.5 MHz	707.5 MHz	714.5 MHz	
3 MHz	QPSK	1	0	22.3	22.1	22.2	169.8
		1	8	22.2	22.5	22.4	**177.8**
		1	14	22.2	22.5	22.2	**177.8**
		8	0	21.3	21.3	21.3	134.9
		8	4	21.4	21.3	21.3	138.0
		8	7	21.4	21.3	21.3	138.0
		15	0	21.3	21.3	21.3	134.9
	16QAM	1	0	21.4	21.2	21.6	**144.5**
		1	8	21.5	21.5	21.6	**144.5**
		1	14	21.3	21.3	21.3	134.9
		8	0	20.3	20.2	20.4	109.6
		8	4	20.4	20.1	20.5	112.2
		8	7	20.4	20.1	20.5	112.2
		15	0	20.1	20.2	20.4	109.6

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				23017	23095	23173	Worst CH
				699.7 MHz	707.5 MHz	715.3 MHz	
1.4 MHz	QPSK	1	0	22.2	22.1	22.4	173.8
		1	3	22.2	22.2	22.5	**177.8**
		1	5	22.2	22.0	22.3	169.8
		3	0	22.2	22.3	22.4	173.8
		3	1	22.2	22.4	22.3	173.8
		3	3	22.2	22.4	22.3	173.8
		6	0	21.2	21.3	21.4	138.0
	16QAM	1	0	21.2	21.1	21.3	134.9
		1	3	21.3	21.1	21.4	138.0
		1	5	21.3	21.0	21.3	134.9
		3	0	21.0	21.0	21.5	**141.3**
		3	1	21.2	21.0	21.4	138.0
		3	3	21.3	21.0	21.4	138.0
		6	0	20.3	20.0	20.5	112.2

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LTE Band 26 (Part 90)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power	
				Measured Pwr (dBm)	Measured Pwr (mW)
				26765	26765
				821.5 MHz	821.5 MHz
15 MHz	QPSK	1	0	22.4	173.8
		1	37	22.9	**195.0**
		1	74	22.4	173.8
		36	0	21.6	144.5
		36	20	21.8	151.4
		36	39	21.6	144.5
		75	0	21.6	144.5
	16QAM	1	0	22.1	162.2
		1	37	22.3	**169.8**
		1	74	22.0	158.5
		36	0	20.5	112.2
		36	20	20.7	117.5
		36	39	20.5	112.2
		75	0	20.6	114.8
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	Measured Pwr (mW)
				26740	26740
				819 MHz	819 MHz
10 MHz	QPSK	1	0	22.5	177.8
		1	25	22.7	**186.2**
		1	49	22.7	**186.2**
		25	0	21.6	144.5
		25	12	21.7	147.9
		25	25	21.6	144.5
		50	0	21.6	144.5
	16QAM	1	0	21.8	**151.4**
		1	25	21.7	147.9
		1	49	21.3	134.9
		25	0	20.7	117.5
		25	12	20.7	117.5
		25	25	20.5	112.2
		50	0	20.5	112.2

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BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)		Measured Pwr (mW)
				26715	26765	Worst CH
				816.5 MHz	821.5 MHz	
5 MHz	QPSK	1	0	22.4	22.3	173.8
		1	12	22.8	22.5	**190.5**
		1	24	22.5	22.2	177.8
		12	0	21.5	21.3	141.3
		12	7	21.7	21.4	147.9
		12	13	21.6	21.4	144.5
		25	0	21.5	21.3	141.3
	16QAM	1	0	21.3	21.2	134.9
		1	12	21.6	21.3	**144.5**
		1	24	21.5	20.8	141.3
		12	0	20.4	20.3	109.6
		12	7	20.4	20.3	109.6
		12	13	20.4	20.2	109.6
		25	0	20.4	20.4	109.6
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)		Measured Pwr (mW)
				26705	26775	Worst CH
				815.5 MHz	822.5 MHz	
3 MHz	QPSK	1	0	22.5	22.5	**177.8**
		1	8	22.5	22.5	**177.8**
		1	14	22.5	22.4	**177.8**
		8	0	21.6	21.4	144.5
		8	4	21.6	21.4	144.5
		8	7	21.6	21.5	144.5
		15	0	21.5	21.5	141.3
	16QAM	1	0	21.7	21.2	147.9
		1	8	22.0	21.3	**158.5**
		1	14	21.6	21.2	144.5
		8	0	20.7	20.6	117.5
		8	4	20.7	20.4	117.5
		8	7	20.7	20.5	117.5
		15	0	20.7	20.3	117.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)		Measured Pwr (mW)
				26697	26783	Worst CH
				814.7 MHz	823.3 MHz	
1.4 MHz	QPSK	1	0	22.5	22.2	177.8
		1	3	22.5	22.3	177.8
		1	5	22.5	22.4	177.8
		3	0	21.6	22.4	**182.0**
		3	1	21.6	22.4	**182.0**
		3	3	21.6	22.4	**182.0**
		6	0	21.5	21.5	147.9
	16QAM	1	0	21.7	21.4	147.9
		1	3	22.0	21.4	**151.4**
		1	5	21.6	21.4	138.0
		3	0	20.7	21.5	141.3
		3	1	20.7	21.7	147.9
		3	3	20.7	21.7	147.9
		6	0	20.7	20.7	117.5

LTE Band 26 (Part22)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power			
				Measured Pwr (dBm)			Measured Pwr (mW)
				26865	26965		Worst CH
				831.5 MHz	841.5 MHz		
15 MHz	QPSK	1	0	22.6	22.5		182.0
		1	37	23.1	22.6		**204.2**
		1	74	22.8	22.5		190.5
		36	0	21.6	21.6		144.5
		36	20	21.6	21.7		147.9
		36	39	21.6	21.4		144.5
		75	0	21.5	21.5		141.3
	16QAM	1	0	21.6	21.7		147.9
		1	37	21.6	21.8		**151.4**
		1	74	21.5	21.1		141.3
		36	0	20.5	20.6		114.8
		36	20	20.6	20.6		114.8
		36	39	20.4	20.4		109.6
		75	0	20.4	20.4		109.6

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				26840	26865	26990	Worst CH
				829.0 MHz	831.5 MHz	844 MHz	
10 MHz	QPSK	1	0	22.3	22.7	22.5	186.2
		1	25	22.5	23.0	22.9	**199.5**
		1	49	22.2	22.8	22.6	190.5
		25	0	21.4	21.6	21.7	147.9
		25	12	21.4	21.6	21.6	144.5
		25	25	21.2	21.6	21.5	144.5
		50	0	21.3	21.5	21.6	144.5
	16QAM	1	0	21.4	21.7	21.7	147.9
		1	25	21.4	22.4	21.8	**173.8**
		1	49	21.0	21.7	21.1	147.9
		25	0	20.6	20.5	20.7	117.5
		25	12	20.4	20.6	20.7	117.5
		25	25	20.3	20.5	20.5	112.2
		50	0	20.2	20.4	20.5	112.2

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				26815	26865	27015	Worst CH
				826.5 MHz	831.5 MHz	846.5 MHz	
5 MHz	QPSK	1	0	22.5	22.5	21.9	177.8
		1	12	22.4	22.8	22.3	**190.5**
		1	24	22.0	22.6	22.2	182.0
		12	0	21.4	21.6	21.5	144.5
		12	7	21.4	21.7	21.5	147.9
		12	13	21.3	21.6	21.5	144.5
		25	0	21.3	21.5	21.6	144.5
	16QAM	1	0	20.9	21.4	21.4	138.0
		1	12	20.6	21.5	21.6	**144.5**
		1	24	20.2	21.1	21.3	134.9
		12	0	20.3	20.5	20.4	112.2
		12	7	20.3	20.4	20.5	112.2
		12	13	20.2	20.4	20.6	114.8
		25	0	20.3	20.6	20.6	114.8
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				26805	26865	27025	Worst CH
				825.5 MHz	831.5 MHz	847.5 MHz	
3 MHz	QPSK	1	0	22.4	22.9	22.4	195.0
		1	8	22.6	23.0	22.5	**199.5**
		1	14	22.4	22.8	22.4	190.5
		8	0	21.5	21.7	21.5	147.9
		8	4	21.4	21.7	21.6	147.9
		8	7	21.4	21.6	21.6	144.5
		15	0	21.4	21.6	21.7	147.9
	16QAM	1	0	21.5	21.6	21.4	144.5
		1	8	21.7	22.0	21.6	**158.5**
		1	14	21.4	21.6	21.6	144.5
		8	0	20.5	20.7	20.6	117.5
		8	4	20.5	20.7	20.8	120.2
		8	7	20.5	20.6	20.7	117.5
		15	0	20.3	20.5	20.6	114.8
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			Measured Pwr (mW)
				26797	26865	27033	Worst CH
				824.7	831.5 MHz	848.3 MHz	
1.4 MHz	QPSK	1	0	22.5	22.5	22.5	177.8
		1	3	22.6	22.6	22.6	182.0
		1	5	22.4	22.7	22.5	**186.2**
		3	0	22.5	22.7	22.7	**186.2**
		3	1	22.6	22.7	22.6	**186.2**
		3	3	22.4	22.7	22.6	**186.2**
		6	0	21.5	21.7	21.7	147.9
	16QAM	1	0	21.3	21.7	21.6	147.9
		1	3	21.5	21.8	21.8	151.4
		1	5	21.3	21.6	21.6	144.5
		3	0	21.5	21.3	22.1	**162.2**
		3	1	21.6	21.3	21.8	151.4
		3	3	21.5	21.3	21.7	147.9
		6	0	20.3	20.4	20.7	117.5

LTE Band 26 (Straddle)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)	
				Measured Pwr (dBm)	Measured Pwr (mW)
				26790	26790
				824 MHz	824 MHz
15 MHz	QPSK	1	0	22.4	173.8
		1	37	22.8	**190.5**
		1	74	22.6	182.0
		36	0	21.7	147.9
		36	20	21.7	147.9
		36	39	21.5	141.3
		75	0	21.5	141.3
	16QAM	1	0	21.7	147.9
		1	37	21.8	151.4
		1	74	21.2	131.8
		36	0	20.7	117.5
		36	20	20.6	114.8
		36	39	20.4	109.6
		75	0	20.4	109.6
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	Measured Pwr (mW)
				26790	26790
				824 MHz	824 MHz
10 MHz	QPSK	1	0	22.5	177.8
		1	25	22.8	**190.5**
		1	49	22.2	166.0
		25	0	21.7	147.9
		25	12	21.6	144.5
		25	25	21.6	144.5
		50	0	21.6	144.5
	16QAM	1	0	21.6	144.5
		1	25	21.7	**147.9**
		1	49	21.0	125.9
		25	0	20.5	112.2
		25	12	20.6	114.8
		25	25	20.6	114.8
		50	0	20.5	112.2

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	Measured Pwr (mW)
				26790	26790
				824 MHz	824 MHz
5 MHz	QPSK	1	0	22.3	169.8
		1	12	22.5	**177.8**
		1	24	22.1	162.2
		12	0	21.6	144.5
		12	7	21.7	147.9
		12	13	21.7	147.9
		25	0	21.7	147.9
	16QAM	1	0	21.3	134.9
		1	12	21.6	**144.5**
		1	24	21.1	128.8
		12	0	20.6	114.8
		12	7	20.7	117.5
		12	13	20.6	114.8
		25	0	20.6	114.8
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	Measured Pwr (mW)
				26790	26790
				824 MHz	824 MHz
3 MHz	QPSK	1	0	22.6	**182.0**
		1	8	22.6	**182.0**
		1	14	22.6	**182.0**
		8	0	21.7	147.9
		8	4	21.7	147.9
		8	7	21.6	144.5
		15	0	21.7	147.9
	16QAM	1	0	21.8	151.4
		1	8	21.9	**154.9**
		1	14	21.2	131.8
		8	0	20.5	112.2
		8	4	20.6	114.8
		8	7	20.6	114.8
		15	0	20.7	117.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)	Measured Pwr (mW)
				26790	26790
				824 MHz	824 MHz
1.4 MHz	QPSK	1	0	22.6	182.0
		1	3	22.7	**186.2**
		1	5	22.6	182.0
		3	0	22.5	177.8
		3	1	22.6	182.0
		3	3	22.6	182.0
		6	0	21.7	147.9
	16QAM	1	0	21.5	141.3
		1	3	21.7	147.9
		1	5	21.7	147.9
		3	0	21.8	**151.4**
		3	1	21.8	**151.4**
		3	3	21.8	**151.4**
		6	0	20.8	120.2

LTE Band 5

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 824-849 MHz under Part 22H) 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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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Allowed Max. Peak Gain (dBi)
GSM1900 / WCDMA Band 2 / LTE Band 2 1850 ~ 1910 MHz	3.5
WCDMA Band 4 / LTE Band 4 1710 ~ 1755 MHz	5.0
GSM850 / WCDMA Band 5 / LTE Band 5 / LTE Band 26 814 ~ 849 MHz	5.6
LTE Band 12 / LTE Band 17 699 ~ 716 MHz	6.6
LTE Band 7 2500 ~ 2570 MHz	9.0

5.4. WORST-CASE ORIENTATION

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

- GSM GPRS
- UMTS REL 99/HSDPA

For all 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 modulations. It was found that QPSK and 16QAM results were worst case. All testing was performed using QPSK and 16QAM modulations to represent the worst case. However, the out band emissions and spurious radiation were only performed on bandwidth and RB offset(with RB size 1) with the highest power in QPSK.

