



FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART F
FCC CFR47 PART 27 SUBPART L
FCC CFR47 PART 27 SUBPART M
FCC CFR47 PART 90 SUBPART S

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + BT/BLE and DTS/UNII a/b/g/n/ac, ANT+ and NFC

MODEL NUMBER : SM-N9200

FCC ID: A3LSMN9200

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/07/15	Initial issue	Junwhan Lee
A	07/09/15	Added test data of LTE Band 26	CY Choi
B	07/11/15	Revised Form of test result Table at page 15	Junwhan Lee
C	07/16/15	Revised LTE output power table	Junwhan Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac, ANT+ and NFC
MODEL NUMBER: SM-N9200
SERIAL NUMBER: R38G5101T0T (RADIATED); R38G5101SEW (CONDUCTED)
DATE TESTED: JUN 17 - JUL 15, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E, 27F, 27L, 27M and 90S	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
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24, FCC CFR Part 27 and FCC CFR Part 90.

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, 443-823, 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

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.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:

$$\text{EIRP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)} + \text{Substitution Antenna Factor (dBi)}$$

$$\text{ERP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)}$$

(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	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac, ANT+ and NFC.

5.2. MAXIMUM OUTPUT POWER (LTE)

The transmitter has a maximum peak conducted and radiated ERP / EIRP output powers as follows:

LTE Band 41

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 41	2496 ~ 2690	20	QPSK	23.71	234.96	19.77	94.84
			16QAM	23.00	199.53	18.74	74.82
		15	QPSK	23.57	227.51	18.44	69.82
			16QAM	22.98	198.61	17.44	55.46
		10	QPSK	23.34	215.77	19.08	80.91
			16QAM	22.68	185.35	18.05	63.83
		5	QPSK	23.55	226.46	17.98	62.81
			16QAM	22.86	193.20	18.99	79.25

LTE Band 26 (Part90)

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 26	814 ~ 824	10	QPSK	22.89	194.54	10.10	10.23
			16QAM	22.09	161.81	9.06	8.05
		5	QPSK	23.25	211.35	10.03	10.07
			16QAM	22.87	193.64	9.05	8.04
		3	QPSK	23.54	225.94	9.28	8.47
			16QAM	22.89	194.54	8.30	6.76
		1.4	QPSK	23.46	221.82	7.45	5.56
			16QAM	22.75	188.36	6.24	4.21

LTE Band 26 (Part22)

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 26	824 ~ 849	15	QPSK	23.19	208.45	7.53	5.66
			16QAM	22.37	172.58	6.47	4.44
		10	QPSK	23.74	236.59	9.25	8.41
			16QAM	23.16	207.01	8.19	6.59
		5	QPSK	23.53	225.42	8.91	7.78
			16QAM	22.87	193.64	7.92	6.19
		3	QPSK	23.50	223.87	8.14	6.52
			16QAM	22.76	188.80	7.10	5.13
		1.4	QPSK	23.45	221.31	6.03	4.01
			16QAM	22.77	189.23	5.01	3.17

LTE Band 25

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 25	1850 ~ 1915	20	QPSK	23.89	244.91	7.63	5.79
			16QAM	23.44	220.80	6.56	4.53
		15	QPSK	23.67	232.81	8.20	6.61
			16QAM	23.04	201.37	7.22	5.27
		10	QPSK	23.59	228.56	7.99	6.30
			16QAM	23.00	199.53	6.95	4.95
		5	QPSK	23.49	223.36	8.02	6.34
			16QAM	22.82	191.43	7.03	5.05
		3	QPSK	23.66	232.27	8.30	6.76
			16QAM	22.68	185.35	7.25	5.31
		1.4	QPSK	23.84	242.10	7.21	5.26
			16QAM	23.15	206.54	6.23	4.20

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE Band 12

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 12	699 ~ 716	10	QPSK	23.36	216.77	15.27	33.65
			16QAM	22.48	177.01	14.23	26.49
		5	QPSK	23.26	211.84	15.14	32.66
			16QAM	22.90	194.98	14.11	25.76
		3	QPSK	23.75	237.14	15.31	33.96
			16QAM	22.67	184.93	14.33	27.10
		1.4	QPSK	23.45	221.31	13.15	20.65
			16QAM	22.84	192.31	12.11	16.26

LTE Band 5

Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

LTE Band 4

Band	Frequency Range [MHz]	BandWidth [MHz]	Modulation Peak	Conducted		Radiated	
				Avg [dBm]	Avg [mW]	Avg [dBm]	Avg [mW]
Band 4	1710 ~ 1755	20	QPSK	22.71	186.64	20.73	118.30
			16QAM	22.00	158.49	19.76	94.62
		15	QPSK	22.57	180.72	16.94	49.43
			16QAM	22.00	158.49	15.86	38.55
		10	QPSK	22.04	159.96	20.25	105.93
			16QAM	21.80	151.36	19.59	90.99
		5	QPSK	21.91	155.24	20.35	108.39
			16QAM	21.92	155.60	19.23	83.75
		3	QPSK	22.39	173.38	20.32	107.65
			16QAM	21.29	134.59	19.09	81.10
		1.4	QPSK	22.63	183.23	18.33	68.08
			16QAM	22.00	158.49	17.29	53.58

LTE Band 2

Due to frequency range and same output power setting, test was carried in LTE Band 25 to cover both LTE Band 25 and LTE Band 2.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Peak Gain (dBi)
LTE Band 41 2496 ~ 2690 MHz	-1.69
LTE Band 26 / Band 5 814 ~ 849 MHz	-3.42
LTE Band 25 / Band 2 1850 ~ 1915 MHz	-1.48
LTE Band 12 / Band 17 699 ~ 716 MHz	-3.05
LTE Band 4 1710 ~ 1755 MHz	-1.98

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA20CBC	R37FCPc00R1DK3	N/A
Data Cable	SAMSUNG	EP-DG925UWE	N/A	N/A
Earphone	SAMSUNG	EO-EG920LW	N/A	N/A

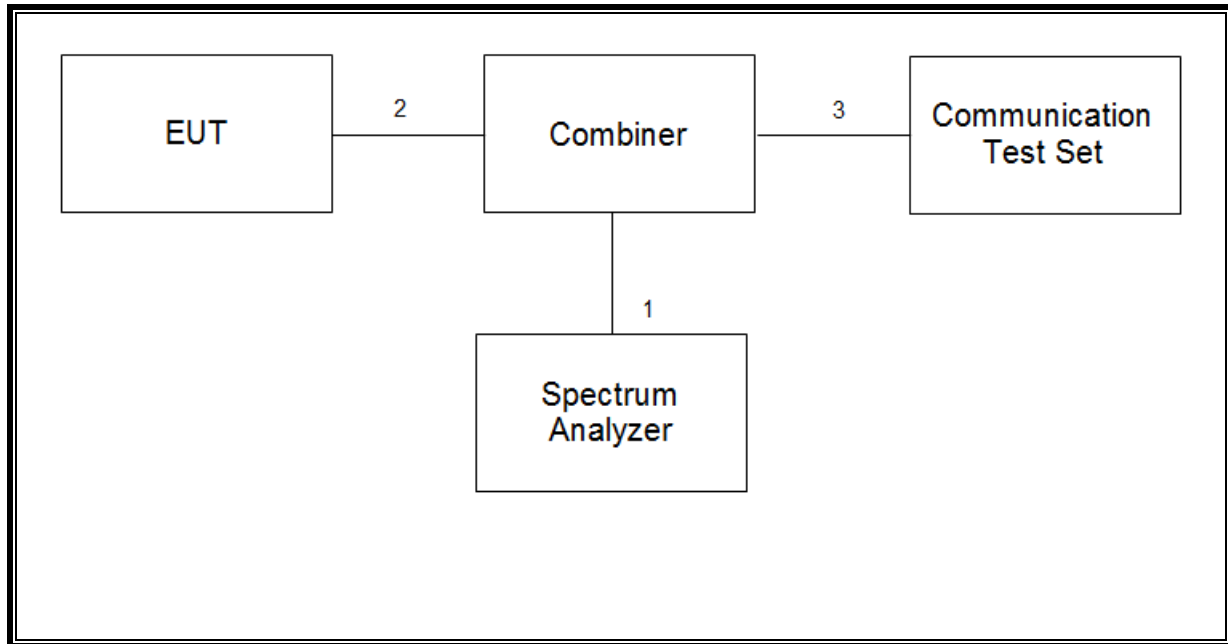
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	0.8m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

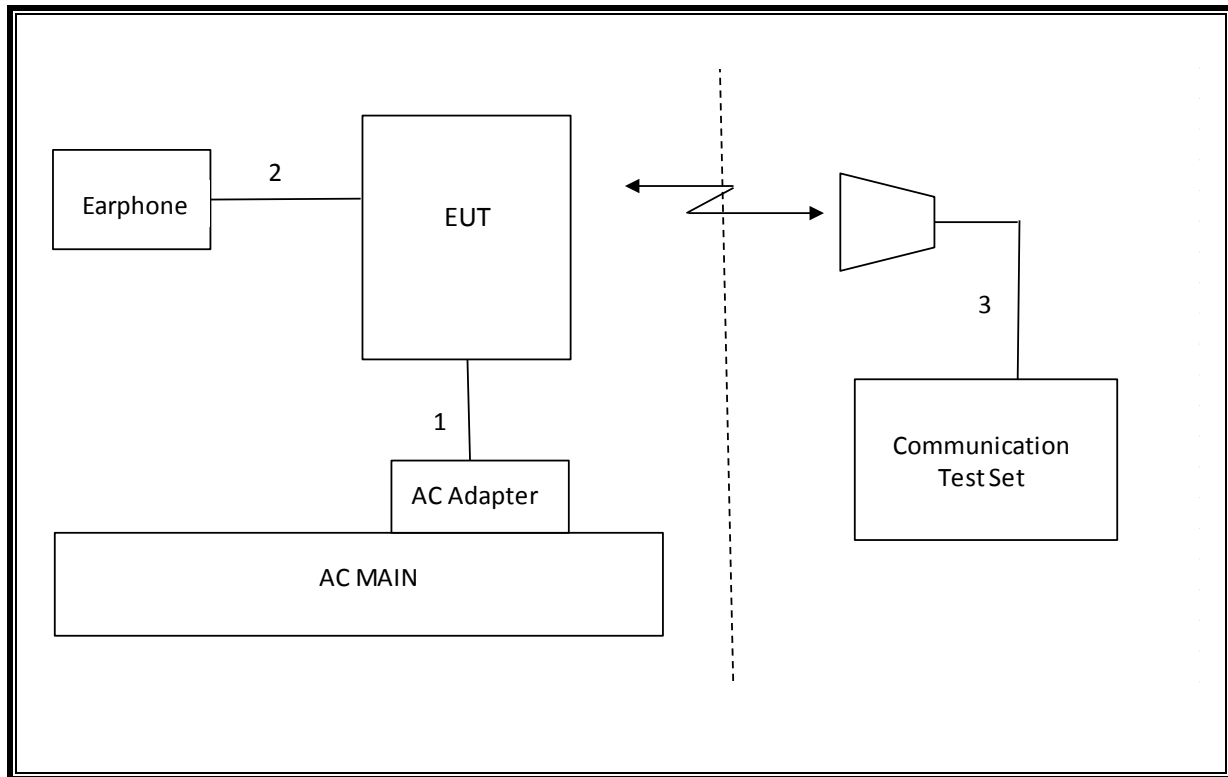
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121D DB4	00164753	07-29-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	950	11-17-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-16
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-15
Antenna, Horn, 18 GHz	ETS	3115	00161451	05-17-16
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-16
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-16
Antenna, Horn, 40 GHz	ETS	3116C	00166255	09-23-15
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	09-29-15
Preamplifier, 1000 MHz	Sonoma	310N	341282	11-17-15
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	11-18-15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	09-23-15
Communications Test Set	R&S	CMW500	150312	08-13-15
Average Power Sensor	R&S	NRZ-Z91	102681	11-17-15
Average Power Sensor	Agilent / HP	U2000	MY54270007	09-23-15
EMI Test Receive, 40 GHz	R&S	ESU40	100439	11-17-15
EMI Test Receive, 3 GHz	R&S	ESR3	101832	11-17-15
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	11-17-15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	11-17-15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	11-17-15
Combiner	WEINSCHL	1575	2153	11-17-15
Temperature Chamber	ESPEC	SH-642	93001109	11-13-15
DC Power Supply	Agilent / HP	E3640A	MY54226395	09-23-15

