

FCC 47 CFR PART 27

RF Test Report

Applicant : Sierra Wireless Inc.
Address : 13811 Wireless Way, Richmond, BC, Canada V6V 3A4
Product Type : Module
Trade Name : AirPrime
Model Number : HL7618
Applicable Standard : FCC 47 CFR PART 27L
ANSI/TIA-603-D 2010
Application Purpose : Original
Receive Date : Nov. 16, 2015
Test Period : Nov. 16 ~ Nov. 17, 2015
Issue Date : Dec. 09, 2015

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Dec. 09, 2015	Initial Issue	

Verification of Compliance

Issued Date: 12/09/2015

Applicant : Sierra Wireless Inc.
Address : 13811 Wireless Way, Richmond, BC, Canada V6V 3A4
Product Type : Module
Trade Name : AirPrime
Model Number : HL7618
FCC ID : N7NHL7618
EUT Rated Voltage : DC 3.2V / 3.7 V / 4.5V
Test Voltage : DC 3.2V / 3.7 V / 4.5V
Applicable Standard : FCC 47 CFR PART 27L
ANSI/TIA-603-D 2010
Test Result : Complied
Application Purpose : Original
Performing Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade District,
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Taiwan Accreditation Foundation accreditation number: 1330
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A Test Lab Techno Corp. 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 A Test Lab Techno Corp. 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.

Approved By
(Manager)

: Fly Lu
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Reviewed By

(Testing Engineer)

: Eric Ou Yang
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1 General Information

1.1. EUT Description

Applicant		Sierra Wireless Inc.			
Applicant Address		13811 Wireless Way, Richmond, BC, Canada V6V 3A4			
Manufacturer		Sierra Wireless Inc.			
Manufacturer Address		13811 Wireless Way, Richmond, BC, Canada V6V 3A4			
Product Type		Module			
Trade Name		AirPrime			
Model Number		HL7618			
FCC ID		N7NHL7618			
IMEI No.		355463070000006			
Mode	LTE	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
		4	1710 ~ 1755	2110 ~ 2155	QPSK, 16QAM
		13	777 ~ 787	746 ~ 756	QPSK, 16QAM
Channel Bandwidth		LTE Band 4 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 13 5MHz, 10MHz			
Antenna Gain (dBi)		LTE Band 4: 6.99 dBi LTE Band 13 : 11.87 dBi			

Operate Band	Max. Conducted Output Power (W)	Max. E.R.P. / E.I.R.P. (W)	Emission Designator
QPSK			
LTE Band 4 (Channel Bandwidth 1.4MHz)	0.186	0.929	1M09G7D
LTE Band 4 (Channel Bandwidth 3MHz)	0.196	0.982	2M69G7D
LTE Band 4 (Channel Bandwidth 5MHz)	0.195	0.977	4M47G7D
LTE Band 4 (Channel Bandwidth 10MHz)	0.196	0.979	8M96G7D
LTE Band 4 (Channel Bandwidth 15MHz)	0.200	1.000	13M4G7D
LTE Band 4 (Channel Bandwidth 20MHz)	0.188	0.940	17M9G7D
LTE Band 13 (Channel Bandwidth 5MHz)	0.169	1.585	4M48G7D
LTE Band 13 (Channel Bandwidth 10MHz)	0.159	1.493	8M99G7D
16QAM			
LTE Band 4 (Channel Bandwidth 1.4MHz)	0.173	0.865	1M09W7D
LTE Band 4 (Channel Bandwidth 3MHz)	0.173	0.865	2M69W7D
LTE Band 4 (Channel Bandwidth 5MHz)	0.173	0.867	4M47W7D
LTE Band 4 (Channel Bandwidth 10MHz)	0.172	0.859	8M97W7D
LTE Band 4 (Channel Bandwidth 15MHz)	0.167	0.836	13M4W7D
LTE Band 4 (Channel Bandwidth 20MHz)	0.160	0.802	17M9W7D
LTE Band 13 (Channel Bandwidth 5MHz)	0.153	1.435	4M47W7D
LTE Band 13 (Channel Bandwidth 10MHz)	0.151	1.413	9M00W7D

1.2. Mode of Operation

Three channels had been tested for each channel bandwidth.