Highest power setting for each bands				
LTE Band	**Frequency (MHz)**	**Bandwidth (MHz)**	**RB size**	**RB offset**
2	1857.5	15	1	37
	1880		1	0
	1902.5		1	37
4	1717.5	15	1	37
	1732.5		1	37
	1747.5		1	37
7	2505	10	1	25
	2535		1	25
	2565		1	25
12	704	10	1	0
	707.5		1	25
	711		1	25
26 (Straddle)	824	15	1	37
26 (Part 90)	821.5	15	1	37
26 (Part 22)	831.5	15	1	37
	841.5		1	37

The 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	RSE		
	X	Y	Z
GSM850	-	O	-
GSM1900	-	O	-
WCDMA B5	-	O	-
WCDMA B4	-	-	O
WCDMA B2	-	O	-
LTE B2	-	-	O
LTE B4	-	-	O
LTE B7	-	-	O
LTE B12	-	O	-
LTE B26	O	-	-

Note 1. : The EUT is continuously communicated with the call box during the tests.
Note 2. : LTE Band 26 lower band (814-824MHz) is not used in Canada
Note 3. : For radiated spurious emissions, while ANSI C63.26 allows the antenna port to be terminated in a load an antenna was connected to the RF port to allow connection to the call box.

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
JIG Board	AM TELECOM	None	None	None
External Antenna x 2ea	AM TELECOM	HW-MULTI-MDW-SMA-L	None	None

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	DC IN	Shielded	1.0m	N/A
2	Main ANT	2	MHF Type	Shielded	2.0m	N/A
3	DRX ANT	3	MHF Type	Shielded	2.0m	N/A

TEST SETUP

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

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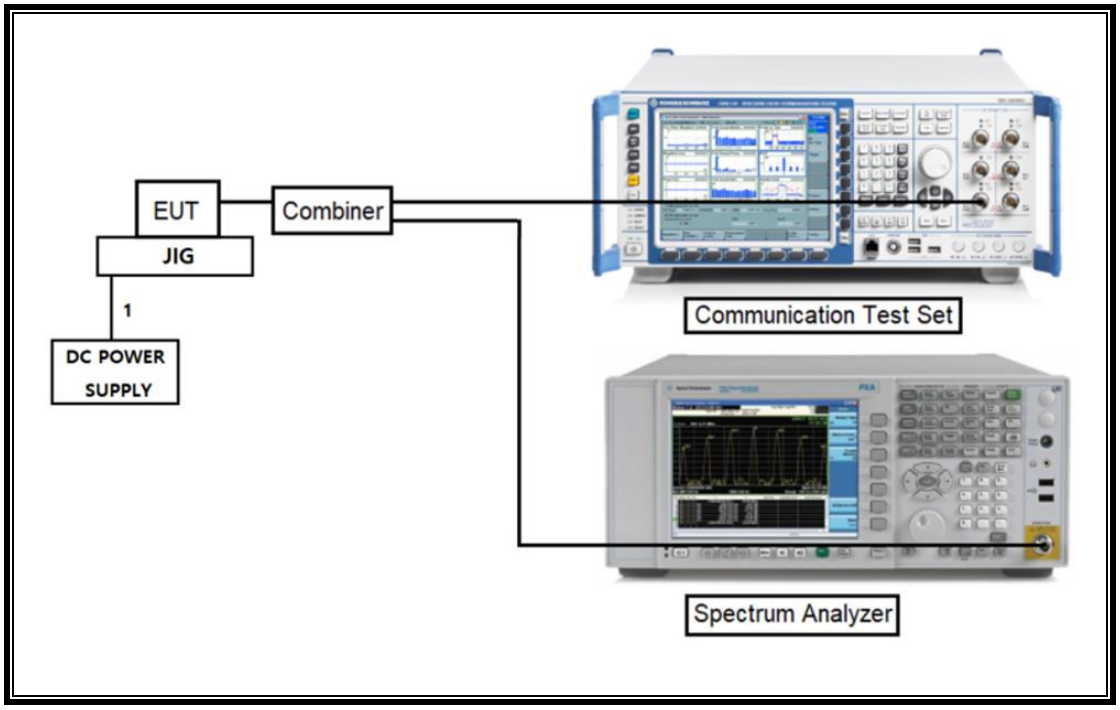
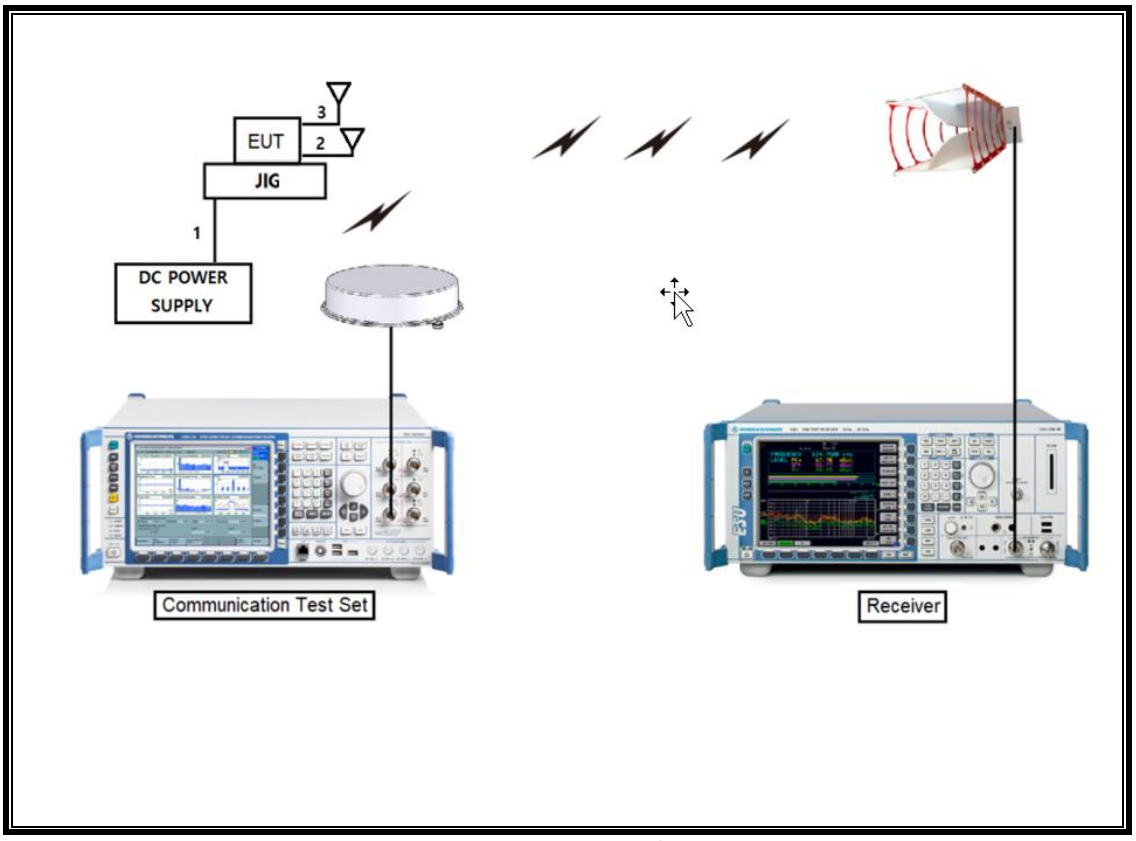
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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	02-08-23
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	08-04-22
Antenna, Horn, 40 GHz	ETS	3116C	00168645	10-02-21
Preamplifier	ETS	3116C-PA	00168841	08-06-21
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-19-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-13-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-13-22
Antenna, Horn, 18 GHz	ETS	3115	00167211	07-27-22
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-15-22
Antenna, Horn, 18 GHz	ETS	3117	00168724	07-27-22
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-15-22
Communications Test Set	R&S	CMW500	150314	08-04-21
DC Power Supply	Agilent / HP	E3640A	MY54226395	08-05-21
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-06-21
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-04-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-03-21
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY57143717	01-13-22
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY57143652	01-13-22
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-03-21
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	08-05-21
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	08-05-21
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	08-05-21
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	08-05-21
Attenuator	PASTERNACK	PE7087-10	A009	08-05-21
Attenuator	PASTERNACK	PE7087-10	A001	08-03-21
Attenuator	PASTERNACK	PE7087-10	A008	08-03-21
Attenuator	PASTERNACK	PE7004-10	2	08-04-21
Attenuator	PASTERNACK	PE7395-10	A011	08-05-21
Temperature Chamber	ESPEC	PL-3J	15011850	08-04-21
Power Splitter	MINI-CIRCUITS	WA1534	UL001	01-27-22
Power Splitter	MINI-CIRCUITS	WA1534	UL002	01-27-22
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Antenna port test software	UL	CLT	Ver 2.5	

7. SUMMARY TABLE

FCC Part Section	ISED Section	Test Description	Test Limit	Test Condition	Test Result
2.1049	RSS-Gen	Occupied Band width (99%)	N/A	Conducted	Pass
22.917(a) 24.238(a) 27.53(g),(h) 90.691	RSS-130 (4.7) RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Band Edge / Conducted Spurious Emission	-13dBm		Pass
27.53(m)	RSS-199 (4.5)	Conducted Spurious Emission	-25dBm		Pass
27.53(m) 90.691	RSS-199 (4.5)	Emission mask	Section 9.2.2		Pass
2.1046	N/A	Conducted output power	N/A		Pass
22.355 24.235 27.54 90.213	RSS-130 (4.5) RSS-132 (5.3) RSS-133 (6.3) RSS-139 (6.4) RSS-199 (4.3)	Frequency Stability	2.5PPM		Pass
22.913(a)(5)	N/A	Effective Radiated Power	38.5dBm	Radiated	Pass
90.635(b)	N/A		50 dBm		Pass
27.50(c)(10)	RSS-130 (4.6)		34.77dBm		Pass
24.232(c) 27.50(h)(2)	RSS-133 (6.4) RSS-199 (4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass
N/A	RSS-132 (5.4)		40.6dBm		Pass
27.50(d)(4)	RSS-139 (6.5)		30dBm		Pass
22.917(a) 24.238(a) 27.53(g),(h) 90.691	RSS-130 (4.7) RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Radiated Spurious Emission	-13dBm		Pass
27.53 (m)	RSS-199 (4.5)		-25dBm		Pass

8. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to a CMW500 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.

RESULTS

See the following pages.