7. Summary Table

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	Occupied Band width (99%)	N/A	Conducted	Pass	17.930 MHz
22.917(a) 24.238(a) 27.53(g) 90.691	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-16.455 dBm
27.53(m)		-25dBm		Pass	-30.96 dBm
2.1046	Conducted output power	N/A		Pass	23.89 dBm
27.53(m) 90.691	Emission Mask			Pass	-31.91 dBm
22.355 24.235 27.54 90.213	Frequency Stability	2.5PPM		Pass	-0.019 PPM
22.913(a)(2)	Effective Radiated Power	38 dBm	Radiated	Pass	15.31 dBm
27.50(c)(10)		34.77 dBm			
90.635		50 dBm		Pass	10.10 dBm
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power	33dBm		Pass	19.77 dBm
27.50(d)(4)		30dBm		Pass	20.73 dBm
22.917(a) 24.238(a) 27.53(g)	Radiated Spurious Emission	-13dBm		Pass	-31.1 dBm
27.53(m)		-25dBm		Pass	-57.5 dBm

FCC Rule Part	Frequency Range [MHz]	Output Power [W]	Frequency Tolerance	Emission Designator	Emission Bandwidth [MHz]	Communication Type
LTE Band 2 / Band 25						
24E	1860.0 - 1905.0	0.006	2.5 ppm	17M9G7D	20	QPSK
24E	1860.0 - 1905.0	0.005	2.5 ppm	17M9D7W	20	16QAM
24E	1851.5 - 1913.5	0.007	2.5 ppm	2M69G7D	3	QPSK
24E	1851.5 - 1913.5	0.005	2.5 ppm	2M69D7W	3	16QAM
LTE Band 4						
27L	1720.0 - 1745.0	0.118	2.5 ppm	17M9G7D	20	QPSK
27L	1720.0 - 1745.0	0.095	2.5 ppm	17M9D7W	20	16QAM
LTE Band 5 / Band 26						
22H	831.5 - 841.5	0.006	2.5 ppm	13M4G7D	15	QPSK
22H	831.5 - 841.5	0.004	2.5 ppm	13M4D7W	15	16QAM
22H	829.0 - 844.0	0.008	2.5 ppm	8M96G7D	10	QPSK
22H	829.0 - 844.0	0.007	2.5 ppm	8M96D7W	10	16QAM
LTE Band 26						
90S	819.0 - 819.0	0.010	2.5 ppm	8M95G7D	10	QPSK
90S	819.0 - 819.0	0.008	2.5 ppm	8M95D7W	10	16QAM
LTE Band 12 / Band 17						
27H	704.0 - 711.0	0.034	2.5 ppm	8M97G7D	10	QPSK
27H	704.0 - 711.0	0.026	2.5 ppm	8M99D7W	10	16QAM
27H	700.5 - 714.5	0.034	2.5 ppm	2M70G7D	3	QPSK
27H	700.5 - 714.5	0.027	2.5 ppm	2M70D7W	3	16QAM
LTE Band 41						
27M	2506.0 - 2680.0	0.095	2.5 ppm	17M9G7D	20	QPSK
27M	2506.0 - 2680.0	0.075	2.5 ppm	17M9D7W	20	16QAM
27M	2498.5 - 2687.5	0.079	2.5 ppm	4M49D7W	5	16QAM

8. RF POWER OUTPUT VERIFICATION

8.1. LTE OUTPUT VERIFICATION

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signalling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

8.1.1. LTE OUTPUT POWER RESULT

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39750	40620	41490
						2506 MHz	2593 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	23.71	23.55	23.18
			1	49	0	23.31	23.00	22.82
			1	99	0	23.48	23.21	22.76
			50	0	1	22.76	22.58	22.27
			50	24	1	22.44	22.32	22.05
			50	50	1	22.61	22.54	22.18
			100	0	1	22.67	22.42	22.18
		16QAM	1	0	1	23.00	22.76	22.33
			1	49	1	22.66	22.23	22.02
			1	99	1	22.85	22.50	22.00
			50	0	2	21.87	21.56	21.28
			50	24	2	21.45	21.30	21.07
			50	50	2	21.62	21.52	21.22
			100	0	2	21.65	21.43	21.22
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39725	40620	41515
						2503.5 MHz	2593 MHz	2682.5 MHz
LTE Band 41	15	QPSK	1	0	0	23.57	23.47	23.24
			1	37	0	23.11	22.91	22.82
			1	74	0	23.35	23.16	22.82
			36	0	1	22.48	22.43	22.16
			36	20	1	22.50	22.33	22.16
			36	39	1	22.35	22.22	21.99
			75	0	1	22.34	22.30	21.99
		16QAM	1	0	1	22.98	22.69	22.75
			1	37	1	22.55	22.18	22.09
			1	74	1	22.80	22.49	22.08
			36	0	2	21.49	21.42	21.14
			36	20	2	21.51	21.32	21.15
			36	39	2	21.36	21.21	20.99
			75	0	2	21.34	21.32	21.02
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39700	40620	41540
						2501 MHz	2593 MHz	2685 MHz
LTE Band 41	10	QPSK	1	0	0	23.12	23.00	22.86
			1	25	0	23.34	22.96	22.82
			1	49	0	22.94	22.67	22.50
			25	0	1	22.36	22.36	22.10
			25	12	1	22.46	22.35	22.11
			25	25	1	22.36	22.18	21.83
		16QAM	50	0	1	22.34	22.25	22.00
			1	0	1	22.41	22.22	22.03
			1	25	1	22.68	22.23	22.09
			1	49	1	22.33	21.97	21.77
			25	0	2	21.34	21.35	21.10
			25	12	2	21.45	21.34	21.13
			25	25	2	21.36	21.18	20.85
			50	0	2	21.37	21.26	21.05
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39675	40620	41565
						2498.5 MHz	2593 MHz	2687.5 MHz
LTE Band 41	5	QPSK	1	0	0	23.15	23.16	22.93
			1	12	0	23.27	23.55	22.69
			1	24	0	23.23	23.51	22.50
			12	0	1	22.34	22.98	22.04
			12	7	1	22.41	22.96	21.97
			12	13	1	22.40	22.90	21.85
		16QAM	25	0	1	22.37	22.91	21.92
			1	0	1	22.48	22.86	22.07
			1	12	1	22.63	22.80	21.94
			1	24	1	22.61	22.64	21.61
			12	0	2	21.37	21.98	21.00
			12	7	2	21.45	21.96	20.94
			12	13	2	21.44	21.91	20.83
			25	0	2	21.36	21.93	20.96

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)					
						26865				26965	
						831.5 MHz				841.5 MHz	
LTE Band 26	15	QPSK	1	0	0						
			1	37	0						
			1	74	0						
			36	0	1						
			36	20	1						
			36	39	1						
			75	0	1						
		16QAM	1	0	1						
			1	37	1						
			1	74	1						
			36	0	2						
			36	20	2						
			36	39	2						
			75	0	2						
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)					
						26740		26840		26865	
						819 MHz		829 MHz		831.5 MHz	
LTE Band 26	10	QPSK	1	0	0						
			1	25	0						
			1	49	0						
			25	0	2.5						
			25	12	2.5						
			25	25	2.5						
			50	0	2.5						
		16QAM	1	0	1						
			1	25	1						
			1	49	1						
			25	0	3.5						
			25	12	3.5						
			25	25	3.5						
			50	0	3.5						
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)					
						26715		26740		26765	
						816.5 MHz		819 MHz		821.5MHz	
LTE Band 26	5	QPSK	1	0	0						
			1	12	0						
			1	24	0						
			12	0	1						
			12	7	1						
			12	13	1						
			25	0	1						
		16QAM	1	0	1						
			1	12	1						
			1	24	1						
			12	0	2						
			12	7	2						
			12	13	2						
			25	0	2						

LTE Band 26 Measured Results(continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)						
						26705	26740	26775	26805	26865	26915	27025
						815.5 MHz	819 MHz	822.5 MHz	825.5 MHz	831.5 MHz	836.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	23.18	23.12	23.30	23.20	23.26	23.12	23.50
			1	8	0	23.54	23.14	23.45	23.20	23.32	23.12	23.35
			1	14	0	23.04	23.10	23.26	23.10	23.22	23.20	22.50
			8	0	1	22.16	22.11	22.22	22.16	22.21	22.12	22.29
			8	4	1	22.06	22.02	22.27	22.18	22.19	22.17	22.28
			8	7	1	22.07	22.03	22.21	22.11	22.18	22.10	22.33
		16QAM	15	0	1	22.06	21.96	22.17	22.19	22.14	22.13	22.30
			1	0	1	22.16	22.57	22.33	22.10	22.76	22.49	22.50
			1	8	1	22.19	22.46	22.32	22.12	22.65	22.52	22.42
			1	14	1	22.89	22.57	22.21	22.01	22.69	22.61	21.83
			8	0	2	21.17	20.92	21.38	21.27	21.25	21.03	21.45
			8	4	2	21.11	20.88	21.43	21.28	21.01	21.08	21.46
			8	7	2	21.13	20.91	21.37	21.22	21.24	21.01	21.51
			15	0	2	21.08	21.02	21.08	21.22	21.12	21.19	21.26
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)						
						26697	26740	26783	26797	26865	26915	27033
						814.7 MHz	819 MHz	823.3 MHz	824.7 MHz	831.5 MHz	836.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	23.21	23.17	23.32	23.11	23.24	23.04	23.15
			1	3	0	23.19	23.46	23.38	23.13	23.32	23.05	22.70
			1	5	0	23.12	23.26	23.25	22.99	23.45	23.04	22.50
			3	0	0	23.00	23.10	23.16	23.08	23.10	23.04	22.83
			3	1	0	23.03	22.97	23.23	23.15	23.13	23.05	22.74
			3	3	0	23.00	22.98	23.25	23.17	23.13	23.03	22.50
		16QAM	6	0	1	22.03	22.08	22.09	22.05	22.08	22.02	21.82
			1	0	1	22.37	22.61	22.22	22.21	22.72	22.41	22.60
			1	3	1	22.65	22.45	22.43	22.26	22.77	22.44	22.34
			1	5	1	22.39	22.44	22.40	22.12	22.64	22.44	22.01
			3	0	1	22.38	22.31	22.31	22.12	22.27	22.28	22.15
			3	1	1	22.19	22.75	22.38	22.18	22.31	22.27	22.07
			3	3	1	22.12	22.65	22.40	22.21	22.30	22.24	21.67
			6	0	2	21.15	21.50	21.30	21.20	21.08	20.95	21.01

LTE Band 25 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26140	26365	26590
						1860 MHz	1882.5 MHz	1905 MHz
LTE Band 25	20	QPSK	1	0	0	23.89	23.80	23.82
			1	49	0	23.04	23.02	22.99
			1	99	0	23.14	23.31	23.14
			50	0	1	22.42	22.28	22.42
			50	24	1	22.15	22.08	22.17
			50	50	1	22.13	22.05	22.07
			100	0	1	22.32	22.18	22.32
		16QAM	1	0	1	23.44	23.40	23.12
			1	49	1	22.52	22.55	22.36
			1	99	1	22.88	22.59	22.47
			50	0	2	21.46	21.33	21.40
			50	24	2	21.20	21.08	21.13
			50	50	2	21.21	21.08	21.04
			100	0	2	21.41	21.20	21.34
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26115	26365	26615
						1857.5 MHz	1882.5 MHz	1907.5 MHz
LTE Band 25	15	QPSK	1	0	0	23.67	23.57	23.66
			1	37	0	23.18	22.95	22.98
			1	74	0	23.16	23.19	23.24
			36	0	1	22.29	22.26	22.22
			36	20	1	22.22	22.13	22.10
			36	39	1	22.09	22.13	22.14
			75	0	1	22.21	22.11	22.20
		16QAM	1	0	1	22.64	22.98	23.04
			1	37	1	21.90	22.29	22.46
			1	74	1	22.10	22.58	22.49
			36	0	2	21.38	21.28	21.27
			36	20	2	21.25	21.14	21.13
			36	39	2	21.08	21.17	21.06
			75	0	2	21.26	21.16	21.15
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26090	26365	26640
						1855 MHz	1882.5 MHz	1910 MHz
LTE Band 25	10	QPSK	1	0	0	23.43	23.40	23.59
			1	25	0	23.01	23.22	23.38
			1	49	0	22.94	23.11	23.46
			25	0	1	22.22	22.21	22.29
			25	12	1	22.08	22.11	22.17
			25	25	1	22.03	22.07	22.21
			50	0	1	22.08	22.11	22.17
		16QAM	1	0	1	22.62	22.70	23.00
			1	25	1	22.19	22.46	22.83
			1	49	1	22.23	22.43	22.58
			25	0	2	21.23	21.24	21.42
			25	12	2	21.14	21.13	21.31
			25	25	2	21.05	21.07	21.34
			50	0	2	21.06	21.13	21.25