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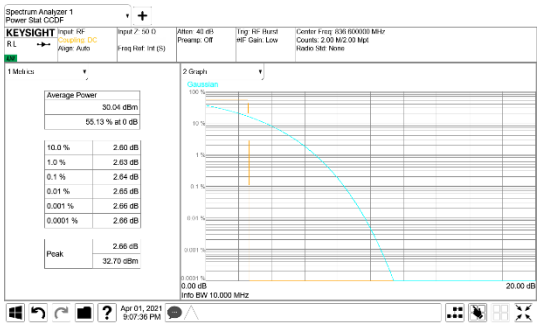
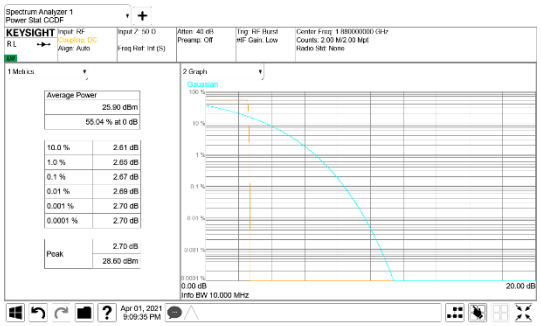
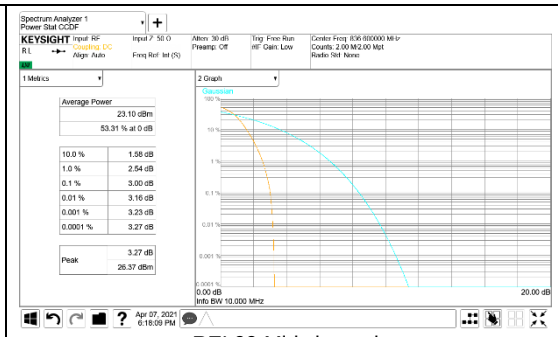
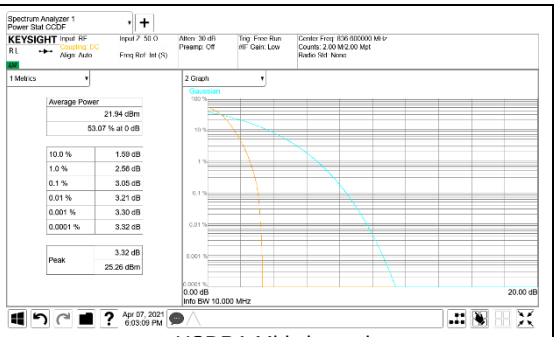
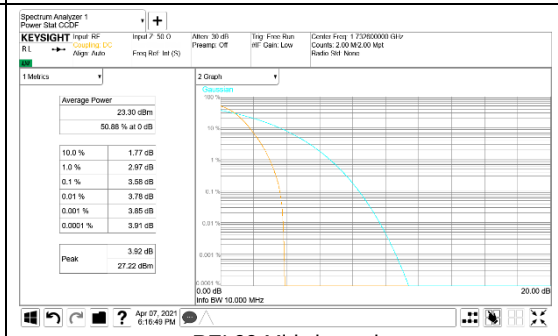
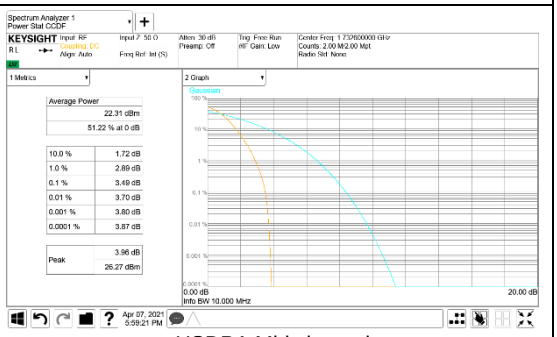
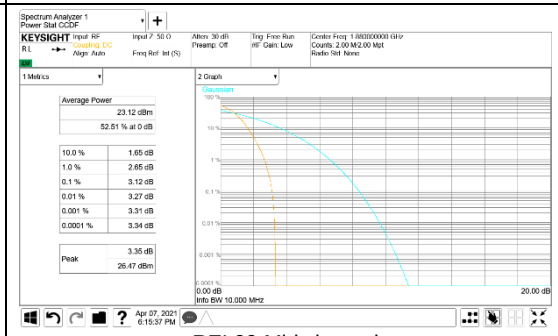
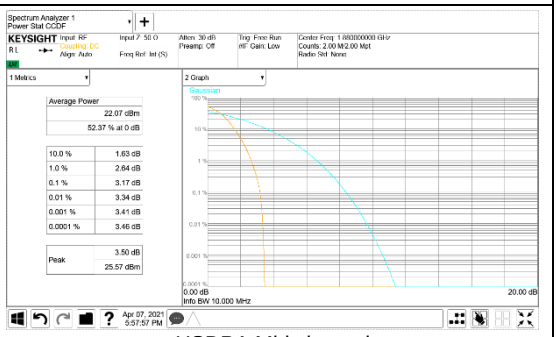
8.1. CONDUCTED PEAK TO AVERAGE RESULT

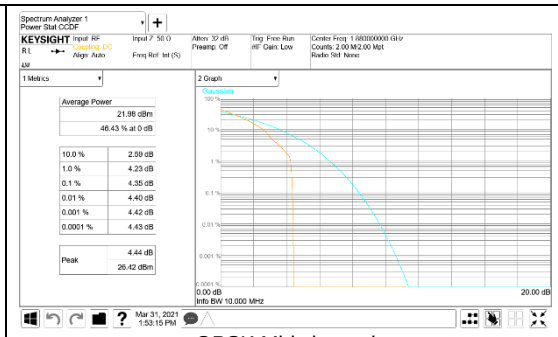
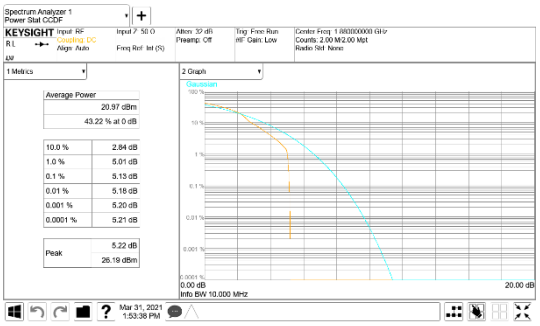
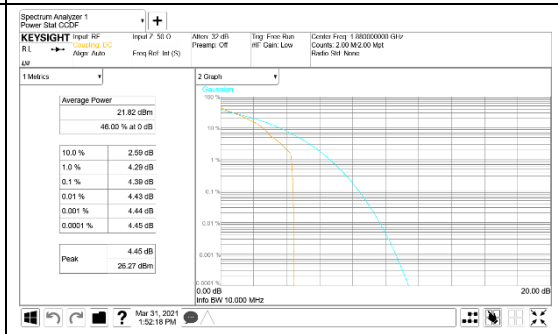
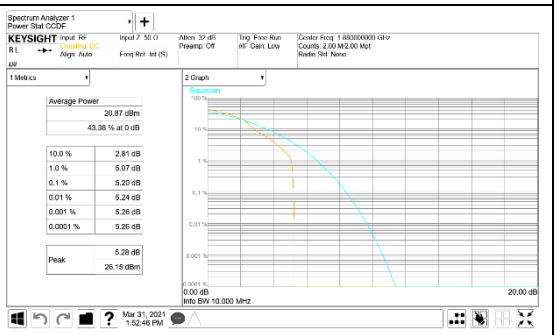
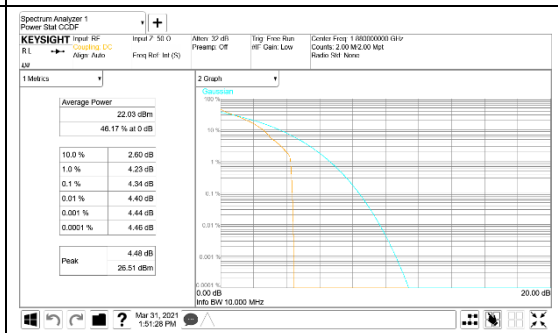
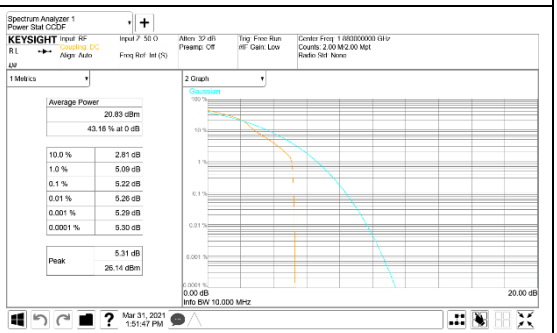
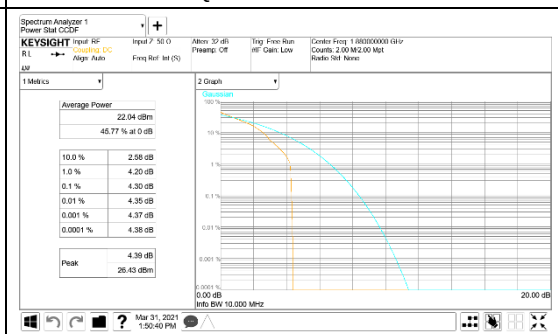
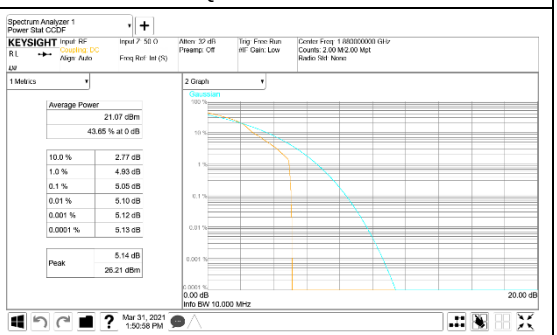
GSM

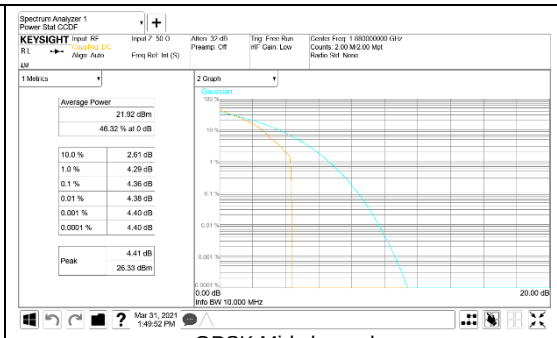
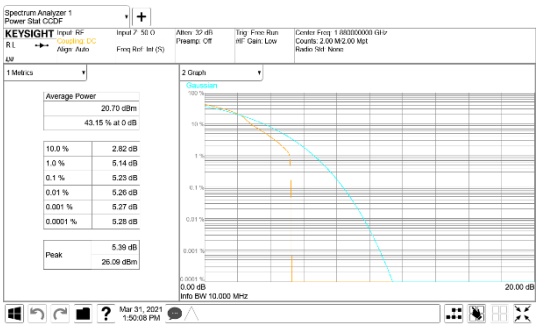
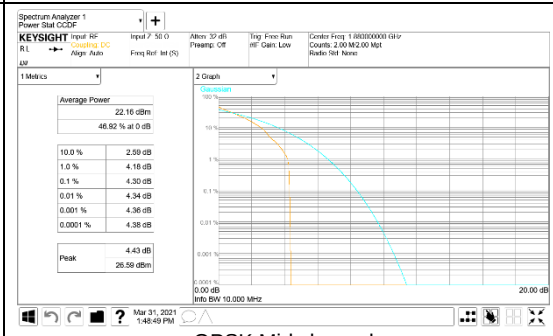
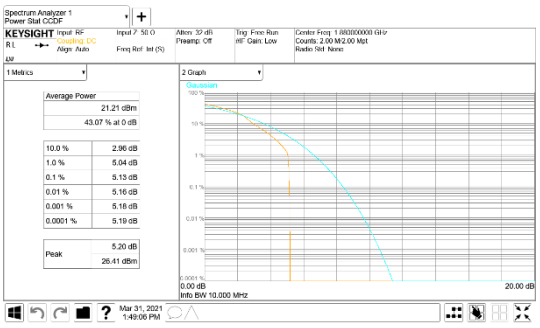
GSM 850	 GPRS Mid channel
GSM 1900	 GPRS Mid channel

WCDMA

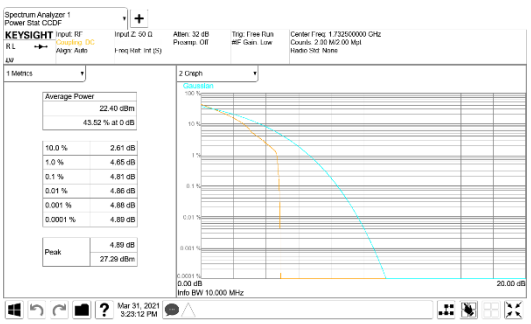
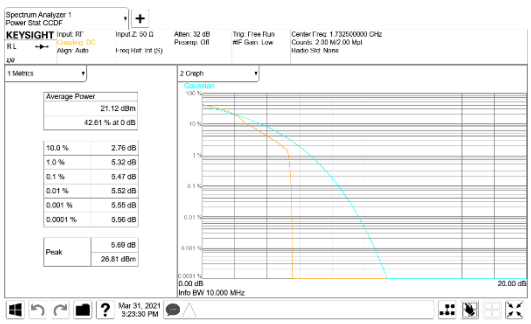
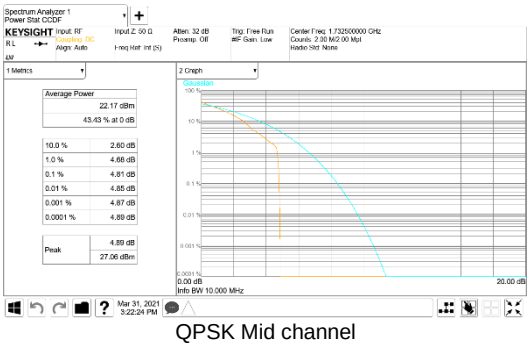
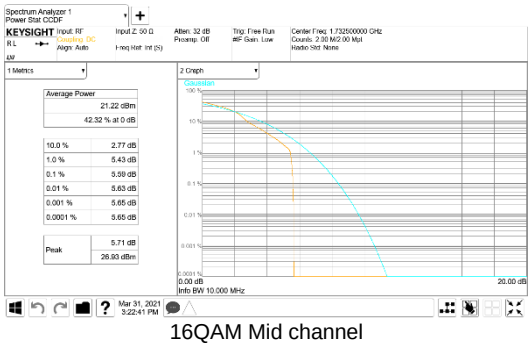
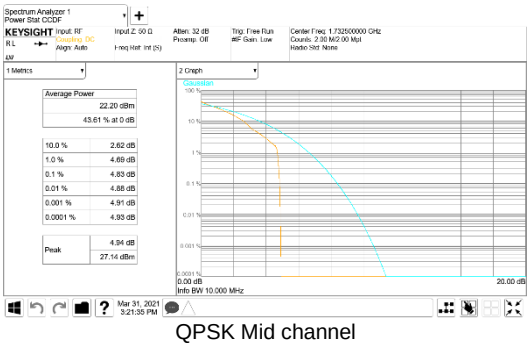
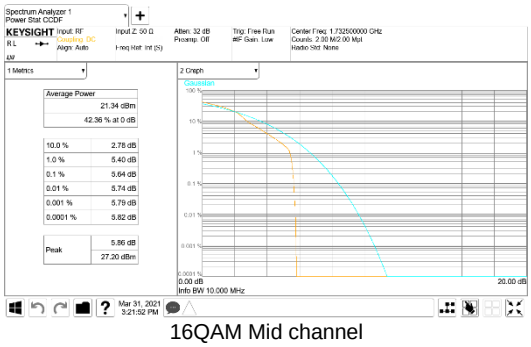
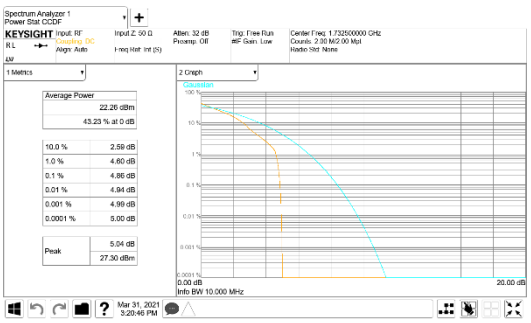
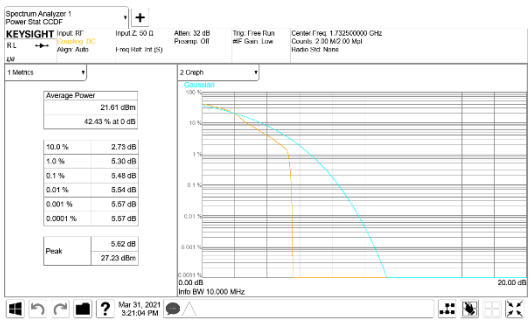
WCDMA Band 5	 REL99 Mid channel	 HSDPA Mid channel
WCDMA Band 4	 REL99 Mid channel	 HSDPA Mid channel
WCDMA Band 2	 REL99 Mid channel	 HSDPA Mid channel

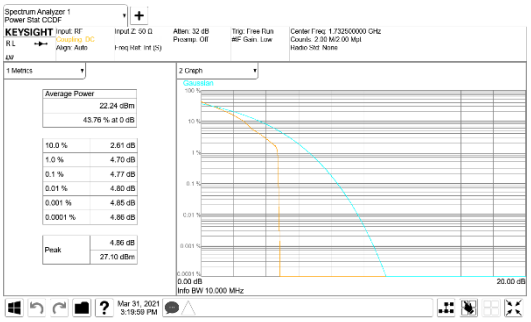
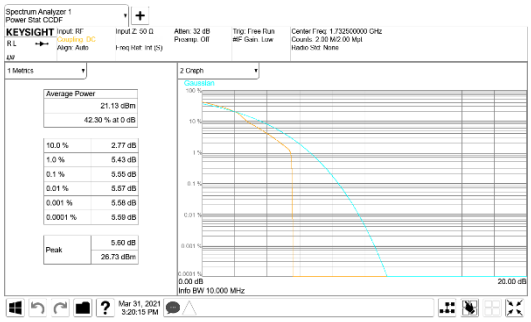
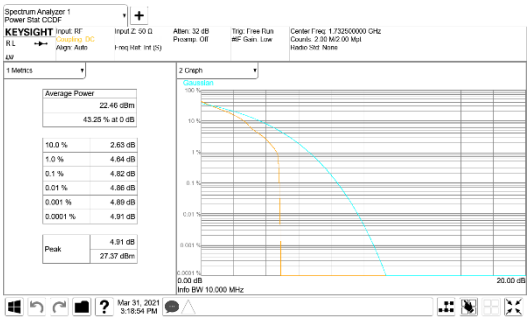
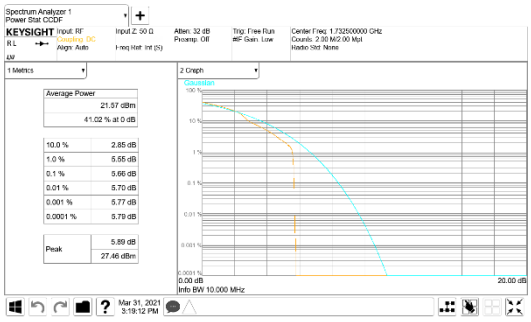
LTE Band 2

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

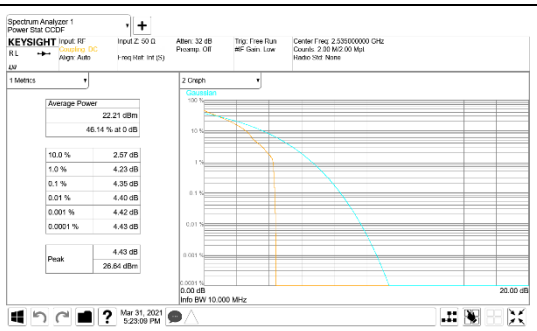
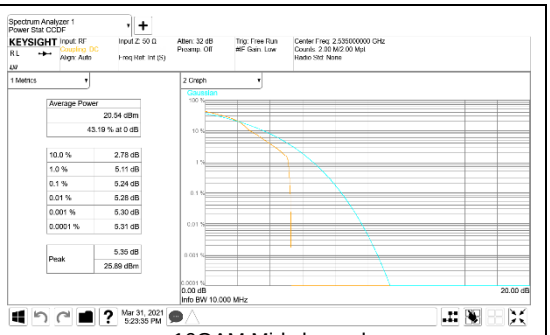
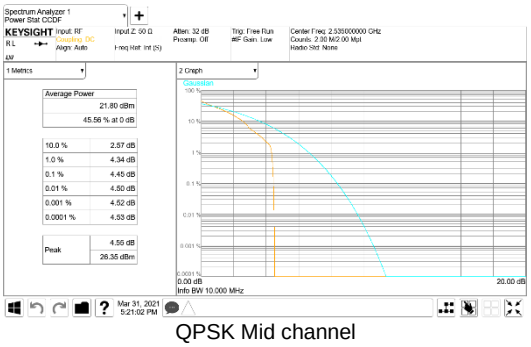
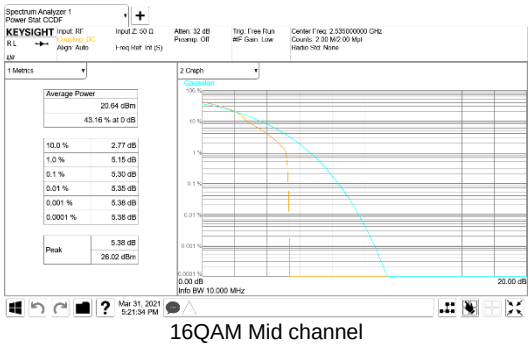
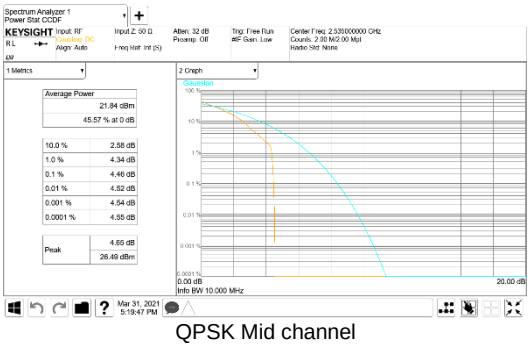
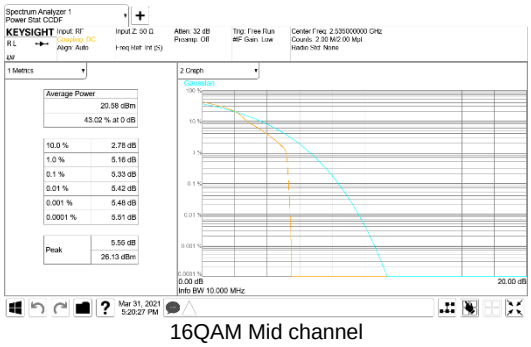
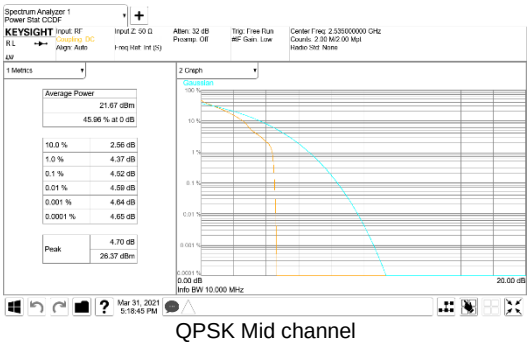
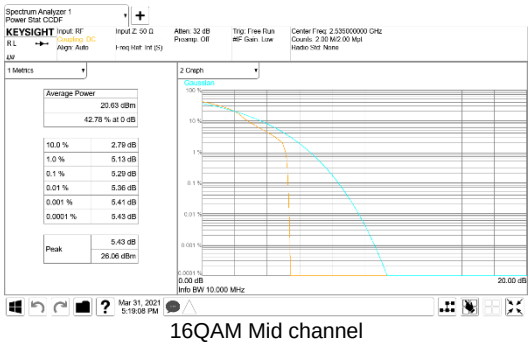
3 MHz	 QPSK Mid channel	 16QAM Mid channel
1.4 MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 4