LTE Band 25 Measured Results(continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26065	26365	26665
						1852.5 MHz	1882.5 MHz	1912.5 MHz
LTE Band 25	5	QPSK	1	0	0	23.23	23.40	23.49
			1	12	0	23.05	23.06	23.32
			1	24	0	23.11	23.24	23.37
			12	0	1	22.13	22.15	22.23
			12	7	1	22.12	22.10	22.24
			12	13	1	21.99	22.13	22.14
			25	0	1	22.08	22.07	22.18
		16QAM	1	0	1	22.31	22.76	22.48
			1	12	1	22.49	22.82	22.32
			1	24	1	22.26	22.66	22.34
			12	0	2	21.25	21.24	21.29
			12	7	2	21.27	21.22	21.32
			12	13	2	21.10	21.21	21.22
			25	0	2	21.18	21.11	21.17
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26055	26365	26675
						1851.5 MHz	1882.5 MHz	1913.5 MHz
LTE Band 25	3	QPSK	1	0	0	23.17	23.08	23.50
			1	8	0	23.66	23.20	23.55
			1	14	0	23.07	23.12	23.34
			8	0	1	22.10	22.17	22.23
			8	4	1	22.11	22.11	22.21
			8	7	1	22.10	22.07	22.23
			15	0	1	22.09	22.04	22.23
		16QAM	1	0	1	22.07	22.67	22.52
			1	8	1	22.03	22.49	22.37
			1	14	1	22.18	22.68	22.26
			8	0	2	21.17	20.94	21.42
			8	4	2	21.20	20.93	21.33
			8	7	2	21.19	20.94	21.42
			15	0	2	21.11	21.07	21.14
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26047	26365	26683
						1850.7 MHz	1882.5 MHz	1914.3 MHz
LTE Band 25	1.4	QPSK	1	0	0	23.23	23.18	23.55
			1	3	0	23.20	23.10	23.45
			1	5	0	23.07	23.05	23.62
			3	0	0	23.02	22.99	23.83
			3	1	0	23.08	23.04	23.84
			3	3	0	23.07	23.03	23.78
			6	0	1	21.98	22.00	22.87
		16QAM	1	0	1	22.24	22.61	23.02
			1	3	1	22.31	22.66	22.99
			1	5	1	22.34	22.43	22.82
			3	0	1	22.07	22.24	23.14
			3	1	1	22.14	22.27	23.15
			3	3	1	22.15	22.31	23.08
			6	0	2	21.16	20.94	22.18

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23060	23095	23130
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0	23.21	23.01	23.36
			1	25	0	23.05	23.12	23.28
			1	49	0	23.01	23.07	23.15
			25	0	2.5	20.49	20.54	20.50
			25	12	2.5	20.58	20.59	20.55
			25	25	2.5	20.50	20.42	20.50
			50	0	2.5	20.54	20.47	20.45
		16QAM	1	0	1	22.36	22.40	22.30
			1	25	1	22.05	22.32	22.48
			1	49	1	22.14	22.47	22.20
			25	0	3.5	19.42	19.51	19.57
			25	12	3.5	19.58	19.49	19.63
			25	25	3.5	19.53	19.42	19.59
			50	0	3.5	19.49	19.50	19.42
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23035	23095	23155
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	23.19	23.20	23.20
			1	12	0	23.19	23.09	23.12
			1	24	0	23.24	23.26	23.19
			12	0	1	22.05	22.01	21.98
			12	7	1	22.14	22.08	22.04
			12	13	1	22.07	22.03	22.04
		16QAM	25	0	1	22.10	22.04	21.98
			1	0	1	22.29	22.66	22.23
			1	12	1	22.90	22.62	22.07
			1	24	1	22.49	22.59	22.27
			12	0	2	21.08	21.11	21.07
			12	7	2	21.18	21.21	21.12
			12	13	2	21.14	21.09	21.10
			25	0	2	21.13	21.09	20.92
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23025	23095	23165
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	23.22	23.05	23.22
			1	8	0	23.75	23.17	23.35
			1	14	0	23.16	23.09	23.25
			8	0	1	22.16	22.14	22.00
			8	4	1	22.10	22.08	22.02
			8	7	1	22.23	22.03	22.08
		16QAM	15	0	1	22.14	22.02	22.04
			1	0	1	22.16	22.65	22.12
			1	8	1	22.26	22.52	22.17
			1	14	1	22.25	22.67	22.07
			8	0	2	21.17	20.98	21.21
			8	4	2	21.16	20.96	21.22
			8	7	2	21.28	20.94	21.30
			15	0	2	21.10	21.01	20.99
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23017	23095	23173
						699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	22.95	23.18	23.34
			1	3	0	23.02	23.08	23.33
			1	5	0	22.90	23.06	23.45
			3	0	0	22.87	22.98	23.29
			3	1	0	23.01	23.04	23.35
			3	3	0	23.02	23.05	23.37
		16QAM	6	0	1	22.01	21.99	22.34
			1	0	1	22.00	22.51	22.59
			1	3	1	22.55	22.57	22.68
			1	5	1	22.28	22.40	22.72
			3	0	1	22.23	22.21	22.75
			3	1	1	22.25	22.20	22.82
			3	3	1	22.28	22.23	22.84
			6	0	2	21.37	20.90	21.85

LTE Band 5

Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	22.49	22.61	22.71
			1	49	0	21.87	21.94	21.89
			1	99	0	22.04	22.00	22.05
			50	0	1	21.07	21.17	21.37
			50	24	1	20.90	21.03	21.01
			50	50	1	20.94	20.92	20.85
			100	0	1	21.04	21.14	21.06
		16QAM	1	0	1	21.97	22.00	22.00
			1	49	1	21.28	21.38	21.20
			1	99	1	21.57	21.30	21.30
			50	0	2	20.07	20.21	20.23
			50	24	2	19.92	20.02	19.89
			50	50	2	19.97	19.94	19.78
			100	0	2	20.01	20.15	20.10
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	22.22	22.33	22.57
			1	37	0	21.69	21.87	21.78
			1	74	0	21.95	21.89	22.21
			36	0	1	21.01	21.13	21.08
			36	20	1	20.85	21.01	20.91
			36	39	1	20.83	20.88	20.88
			75	0	1	20.80	21.00	20.95
		16QAM	1	0	1	21.26	21.67	22.00
			1	37	1	20.62	21.23	21.72
			1	74	1	20.87	21.23	21.54
			36	0	2	19.95	20.15	20.06
			36	20	2	19.84	20.03	19.91
			36	39	2	19.81	19.92	19.86
			75	0	2	19.88	20.04	19.93
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	21.87	22.04	22.04
			1	25	0	21.61	21.95	21.89
			1	49	0	21.63	21.72	21.86
			25	0	1	20.79	20.86	20.84
			25	12	1	20.65	20.84	20.71
			25	25	1	20.62	20.74	20.64
			50	0	1	20.68	20.81	20.73
		16QAM	1	0	1	21.18	21.33	21.80
			1	25	1	20.87	21.16	21.80
			1	49	1	20.92	21.06	21.51
			25	0	2	19.80	19.90	19.96
			25	12	2	19.65	19.88	19.85
			25	25	2	19.61	19.75	19.73
			50	0	2	19.60	19.86	19.69

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	21.77	21.91	21.91
			1	12	0	21.52	21.76	21.62
			1	24	0	21.60	21.79	21.71
			12	0	1	20.67	20.76	20.75
			12	7	1	20.68	20.79	20.75
			12	13	1	20.65	20.71	20.63
			25	0	1	20.65	20.73	20.73
		16QAM	1	0	1	20.83	20.99	20.96
			1	12	1	21.15	21.92	20.62
			1	24	1	20.63	20.90	20.82
			12	0	2	19.79	19.87	19.81
			12	7	2	19.75	19.89	19.85
			12	13	2	19.72	19.80	19.73
			25	0	2	19.72	19.77	19.81
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	21.77	21.84	21.99
			1	8	0	22.27	21.92	22.39
			1	14	0	21.74	21.82	21.79
			8	0	1	20.70	20.82	20.86
			8	4	1	20.70	20.82	20.78
			8	7	1	20.70	20.82	20.74
			15	0	1	20.70	20.80	20.74
		16QAM	1	0	1	20.66	21.27	20.83
			1	8	1	20.72	21.26	20.87
			1	14	1	20.58	21.29	20.81
			8	0	2	19.74	19.64	19.77
			8	4	2	19.73	19.71	19.70
			8	7	2	19.72	19.69	19.73
			15	0	2	19.68	19.82	19.73
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19957	20175	20393
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	21.88	21.92	22.34
			1	3	0	21.76	21.85	21.98
			1	5	0	21.79	21.75	22.40
			3	0	0	21.59	21.75	22.59
			3	1	0	21.66	21.75	22.63
			3	3	0	21.67	21.78	22.63
			6	0	1	20.62	20.72	21.47
		16QAM	1	0	1	20.86	21.27	22.00
			1	3	1	21.03	21.11	21.95
			1	5	1	20.84	21.20	21.69
			3	0	1	20.74	21.19	21.89
			3	1	1	20.70	21.27	21.95
			3	3	1	20.72	21.33	21.95
			6	0	2	19.74	19.63	20.85

LTE Band 2

Due to frequency range and same output power setting, test was carried in LTE Band 25 to cover both LTE Band 25 and LTE Band 2.

9. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02;

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.

9.1. CONDUCTED PEAK TO AVERAGE RESULT

LTE

Band	BW [MHz]	Channel	f [MHz]	Mode	Ratio [dB]	Limit [dB]
Band 41	20	40620	2593	QPSK	4.23	13.00
				16QAM	5.86	
	15			QPSK	5.40	
				16QAM	5.59	
	10			QPSK	5.34	
				16QAM	5.50	
	5			QPSK	4.52	
				16QAM	5.22	
Band 26	15	26965	831.5	QPSK	4.64	
				16QAM	5.41	
	10			QPSK	4.62	
				16QAM	5.46	
	5			QPSK	4.73	
				16QAM	5.52	
	3			QPSK	4.66	
				16QAM	5.47	
	1.4			QPSK	4.78	
				16QAM	5.31	

Band	BW [MHz]	Channel	f [MHz]	Mode	Ratio [dB]	Limit [dB]
Band 25	20	26365	1882.5	QPSK	4.05	13.00
				16QAM	4.52	
	15			QPSK	4.02	
				16QAM	4.79	
	10			QPSK	3.74	
				16QAM	4.42	
	5			QPSK	4.02	
				16QAM	4.50	
	3			QPSK	3.75	
				16QAM	4.44	
1.4	QPSK	3.78				
	16QAM	4.53				
Band 12	10	23095	707.5	QPSK	4.74	
				16QAM	5.49	
	5			QPSK	4.77	
				16QAM	5.53	
	3			QPSK	4.73	
				16QAM	5.49	
	1.4			QPSK	4.76	
				16QAM	5.63	
Band 4	20	20715	1732.5	QPSK	4.46	
				16QAM	5.14	
	15			QPSK	4.48	
				16QAM	5.25	
	10			QPSK	4.51	
				16QAM	5.25	
	5			QPSK	4.49	
				16QAM	5.22	
	3			QPSK	4.48	
				16QAM	5.37	
	1.4			QPSK	4.61	
				16QAM	4.98	