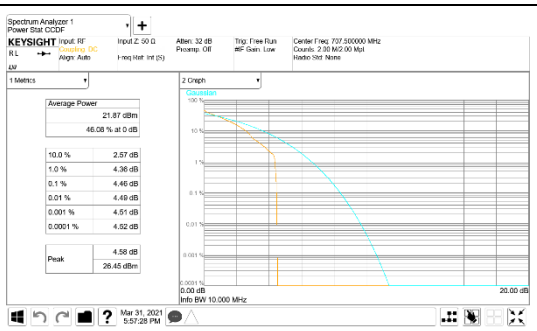
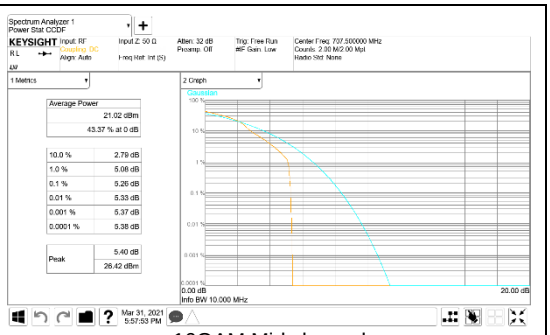
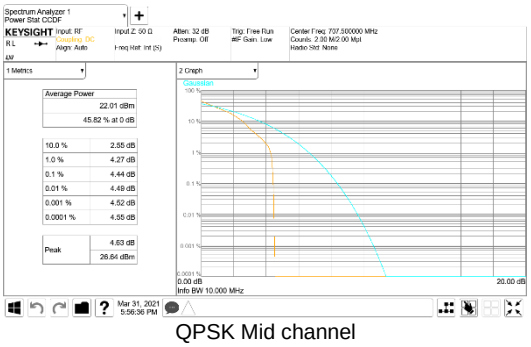
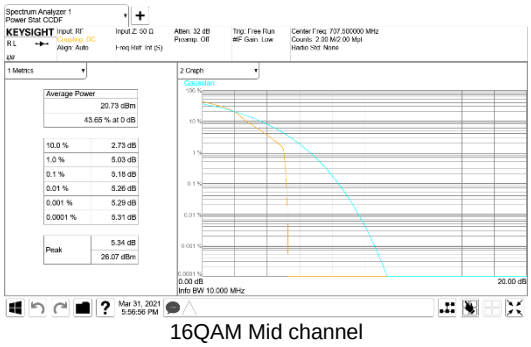
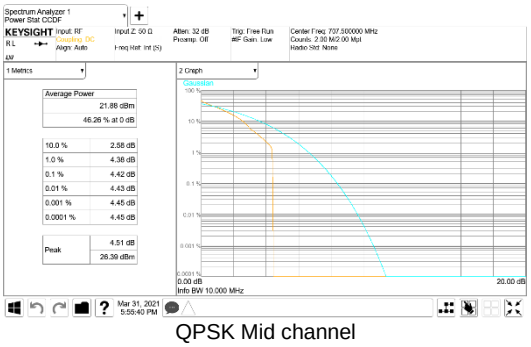
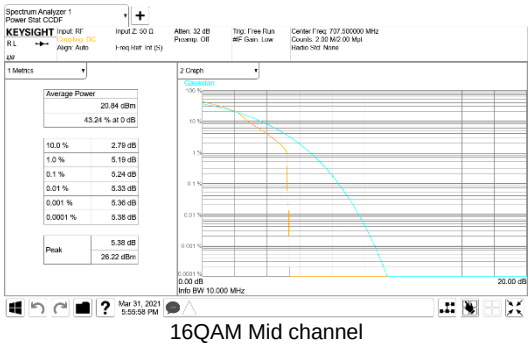
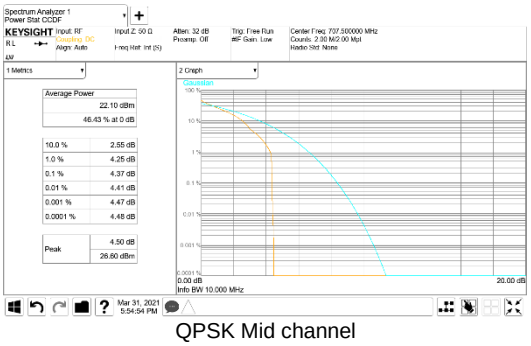
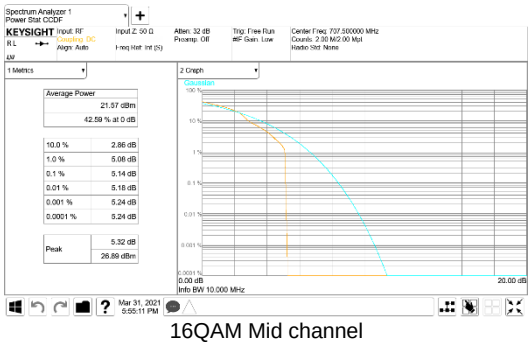
20 MHz	 QPSK Mid channel	 16QAM Mid channel
15 MHz	 QPSK Mid channel	 16QAM Mid channel
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel

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

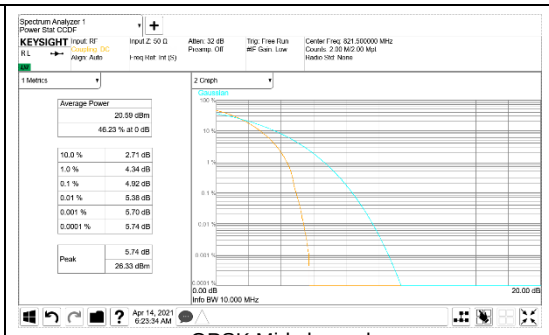
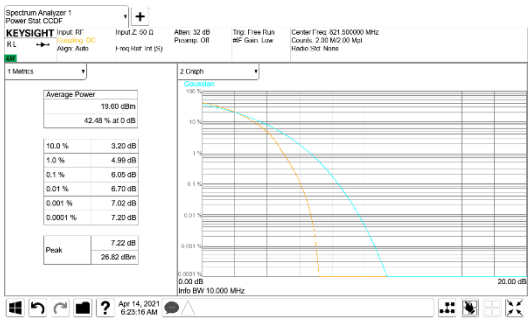
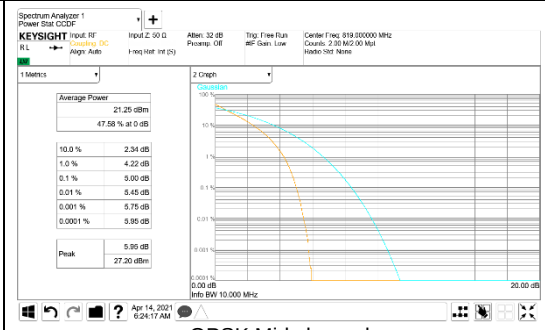
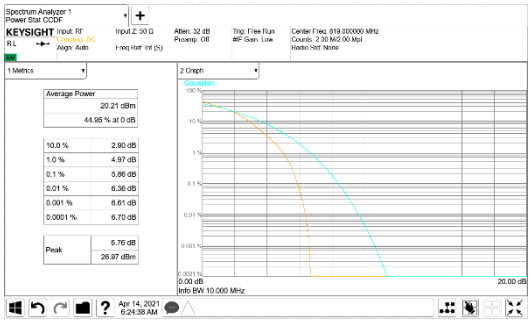
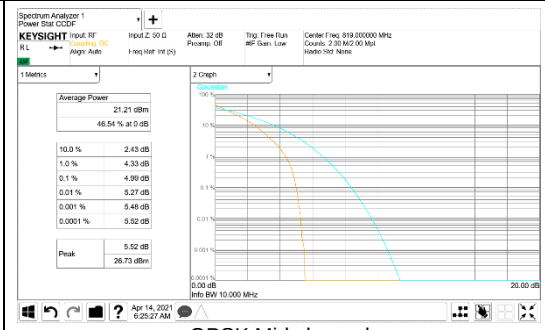
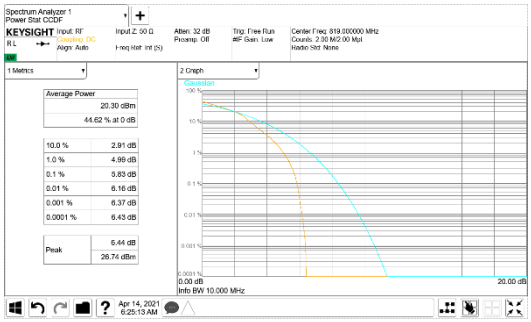
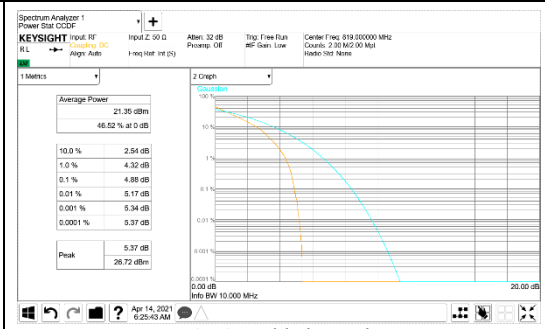
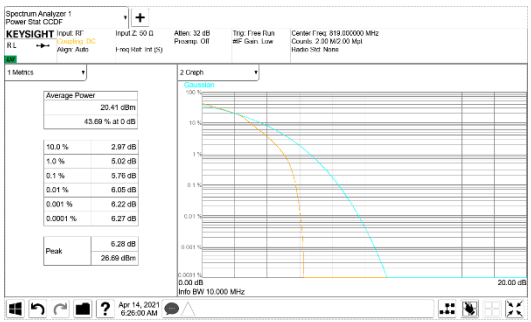
LTE Band 7

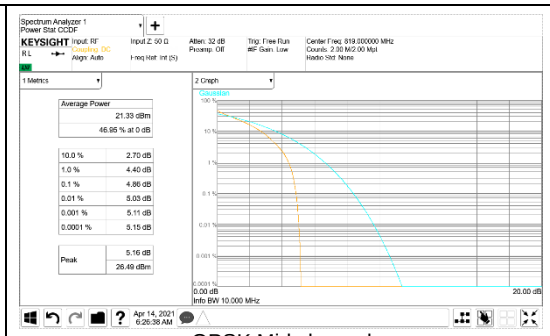
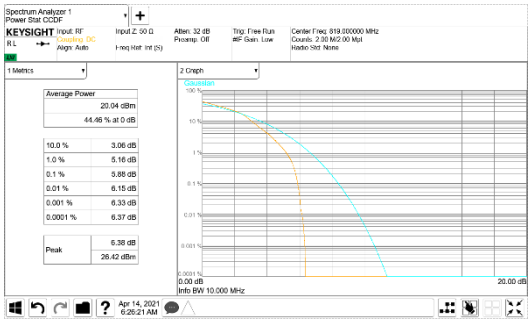
20 MHz	 QPSK Mid channel	 16QAM Mid channel
15 MHz	 QPSK Mid channel	 16QAM Mid channel
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel