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE Band 5

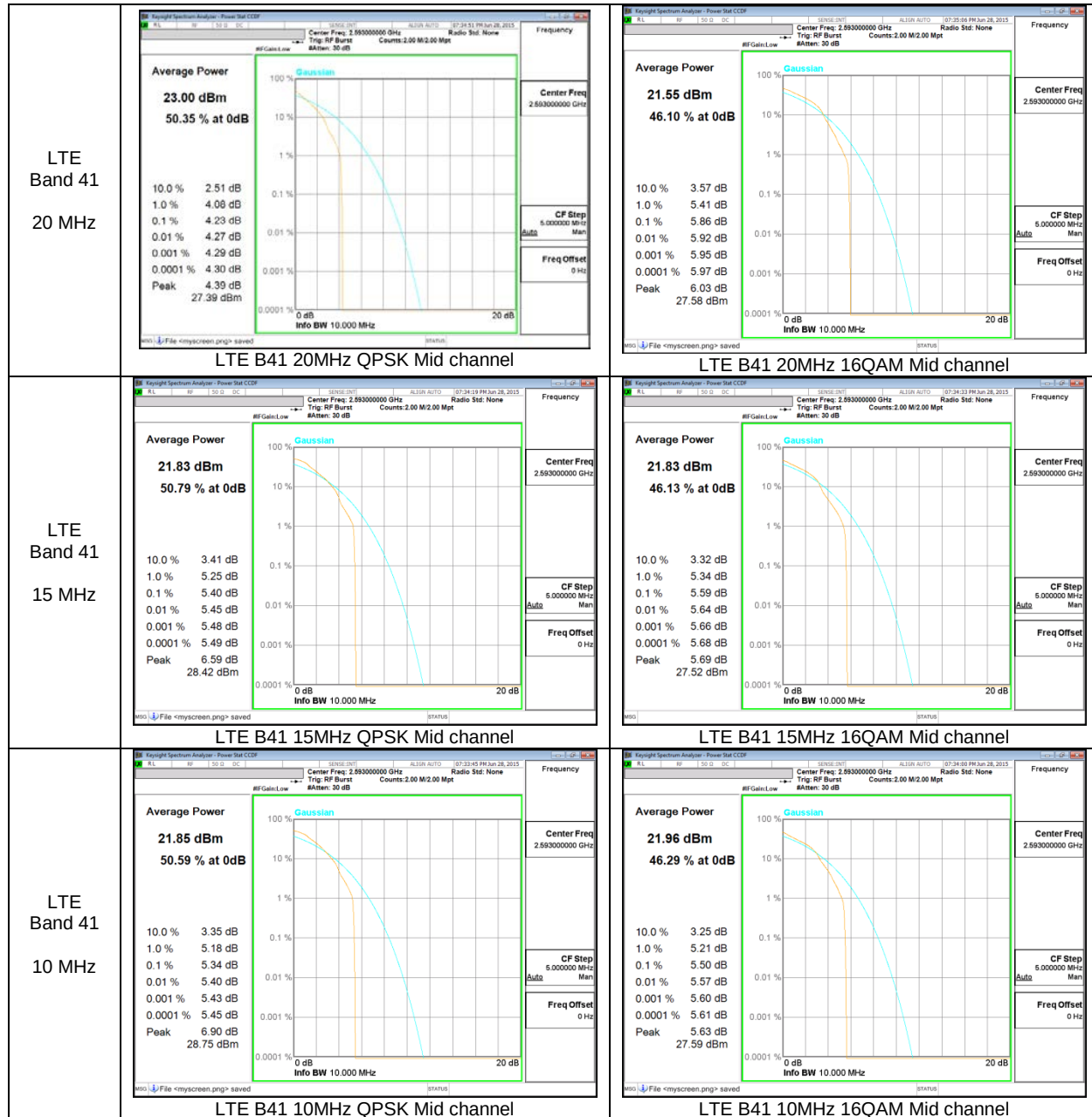
Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

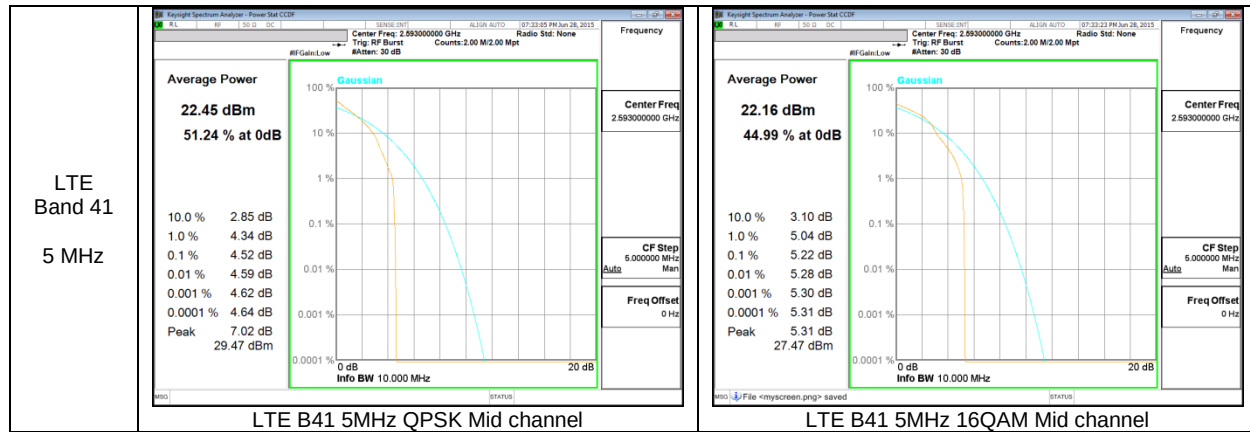
LTE Band 2

Due to frequency range and same output power setting, test was carried in LTE Band 25 to cover both LTE Band 25 and LTE Band 2.

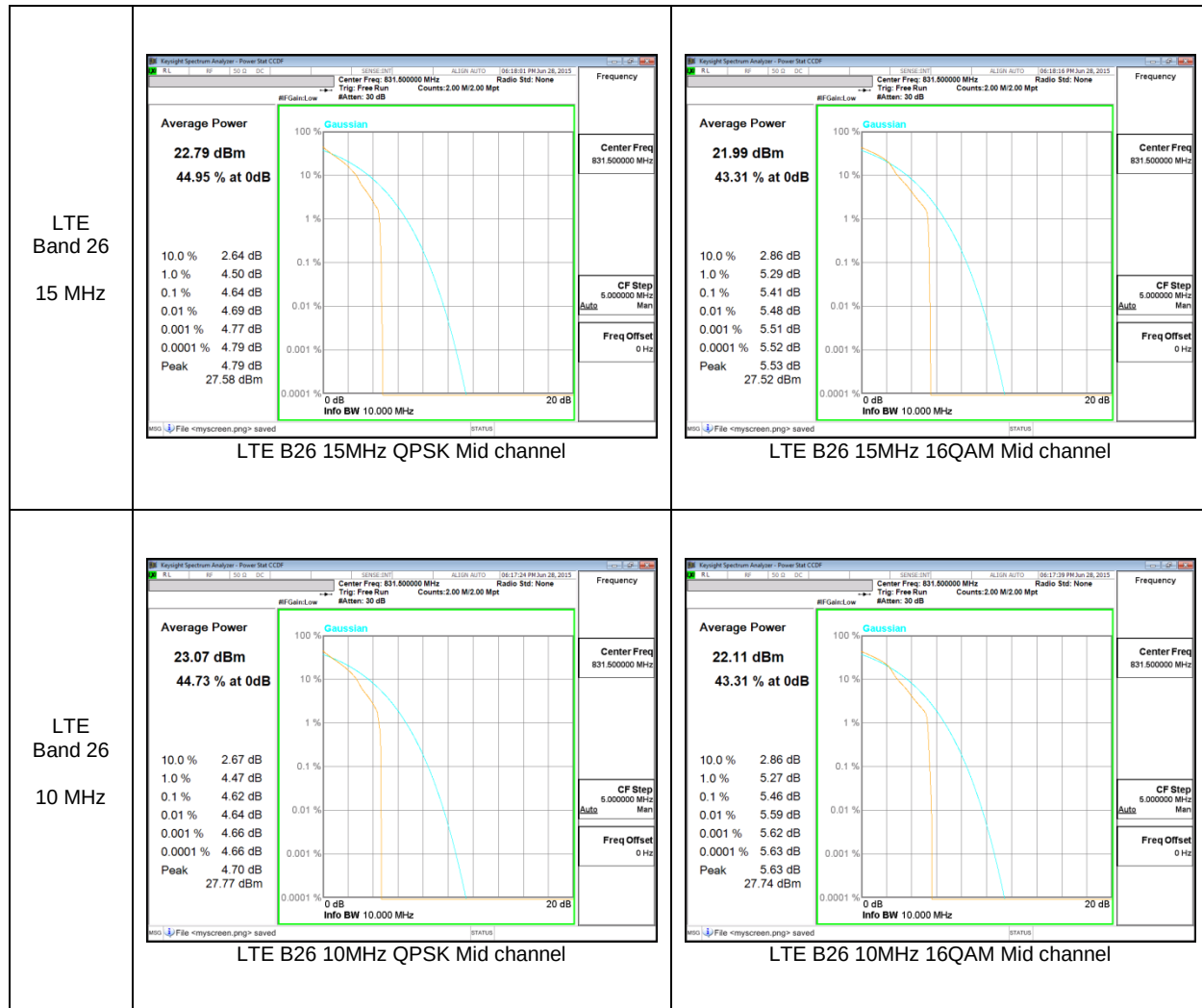
9.2. CONDUCTED PEAK TO AVERAGE PLOTS

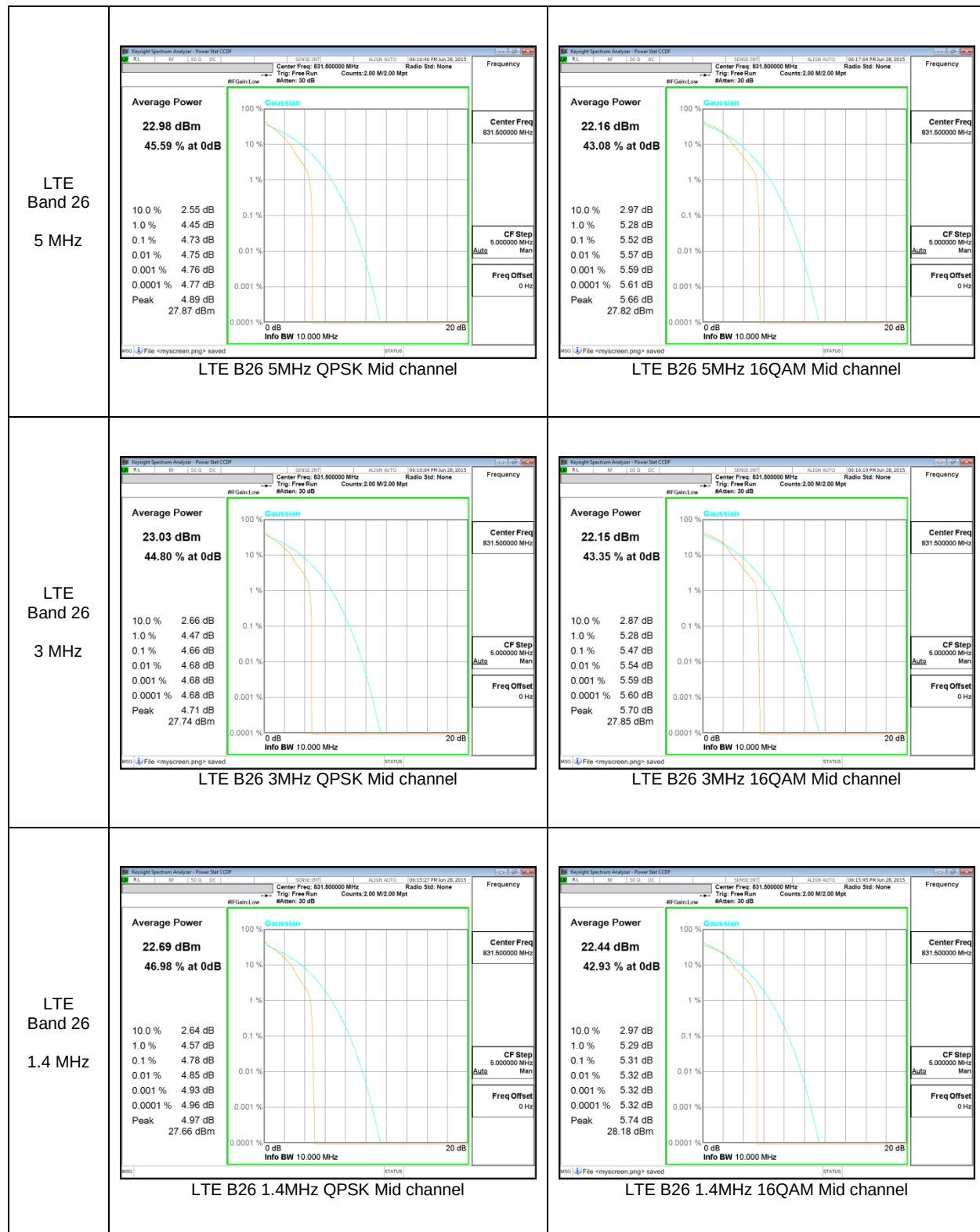
LTE Band 41



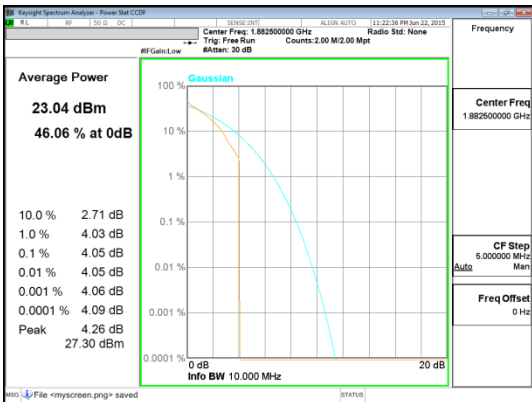
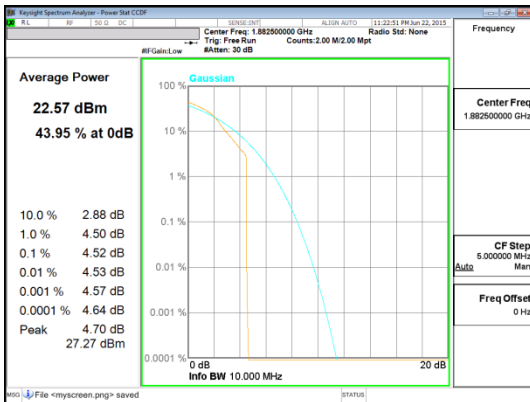
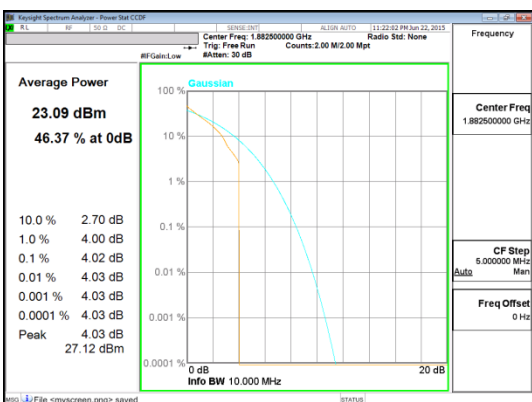
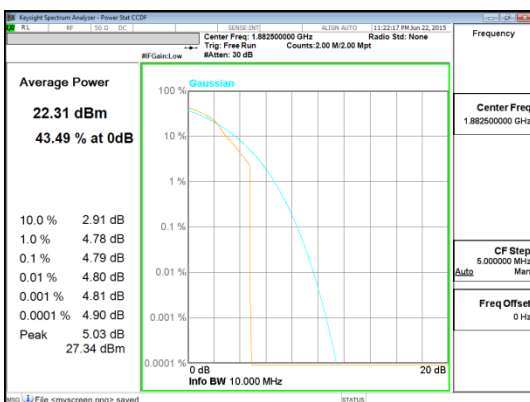
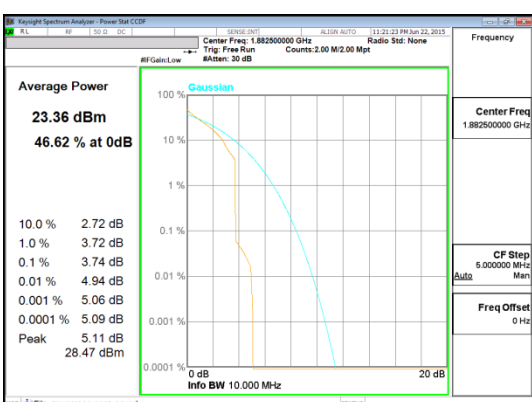
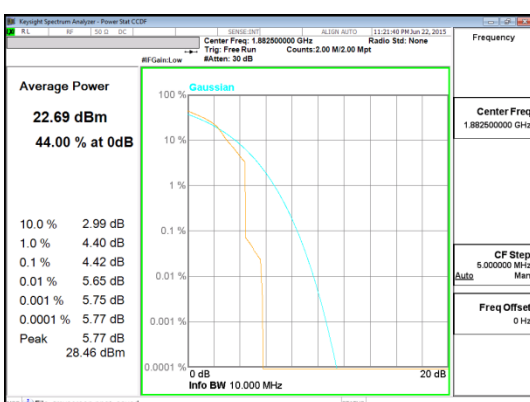


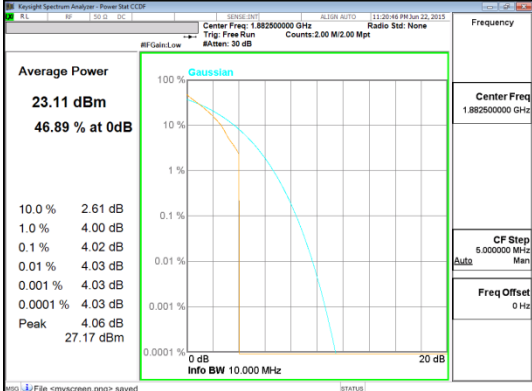
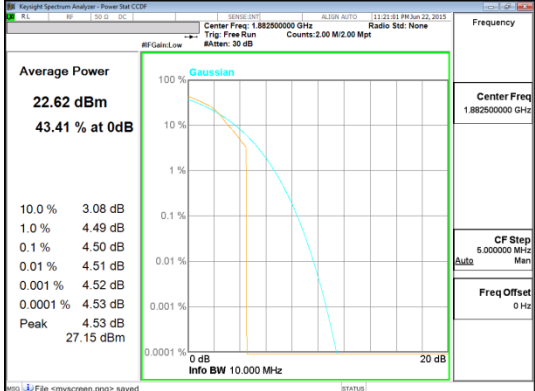
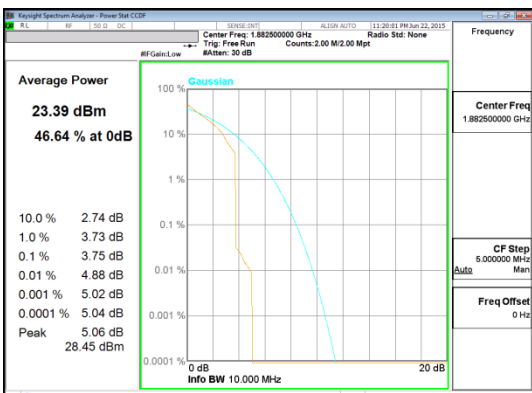
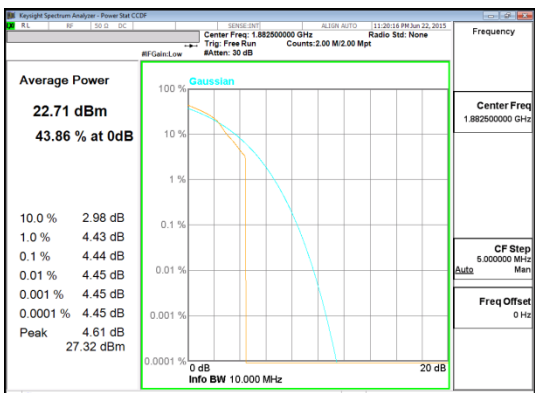
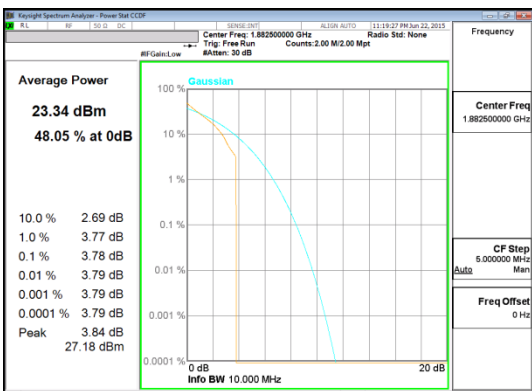
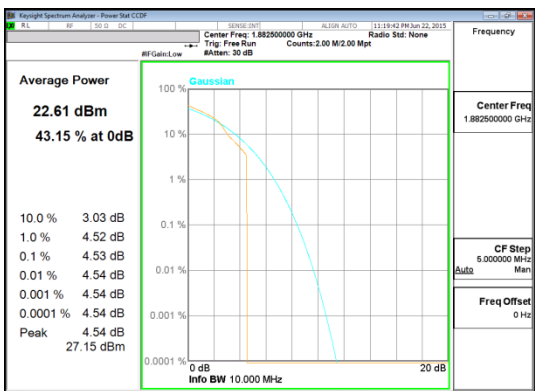
LTE Band 26