LTE Band 12

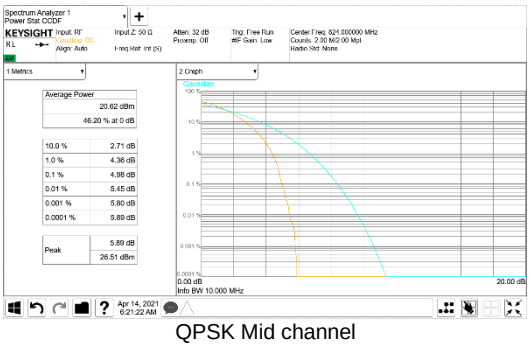
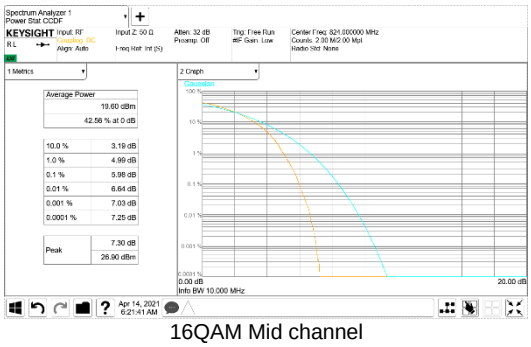
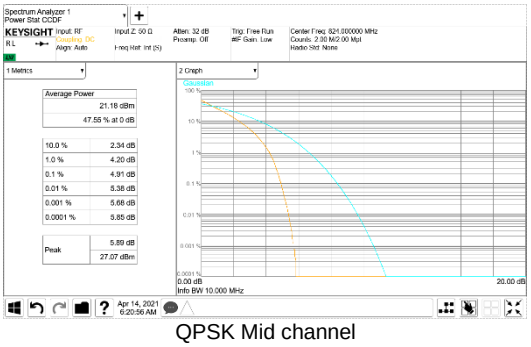
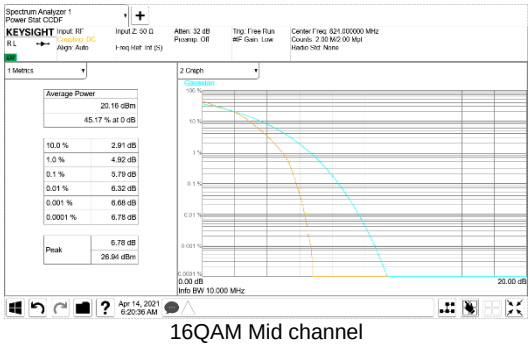
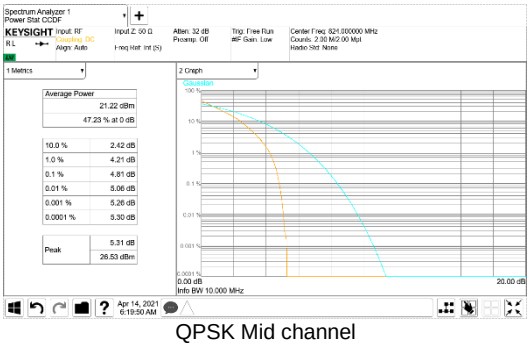
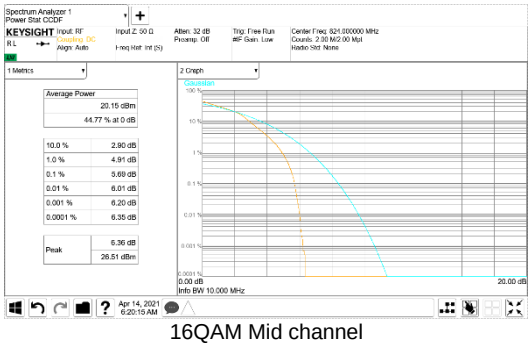
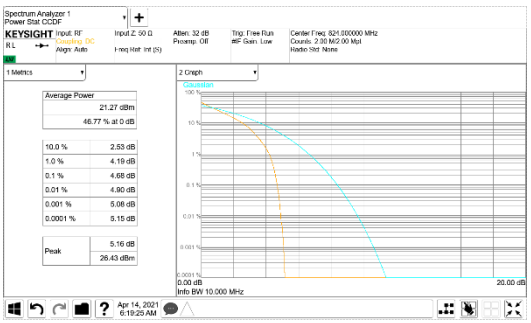
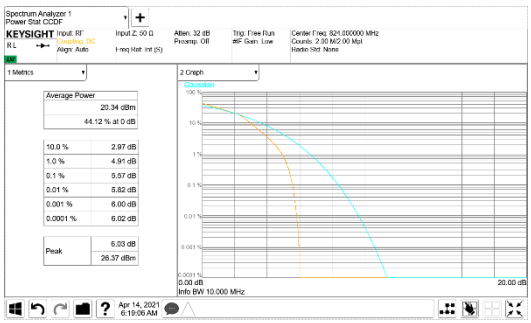
10 MHz	 QPSK Mid channel	 16QAM Mid channel
5 MHz	 QPSK Mid channel	 16QAM Mid channel
3 MHz	 QPSK Mid channel	 16QAM Mid channel
1.4 MHz	 QPSK Mid channel	 16QAM Mid channel

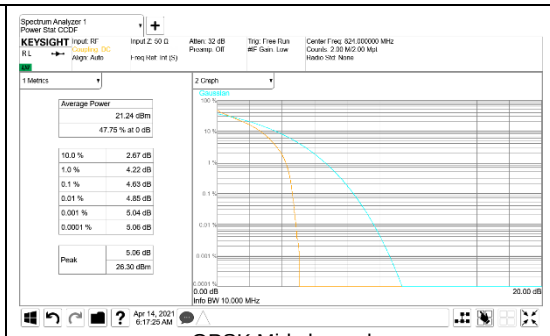
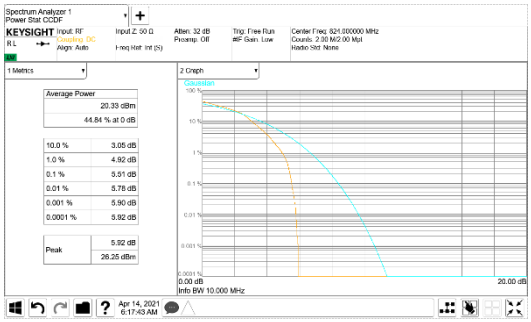
LTE Band 26 (Part 90)

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

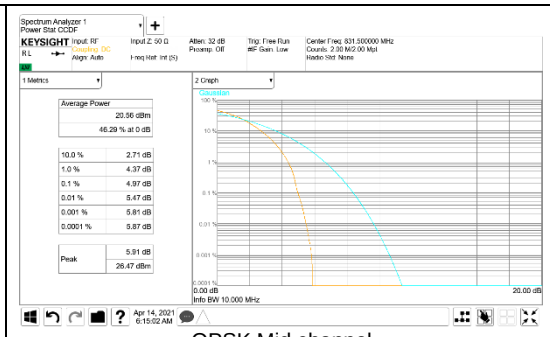
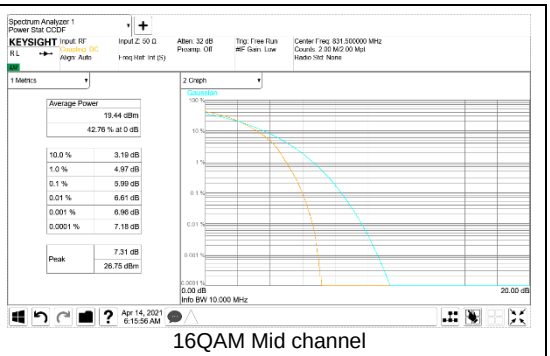
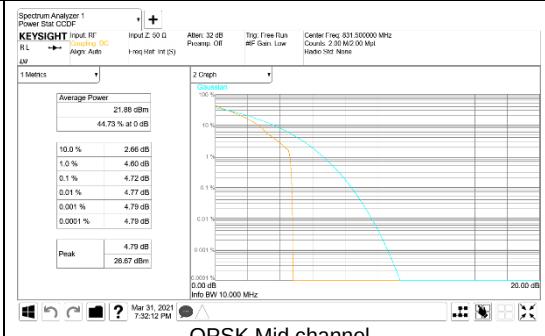
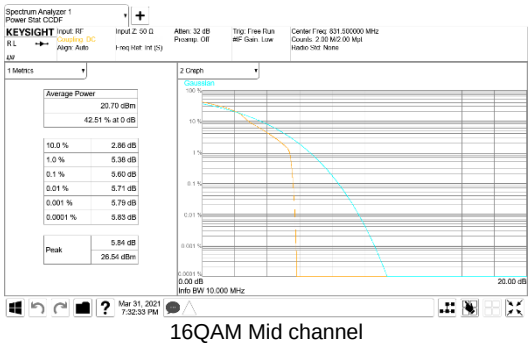
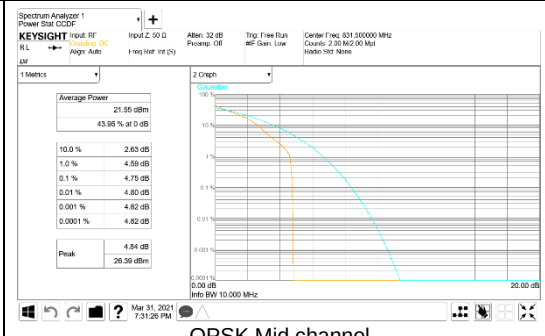
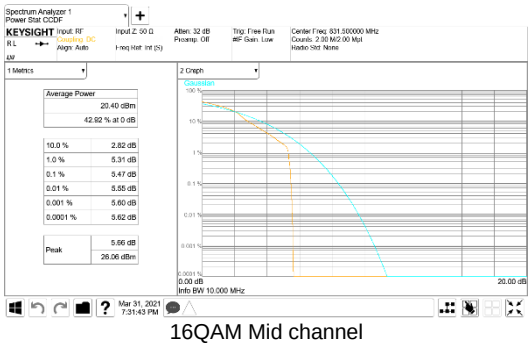
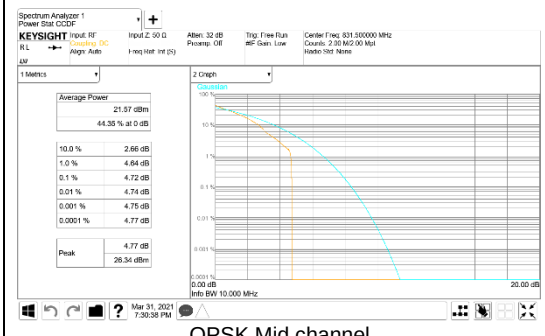
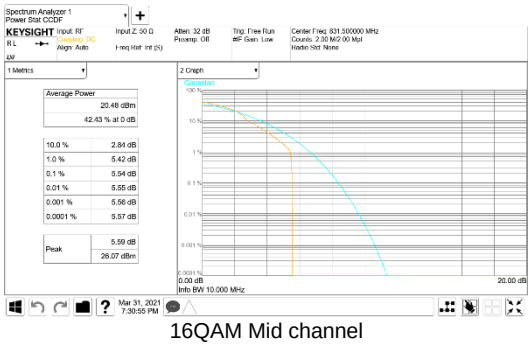
1.4 MHz	 QPSK Mid channel	 16QAM Mid channel

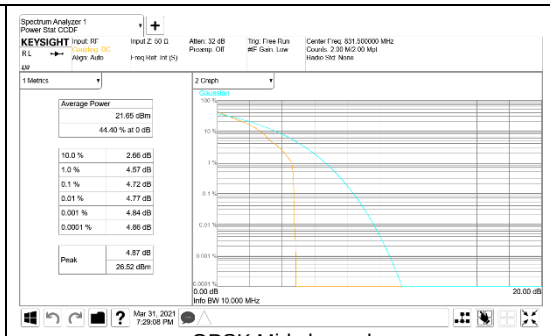
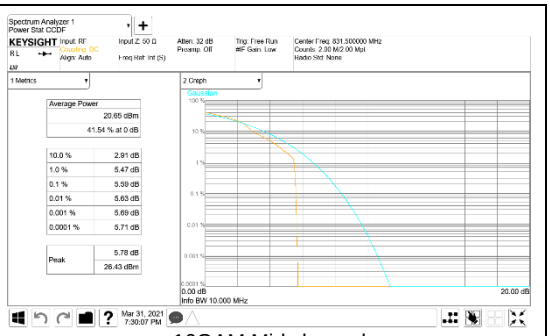
LTE Band 26 (Straddle)

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

LTE Band 26 (Part 22)

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

LTE Band 5

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 824-849 MHz under Part 22H) 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.

9. LIMITS AND CONDUCTED RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
IC: RSS-Gen Issue 5 (6.7)

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 the low, middle and high 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.