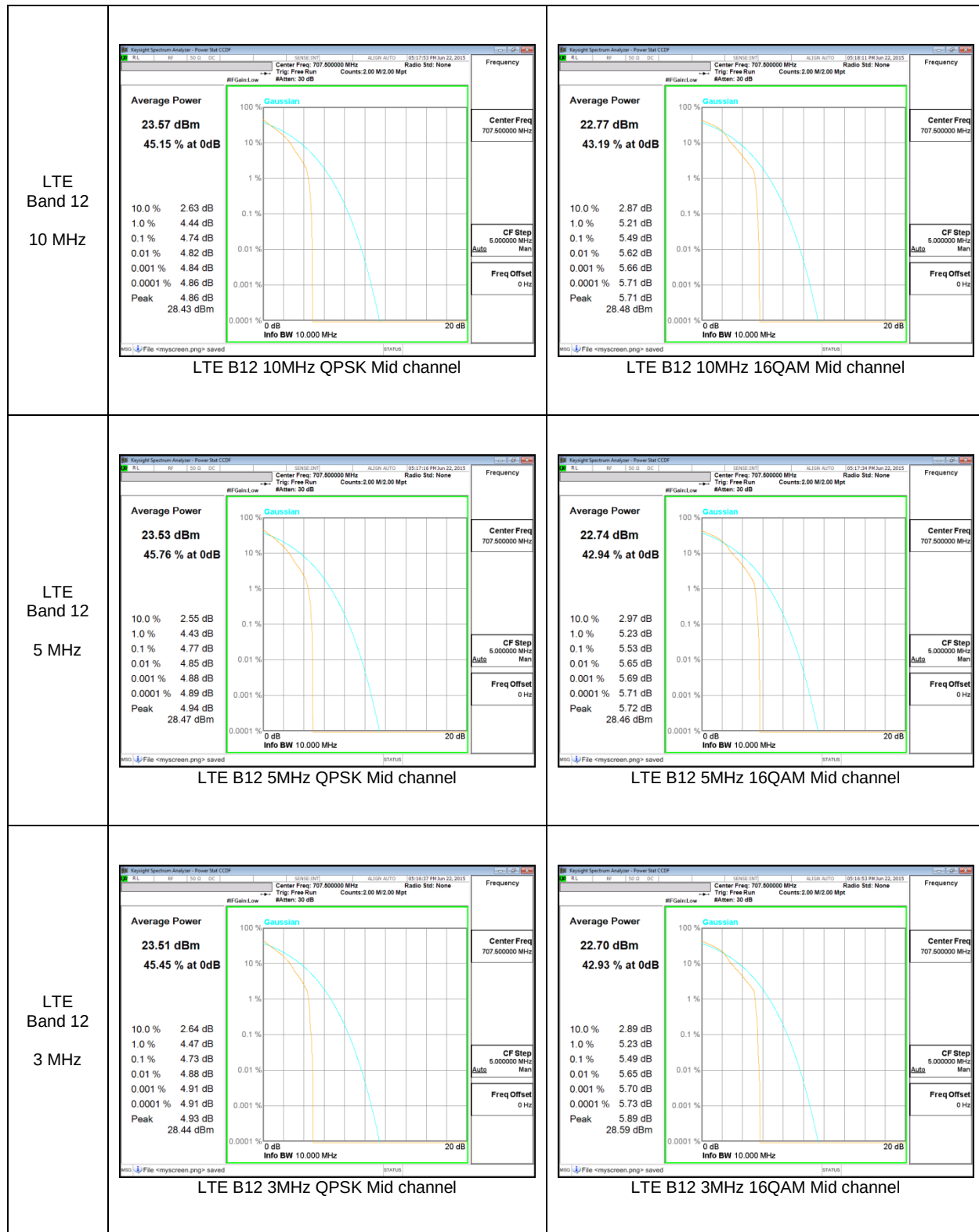


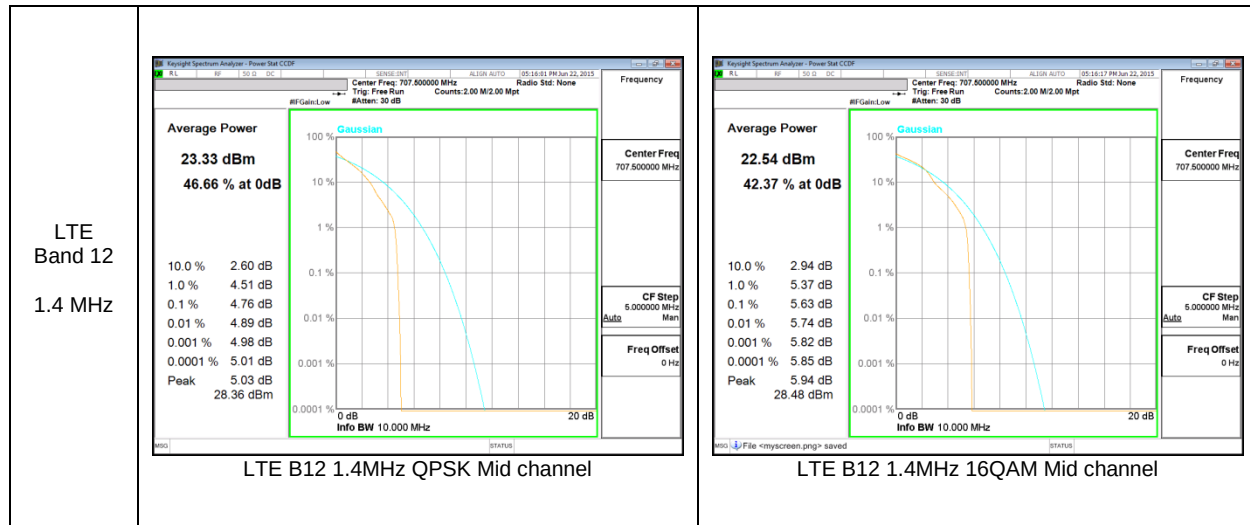
LTE Band 25

LTE Band 25 20 MHz	 Average Power 23.04 dBm 46.06 % at 0dB 10.0 % 2.71 dB 1.0 % 4.03 dB 0.1 % 4.05 dB 0.01 % 4.05 dB 0.001 % 4.06 dB 0.0001 % 4.09 dB Peak 4.26 dB 27.30 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 20MHz QPSK Mid channel	 Average Power 22.57 dBm 43.95 % at 0dB 10.0 % 2.88 dB 1.0 % 4.50 dB 0.1 % 4.52 dB 0.01 % 4.53 dB 0.001 % 4.57 dB 0.0001 % 4.64 dB Peak 4.70 dB 27.27 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 20MHz 16QAM Mid channel
LTE Band 25 15 MHz	 Average Power 23.09 dBm 46.37 % at 0dB 10.0 % 2.70 dB 1.0 % 4.00 dB 0.1 % 4.02 dB 0.01 % 4.03 dB 0.001 % 4.03 dB 0.0001 % 4.03 dB Peak 4.03 dB 27.12 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 15MHz QPSK Mid channel	 Average Power 22.31 dBm 43.49 % at 0dB 10.0 % 2.91 dB 1.0 % 4.78 dB 0.1 % 4.79 dB 0.01 % 4.80 dB 0.001 % 4.81 dB 0.0001 % 4.90 dB Peak 5.03 dB 27.34 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 15MHz 16QAM Mid channel
LTE Band 25 10 MHz	 Average Power 23.36 dBm 46.62 % at 0dB 10.0 % 2.72 dB 1.0 % 3.72 dB 0.1 % 3.74 dB 0.01 % 4.94 dB 0.001 % 5.06 dB 0.0001 % 5.09 dB Peak 5.11 dB 28.47 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 10MHz QPSK Mid channel	 Average Power 22.69 dBm 44.00 % at 0dB 10.0 % 2.99 dB 1.0 % 4.40 dB 0.1 % 4.42 dB 0.01 % 5.65 dB 0.001 % 5.75 dB 0.0001 % 5.77 dB Peak 5.77 dB 28.46 dBm Center Freq 1.882500000 GHz Trig: Free Run Counts: 2.00 M/2.00 Mpt Radio Std: None #F Gain: Low #F Att: 30 dB Info BW 10.000 MHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz LTE B25 10MHz 16QAM Mid channel

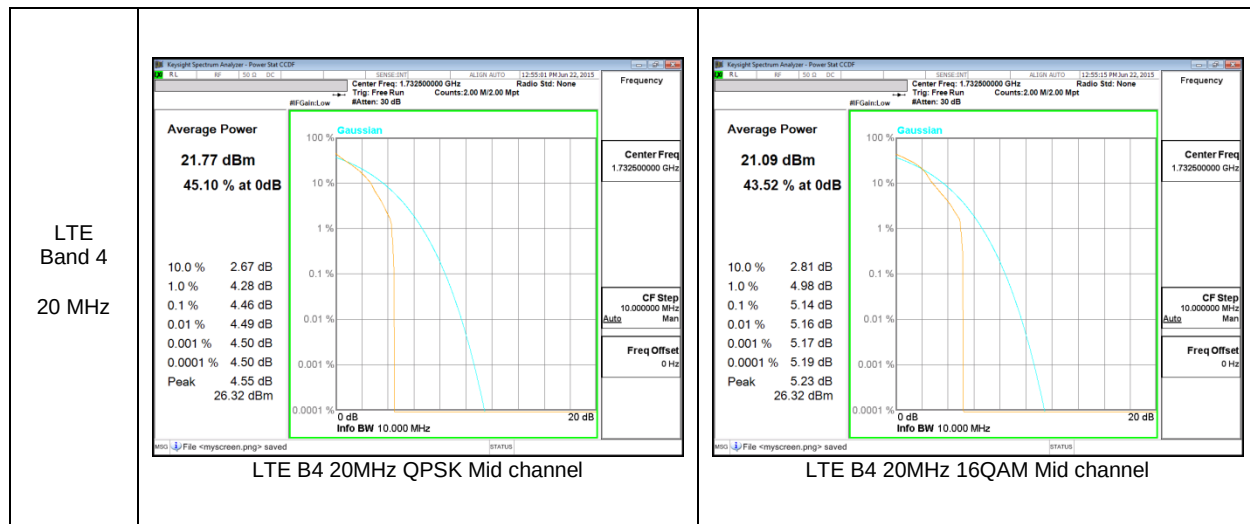
LTE Band 25 5 MHz	 LTE B25 5MHz QPSK Mid channel	 LTE B25 5MHz 16QAM Mid channel
LTE Band 25 3 MHz	 LTE B25 3MHz QPSK Mid channel	 LTE B25 3MHz 16QAM Mid channel
LTE Band 25 1.4 MHz	 LTE B25 1.4MHz QPSK Mid channel	 LTE B25 1.4MHz 16QAM Mid channel

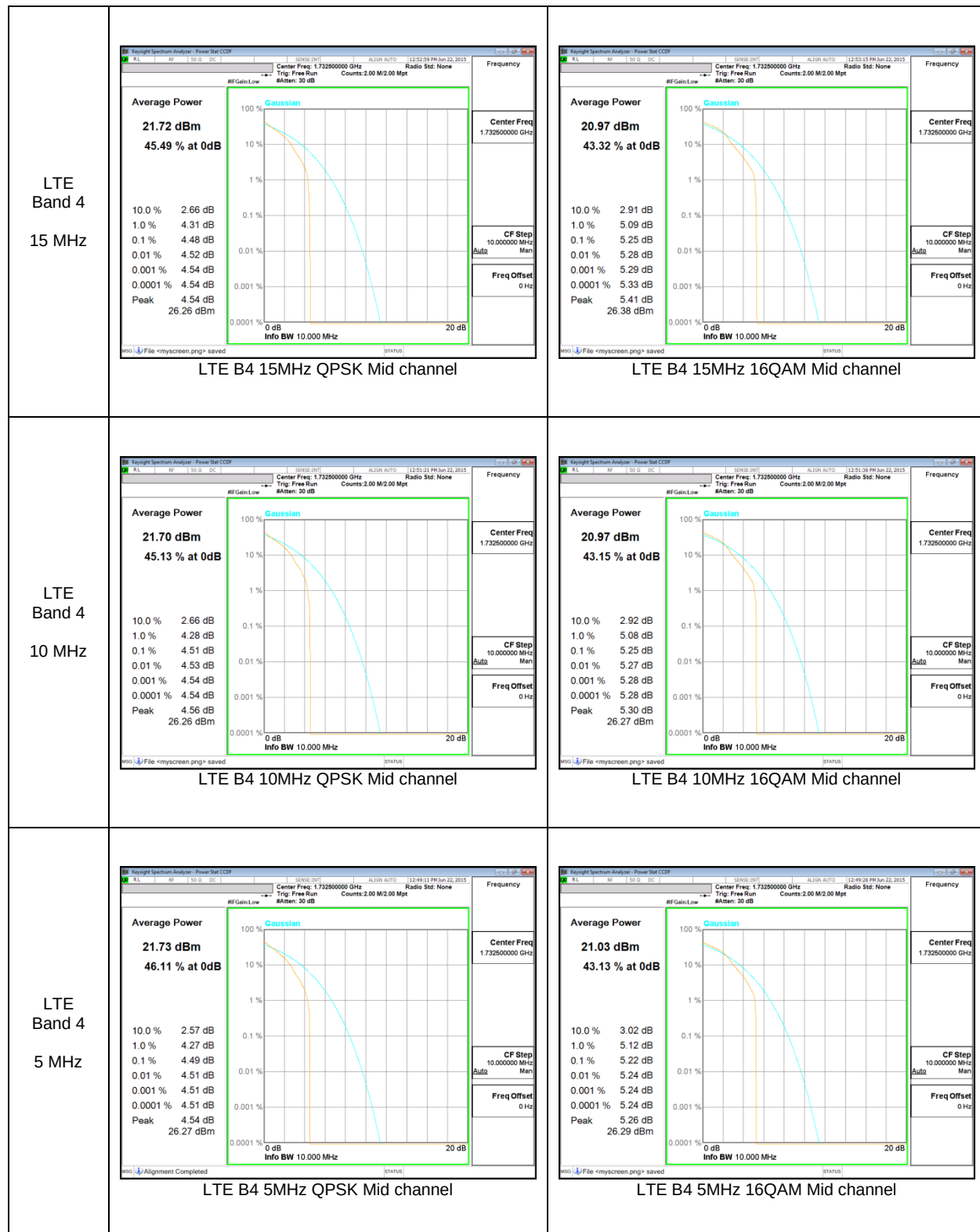
LTE Band 12

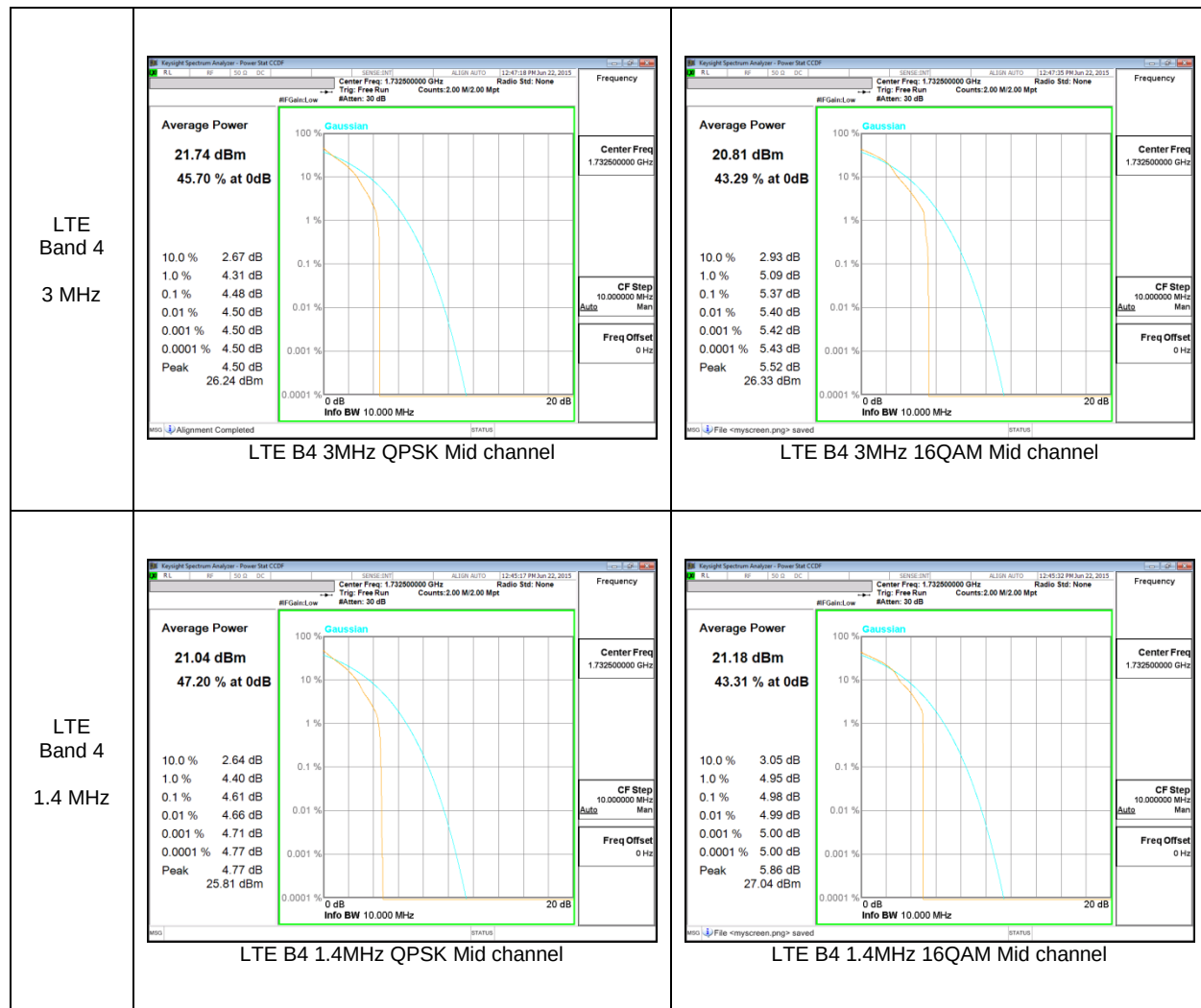




LTE Band 4







10. LIMITS AND CONDUCTED RESULTS

10.1. 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 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 v02r02)

10.1.1. OCCUPIED BANDWIDTH RESULTS

LTE Band 41

Band	BW [MHz]	Channel	f [MHz]	Mode	99% BW [MHz]	26dB BW [MHz]
Band 41	20	35970	2506.0	QPSK	17.874	19.27
				16QAM	17.876	19.55
		40620	2593.0	QPSK	17.891	19.92
				16QAM	17.911	19.33
		41490	2680.0	QPSK	17.925	19.55
				16QAM	17.878	19.97
	15	39725	2503.5	QPSK	13.415	14.54
				16QAM	13.405	14.48
		40620	2593.0	QPSK	13.431	14.57
				16QAM	13.437	14.50
		41515	2682.5	QPSK	13.444	14.56
				16QAM	13.444	14.97
	10	39700	2501.0	QPSK	8.9405	9.729
				16QAM	8.9640	9.724
		40620	2593.0	QPSK	8.9487	9.751
				16QAM	8.9615	9.693
		41540	2685.0	QPSK	8.9745	9.823
				16QAM	8.9538	9.925
	5	39675	2498.5	QPSK	4.4844	4.944
				16QAM	4.4857	4.931
		40620	2593.0	QPSK	4.4931	4.979
				16QAM	4.4821	4.916
		41565	2687.5	QPSK	4.4907	4.945
				16QAM	4.4834	4.905

LTE Band 26

Band	BW [MHz]	Channel	f [MHz]	Mode	99% BW [MHz]	26dB BW [MHz]
Band 26	15	26865	831.5	QPSK	13.414	14.39
				16QAM	13.424	14.62
		26965	841.5	QPSK	13.434	14.54
				16QAM	13.420	14.50
	10	26740	819.0	QPSK	8.9538	9.755
				16QAM	8.9495	9.771
		26865	831.5	QPSK	8.9579	9.748
				16QAM	8.9297	9.749
		26990	844.0	QPSK	8.9481	9.721
				16QAM	8.9588	9.711
	5	26715	816.5	QPSK	4.4908	4.890
				16QAM	4.4827	4.932
		26740	819.0	QPSK	4.4883	4.937
				16QAM	4.4874	4.912
		26765	821.5	QPSK	4.4931	4.890
				16QAM	4.4802	4.893
		26865	831.5	QPSK	4.4921	4.940
				16QAM	4.4884	4.916
		27015	846.5	QPSK	4.4787	4.889
				16QAM	4.4884	4.925
	3	26705	815.5	QPSK	2.6911	2.977
				16QAM	2.6950	2.960
		26740	819.0	QPSK	2.6974	2.974
				16QAM	2.6891	2.952
		26775	822.5	QPSK	2.7012	2.949
				16QAM	2.6909	2.985
		26865	831.5	QPSK	2.6926	2.975
				16QAM	2.6917	2.976
		27025	847.5	QPSK	2.6970	2.981
				16QAM	2.6880	3.008
	1.4	26697	814.7	QPSK	1.0838	1.221
				16QAM	1.0809	1.232
		26740	819.0	QPSK	1.0848	1.229
				16QAM	1.0817	1.213
		26783	823.3	QPSK	1.0832	1.213
				16QAM	1.0848	1.223
		26865	831.5	QPSK	1.0774	1.229
				16QAM	1.0817	1.227
		27033	848.3	QPSK	1.0839	1.225
				16QAM	1.0811	1.230

LTE Band 25

Band	BW [MHz]	Channel	f [MHz]	Mode	99% BW [MHz]	26dB BW [MHz]
Band 25	20	26140	1860.0	QPSK	17.886	19.09
				16QAM	17.869	19.33
		26365	1882.5	QPSK	17.918	19.28
				16QAM	17.884	19.33
		26590	1905.0	QPSK	17.901	19.37
				16QAM	17.883	19.23
	15	26115	1857.5	QPSK	13.415	14.46
				16QAM	13.413	14.56
		26365	1882.5	QPSK	13.437	14.59
				16QAM	13.447	14.50
		26615	1907.5	QPSK	13.420	14.54
				16QAM	13.427	14.57
	10	26090	1855.0	QPSK	8.9521	9.749
				16QAM	8.9408	9.705
		26365	1882.5	QPSK	8.9599	9.664
				16QAM	8.9459	9.780
		26640	1910.0	QPSK	8.9378	9.733
				16QAM	8.9659	9.768
	5	26065	1852.5	QPSK	4.4888	4.885
				16QAM	4.4896	4.929
		26365	1882.5	QPSK	4.4924	4.963
				16QAM	4.4941	4.936
		26665	1912.5	QPSK	4.4820	4.897
				16QAM	4.4941	4.945
	3	26055	1851.5	QPSK	2.6932	2.972
				16QAM	2.6900	2.985
		26365	1882.5	QPSK	2.6871	2.994
				16QAM	2.6922	2.990
		26675	1913.5	QPSK	2.6977	2.986
				16QAM	2.6896	2.991
	1.4	26047	1850.7	QPSK	1.0835	1.232
				16QAM	1.0815	1.229
		26365	1882.5	QPSK	1.0822	1.228
				16QAM	1.0926	1.236
		26683	1914.3	QPSK	1.0788	1.220
				16QAM	1.0824	1.226

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE Band 12

Band	BW [MHz]	Channel	f [MHz]	Mode	99% BW [MHz]	26dB BW [MHz]
Band 12	10	23060	704.0	QPSK	8.9698	9.816
				16QAM	8.9924	9.791
		23095	707.5	QPSK	8.9600	9.674
				16QAM	8.9455	9.733
		23130	711.0	QPSK	8.9345	9.739
				16QAM	8.9579	9.700
	5	23035	701.5	QPSK	4.4898	4.899
				16QAM	4.4898	4.932
		23095	707.5	QPSK	4.4906	4.951
				16QAM	4.4940	4.919
		23155	713.5	QPSK	4.4829	4.883
				16QAM	4.4942	4.930
	3	23025	700.5	QPSK	2.6901	2.963
				16QAM	2.6958	2.977
		23095	707.5	QPSK	2.6913	2.971
				16QAM	2.6934	2.982
		23165	714.5	QPSK	2.7000	3.000
				16QAM	2.6922	2.987
	1.4	23017	699.7	QPSK	1.0846	1.224
				16QAM	1.0825	1.235
		23095	707.5	QPSK	1.0785	1.223
				16QAM	1.0835	1.230
		23173	715.3	QPSK	1.0828	1.225
				16QAM	1.0911	1.236

LTE Band 5

Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

LTE Band 4

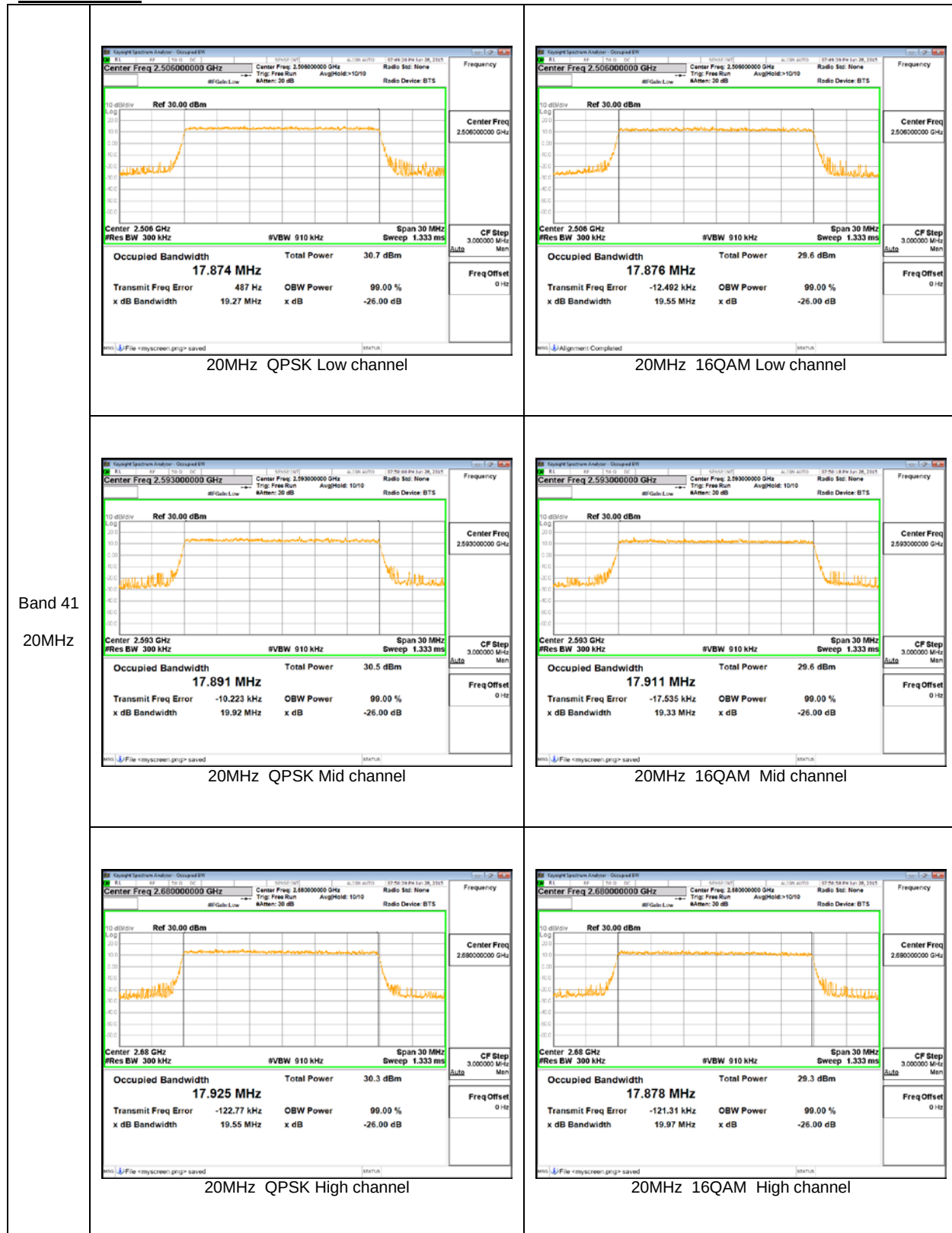
Band	BW [MHz]	Channel	f [MHz]	Mode	99% BW [MHz]	26dB BW [MHz]
Band 4	20	20050	1720.0	QPSK	17.893	19.37
				16QAM	17.876	19.22
		20174	1732.5	QPSK	17.930	19.21
				16QAM	17.888	19.21
		20299	1745.0	QPSK	17.922	19.42
				16QAM	17.898	19.42
	15	20025	1717.5	QPSK	13.407	14.48
				16QAM	13.418	14.50
		20174	1732.5	QPSK	13.442	14.60
				16QAM	13.418	14.52
		20324	1747.5	QPSK	13.436	14.59
				16QAM	13.417	14.58
	10	20000	1715.0	QPSK	8.9542	9.682
				16QAM	8.9461	9.757
		20174	1732.5	QPSK	8.9462	9.714
				16QAM	8.9423	9.658
		20349	1750.0	QPSK	8.9591	9.722
				16QAM	8.9708	9.777
	5	19975	1712.5	QPSK	4.4937	4.918
				16QAM	4.4942	4.936
		20174	1732.5	QPSK	4.4901	4.944
				16QAM	4.4932	4.914
		20374	1752.5	QPSK	4.4886	4.929
				16QAM	4.4929	4.924
	3	19965	1711.5	QPSK	2.6929	2.965
				16QAM	2.6960	2.996
		20174	1732.5	QPSK	2.6915	2.984
				16QAM	2.6900	2.994
		20384	1753.5	QPSK	2.6987	2.994
				16QAM	2.6907	3.002
	1.4	19957	1710.7	QPSK	1.0837	1.227
				16QAM	1.0914	1.237
		20174	1732.5	QPSK	1.0811	1.228
				16QAM	1.0891	1.224
		20392	1754.3	QPSK	1.0853	1.222
				16QAM	1.0828	1.236