9.1.1. OCCUPIED BANDWIDTH DATA

GSM

Band	Modulation	f [MHz]	99% BW	-26dB BW
			(kHz)	(kHz)
850	GPRS	836.6	244.06	321.40
1900	GPRS	1880	245.06	316.50

WCDMA

Band	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
B5	Rel.99	836.6	4.120	4.703
	HSDPA		4.132	4.702
B4	Rel.99	1732.6	4.136	4.670
	HSDPA		4.123	4.661
B2	Rel.99	1880	4.120	4.703
	HSDPA		4.132	4.702

LTE Band 2

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B2	20M	QPSK	1880	17.901	19.360
		16QAM		17.866	19.400
	15M	QPSK	1880	13.403	14.540
		16QAM		13.412	14.610
	10M	QPSK	1880	8.958	9.870
		16QAM		8.949	9.749
	5M	QPSK	1880	4.526	5.022
		16QAM		4.503	5.020
	3M	QPSK	1880	2.701	2.964
		16QAM		2.701	2.981
	1.4M	QPSK	1880	1.093	1.313
		16QAM		1.095	1.299

LTE Band 4

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B4	20M	QPSK	1732.5	17.881	19.240
		16QAM		17.854	19.310
	15M	QPSK	1732.5	13.405	14.610
		16QAM		13.418	14.570
	10M	QPSK	1732.5	8.960	9.797
		16QAM		8.955	9.788
	5M	QPSK	1732.5	4.514	5.045
		16QAM		4.503	5.028
	3M	QPSK	1732.5	2.696	2.977
		16QAM		2.699	2.986
	1.4M	QPSK	1732.5	1.092	1.300
		16QAM		1.096	1.302

LTE Band 7

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B7	20M	QPSK	2535	17.854	19.210
		16QAM		17.850	19.250
	15M	QPSK	2535	13.437	14.540
		16QAM		13.408	14.580
	10M	QPSK	2535	8.956	9.867
		16QAM		8.951	9.815
	5M	QPSK	2535	4.520	5.020
		16QAM		4.500	5.012

LTE Band 12

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B12	10M	QPSK	707.5	8.960	9.835
		16QAM		8.937	9.824
	5M	QPSK	707.5	4.516	4.999
		16QAM		4.490	4.997
	3M	QPSK	707.5	2.694	2.991
		16QAM		2.701	2.979
	1.4M	QPSK	707.5	1.084	1.282
		16QAM		1.086	1.281

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LTE Band 26 (Part 90)

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B26 (Part 90)	15M	QPSK	821.5	13.411	14.580
		16QAM		13.400	14.540
	10M	QPSK	819	8.960	9.833
		16QAM		8.947	9.742
	5M	QPSK	819	4.496	4.984
		16QAM		4.485	4.963
	3M	QPSK	819	2.700	2.972
		16QAM		2.696	2.978
	1.4M	QPSK	819	1.094	1.268
		16QAM		1.090	1.281

LTE Band 26 (Straddle)

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B26 (Straddle)	15M	QPSK	824	13.444	14.580
		16QAM		13.424	14.520
	10M	QPSK	824	8.952	9.819
		16QAM		8.971	9.833
	5M	QPSK	824	4.495	4.973
		16QAM		4.491	4.967
	3M	QPSK	824	2.697	2.988
		16QAM		2.702	2.971
	1.4M	QPSK	824	1.098	1.283
		16QAM		1.085	1.288

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LTE Band 26 (Part 22)

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B26 (Part 22)	15M	QPSK	831.5	13.418	14.6
		16QAM		13.416	14.62
	10M	QPSK	831.5	8.972	9.824
		16QAM		8.955	9.741
	5M	QPSK	831.5	4.510	4.994
		16QAM		4.496	4.982
	3M	QPSK	831.5	2.697	2.975
		16QAM		2.694	2.979
	1.4M	QPSK	831.5	1.092	1.299
		16QAM		1.096	1.297

LTE Band 5

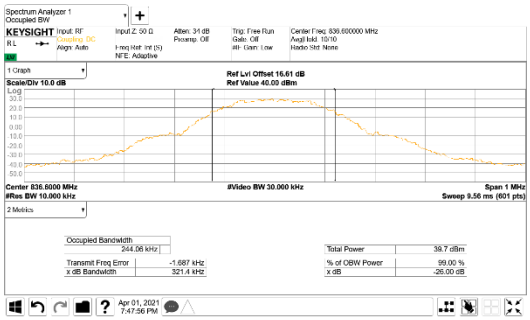
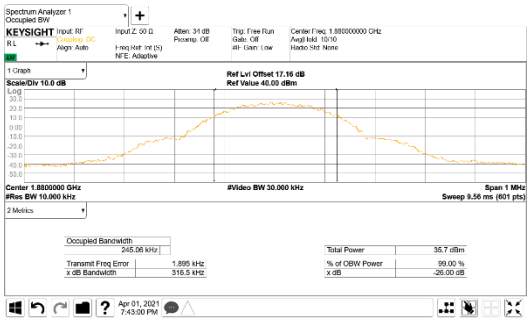
LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 824-849 MHz under Part 22H) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 17

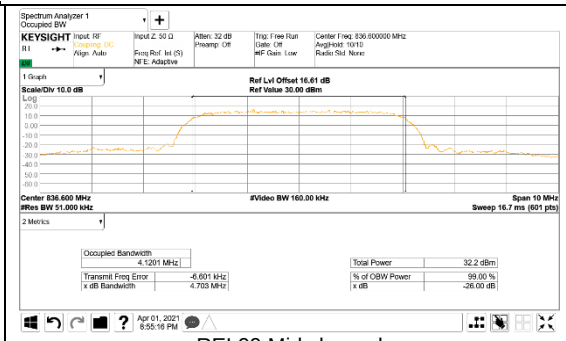
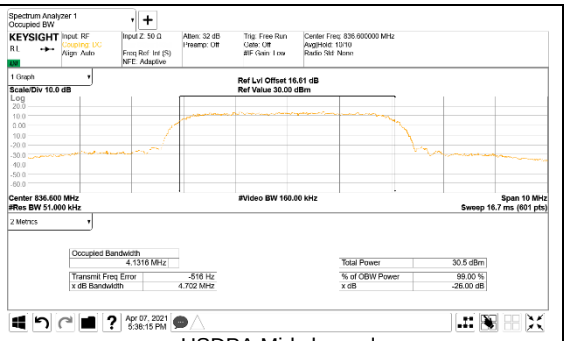
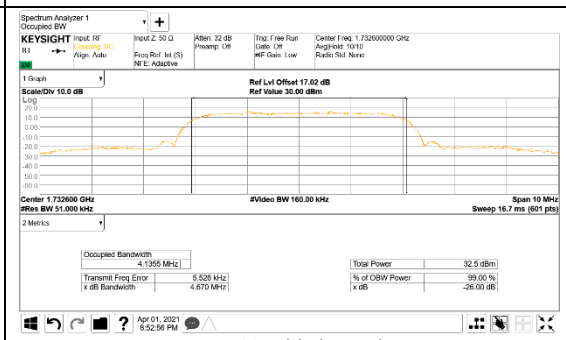
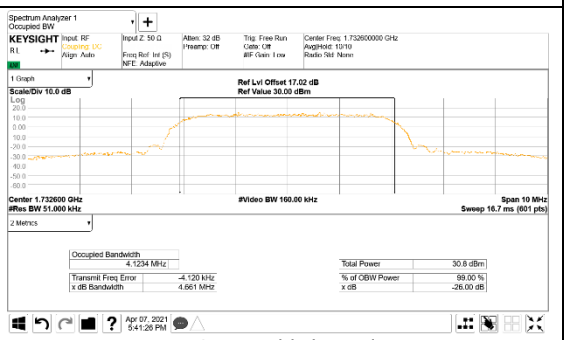
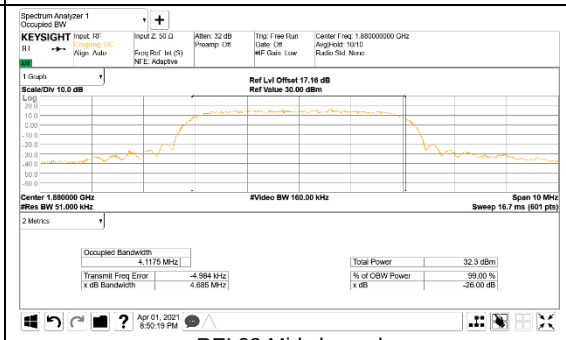
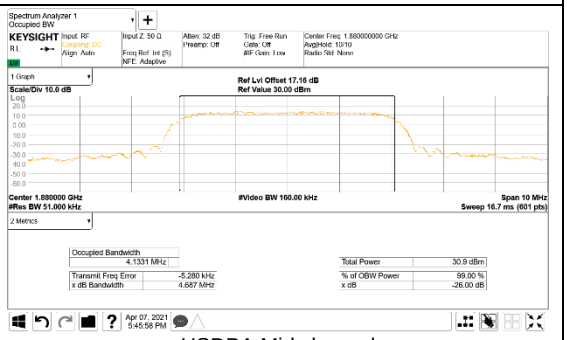
LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

9.1.2. OCCUPIED BANDWIDTH RESULTS

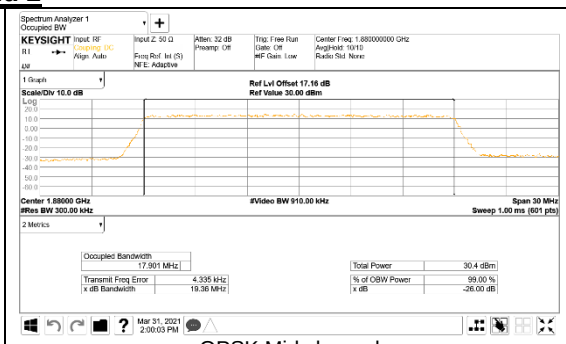
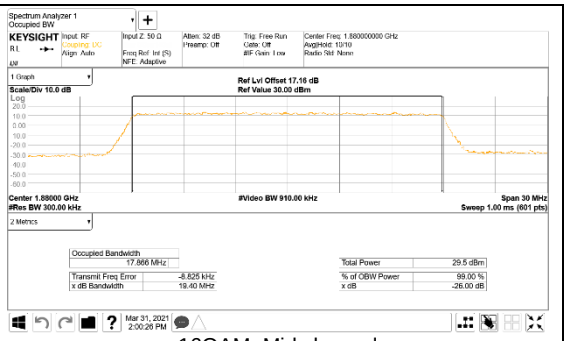
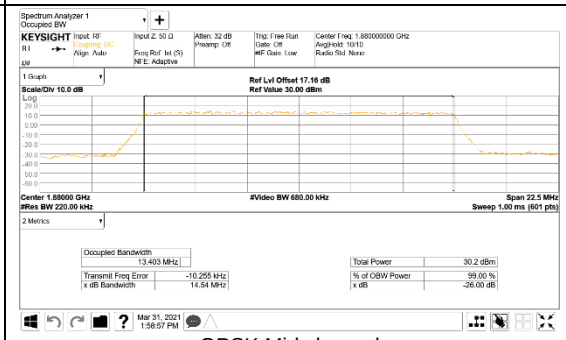
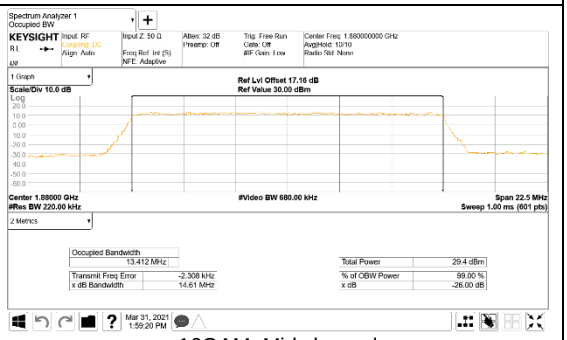
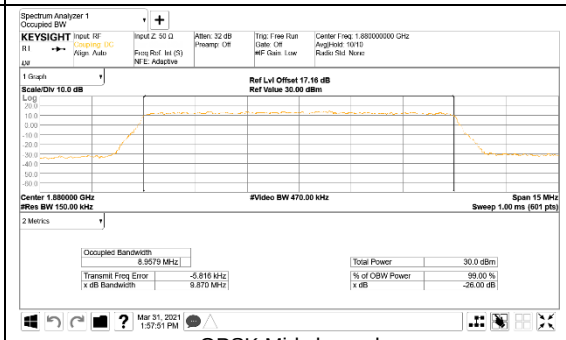
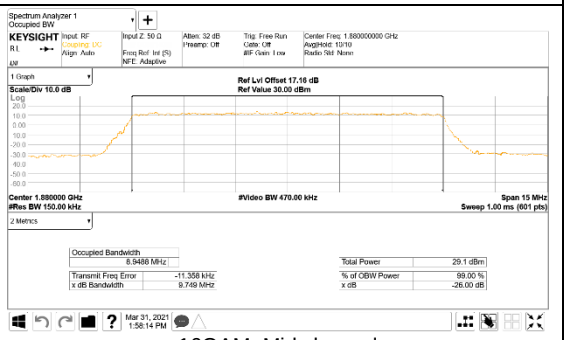
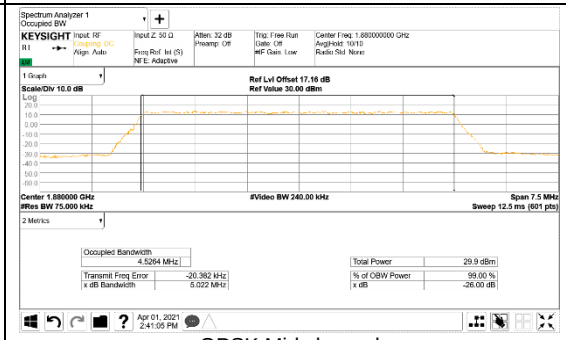
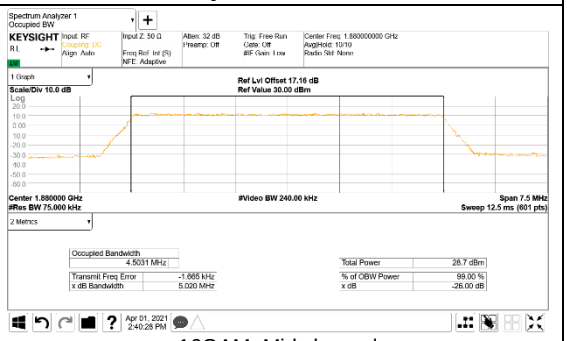
GSM