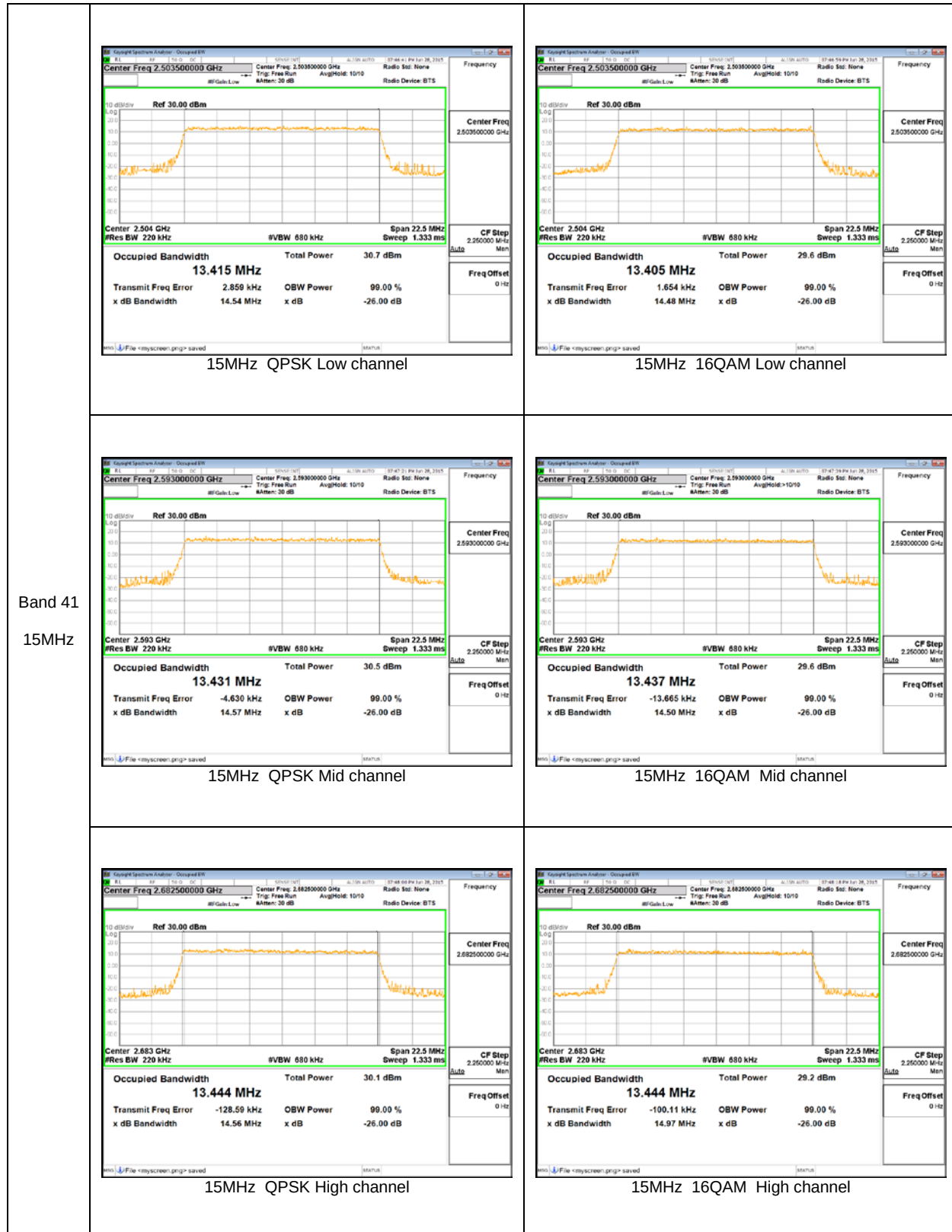
LTE Band 2

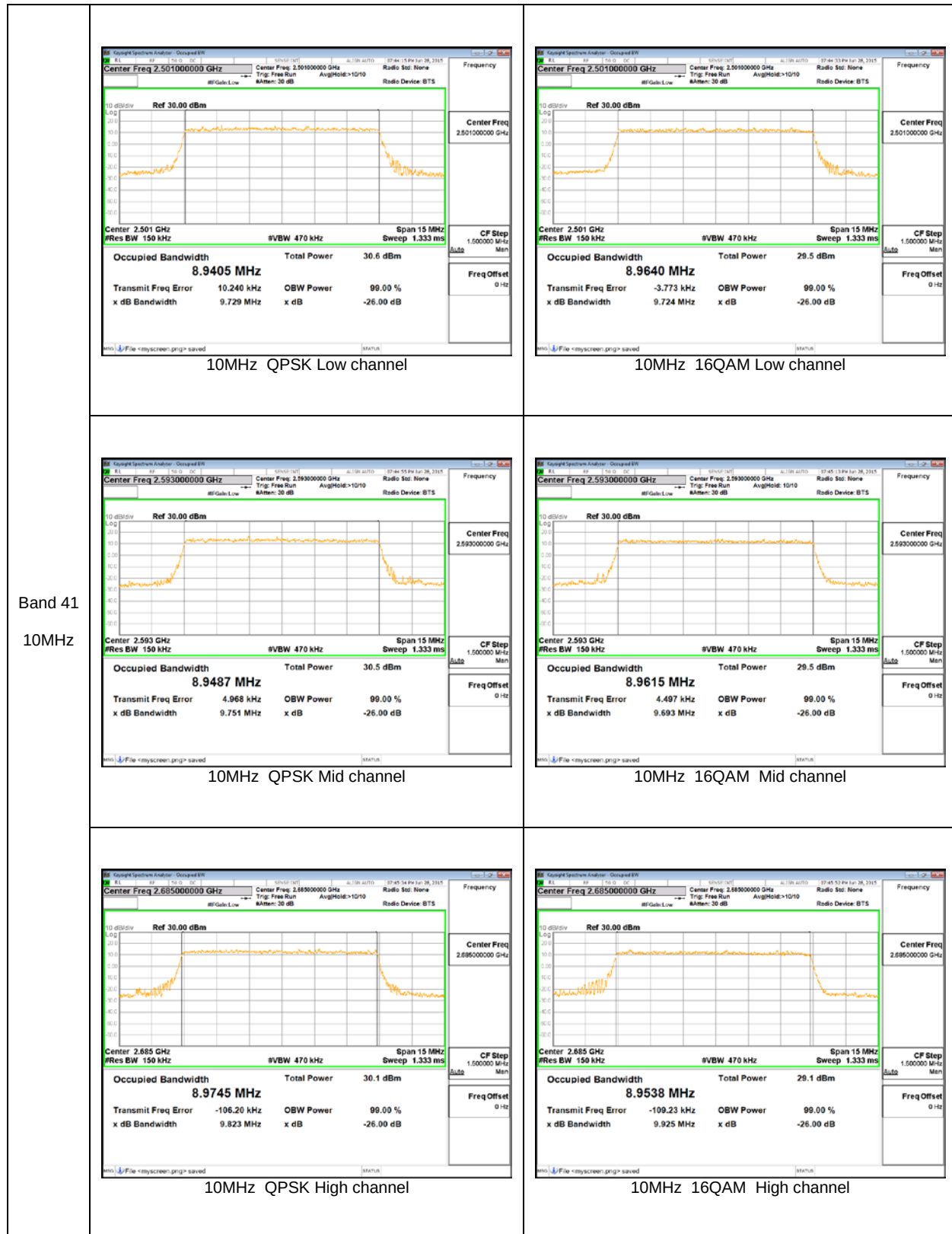
Due to frequency range and same output power setting, test was carried in LTE Band 25 to cover both LTE Band 25 and LTE Band 2

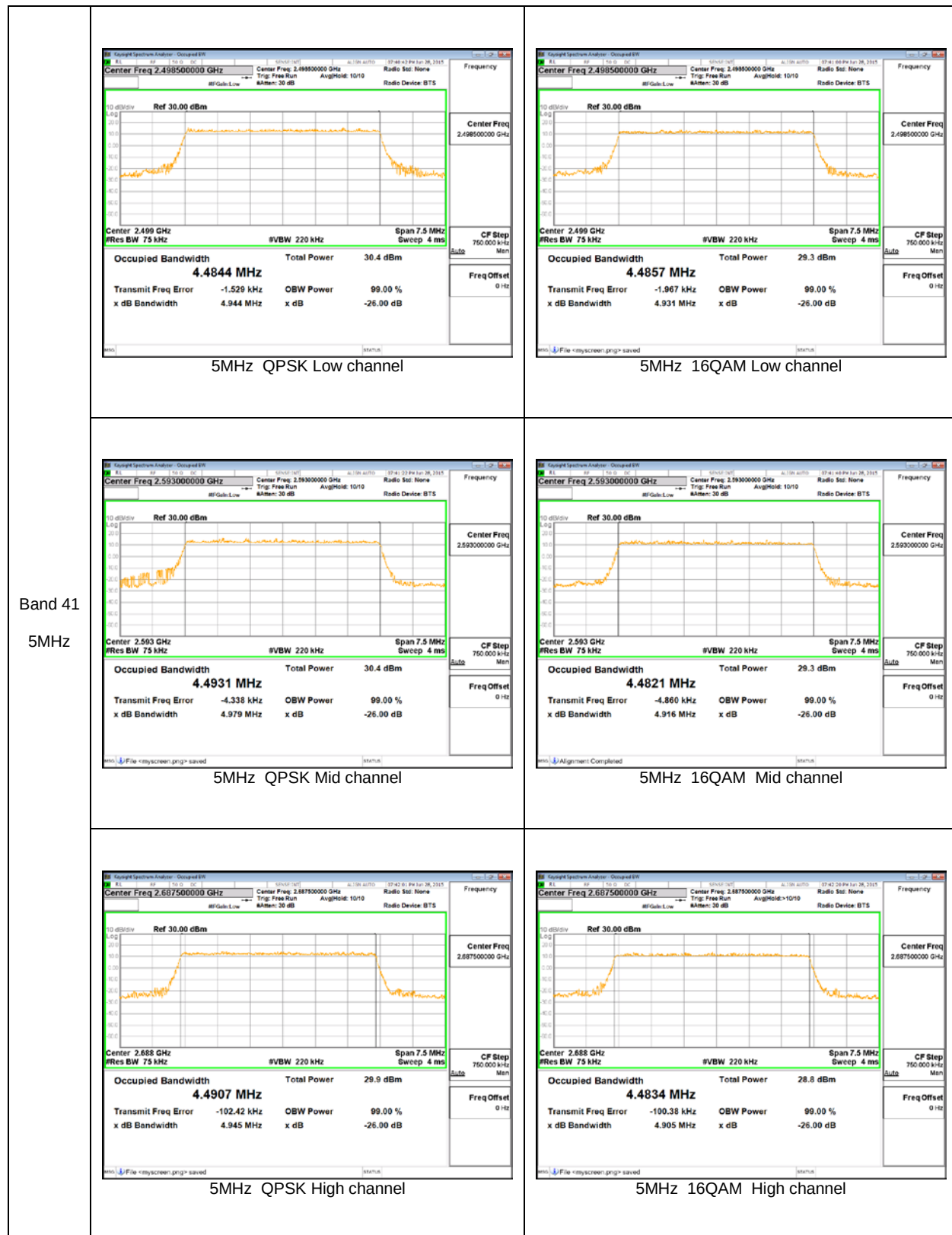
10.1.2. OCCUPIED BANDWIDTH PLOTS

LTE Band 41









LTE Band 26