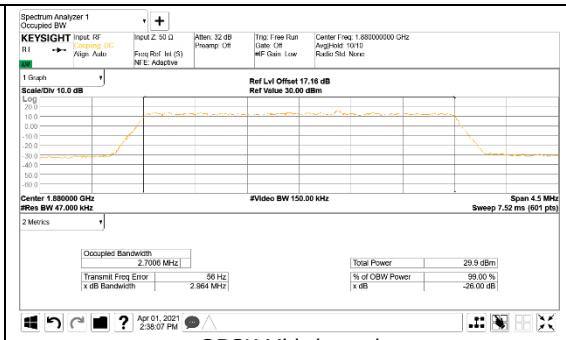
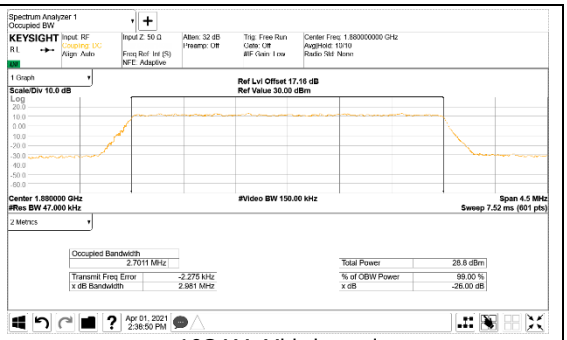
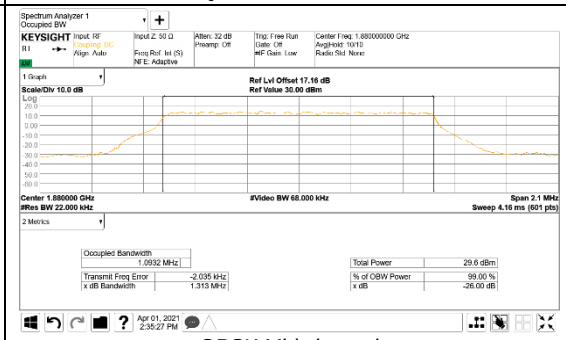
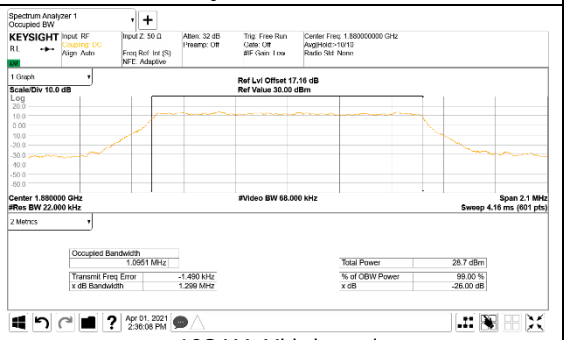
GSM 850	 GPRS Mid channel
GSM 1900	 GPRS Mid channel

WCDMA

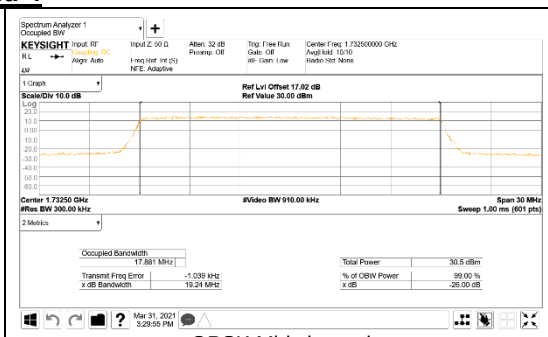
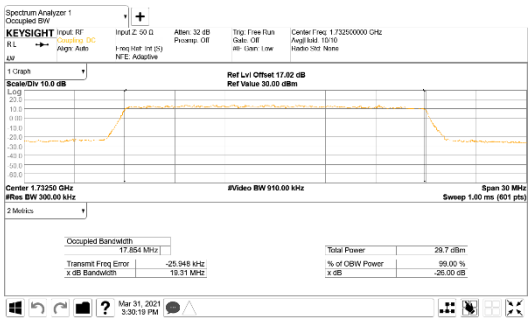
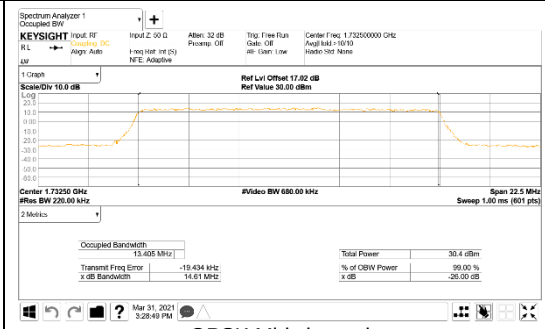
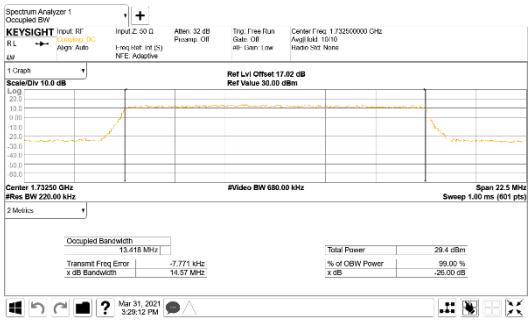
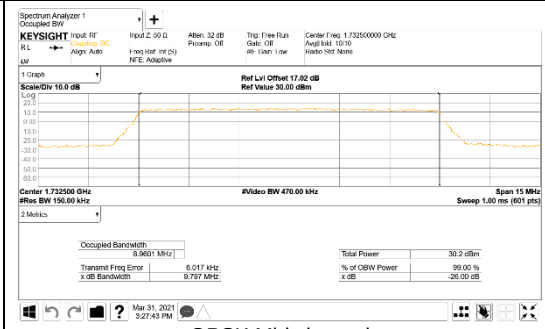
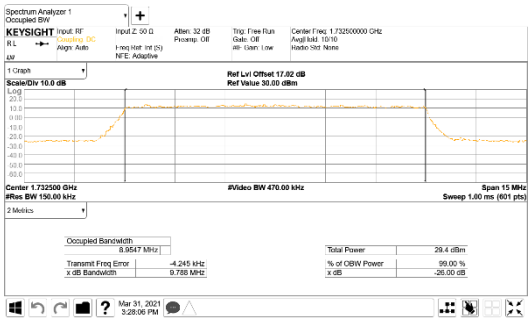
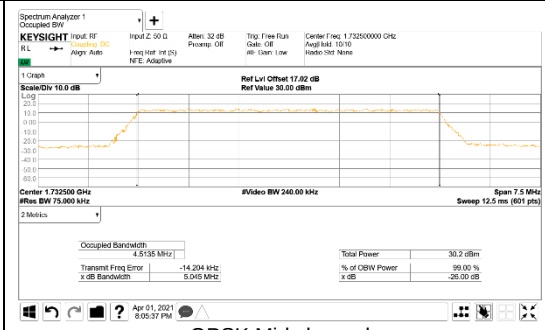
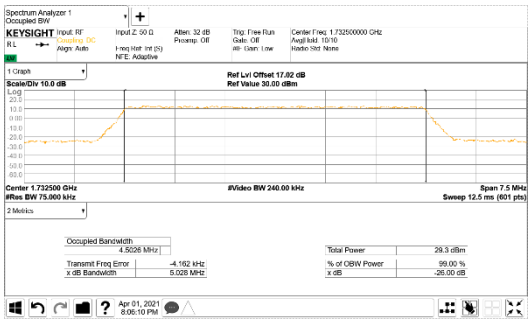
Band 5	 REL99 Mid channel	 HSDPA Mid channel
Band 4	 REL99 Mid channel	 HSDPA Mid channel
Band 2	 REL99 Mid channel	 HSDPA Mid channel

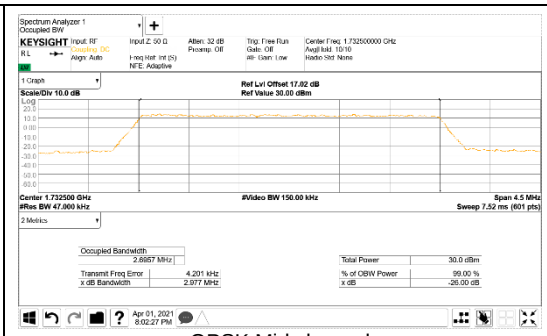
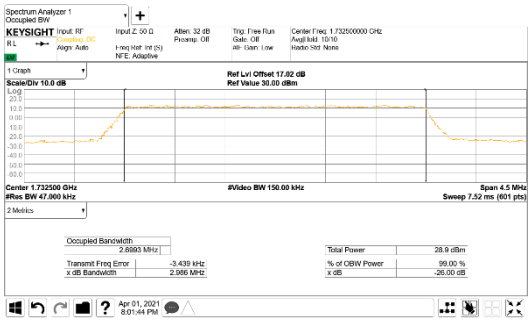
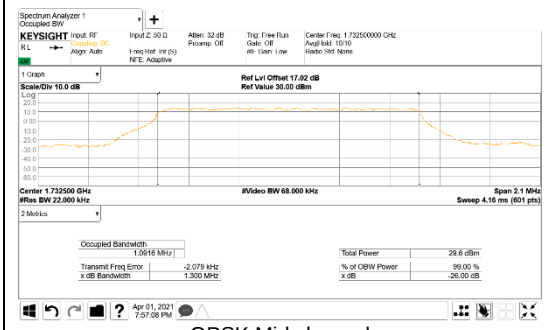
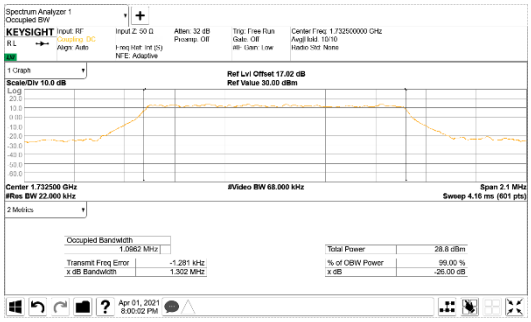
LTE Band 2

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

LTE Band 4

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