LTE Band 4						
Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	19957	1710.7	19965	1711.5	19975	1712.5
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20393	1754.3	20385	1753.5	20375	1752.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	20000	1715.0	20025	1717.5	20050	1720.0
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20350	1750.0	20325	1747.5	20300	1745.0

LTE Band 13				
Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	23755	706.5	23780	709.0
Middle CH	23790	710.0	23790	710.0
High CH	23825	713.5	23800	711.0

Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

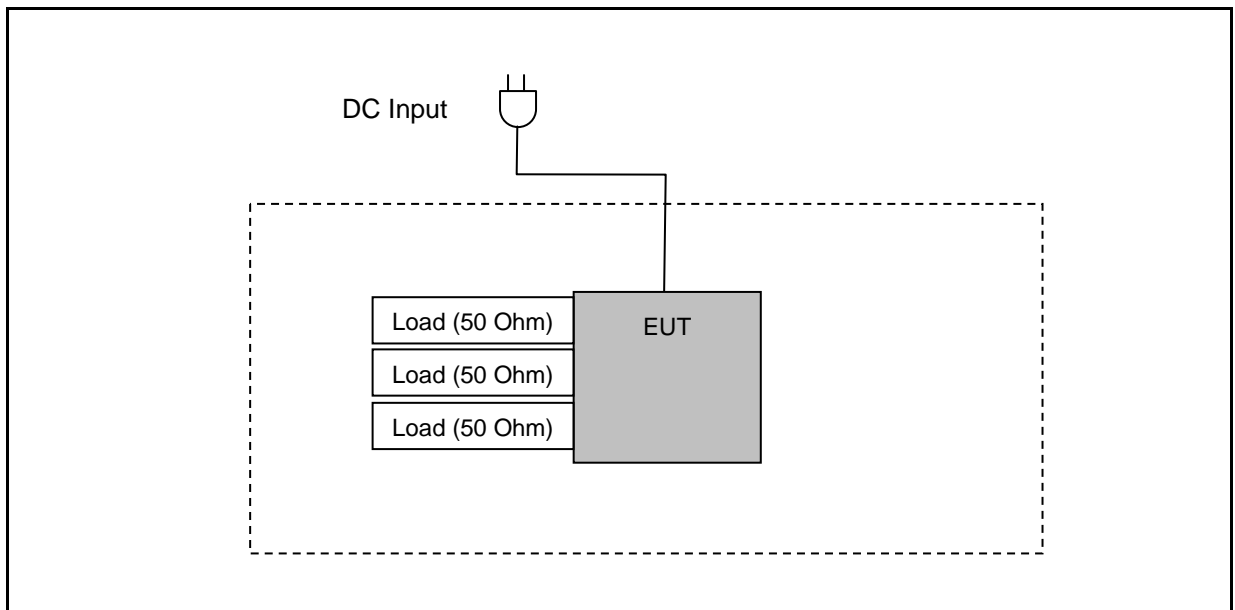
Frequency range investigated for radiated emission: 30MHz to 19000 MHz.

Band	Channel Bandwidth	Test Modes	
LTE Band 4	1.4 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 2) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 5) Link <input type="checkbox"/> LTE(RB Size 3, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 3, RB Offset 1) Link <input type="checkbox"/> LTE(RB Size 3, RB Offset 3) Link <input type="checkbox"/> LTE(RB Size 6, RB Offset 0) Link	QPSK
	3 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 8) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 14) Link <input type="checkbox"/> LTE(RB Size 8, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 8, RB Offset 4) Link <input type="checkbox"/> LTE(RB Size 8, RB Offset 7) Link <input type="checkbox"/> LTE(RB Size 15, RB Offset 0) Link	QPSK
	5 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 12) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 24) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 6) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 13) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 0) Link	QPSK
	10 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 24) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 49) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 12) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 25) Link <input type="checkbox"/> LTE(RB Size 50, RB Offset 0) Link	QPSK
	15 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 38) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 74) Link <input type="checkbox"/> LTE(RB Size 38, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 38, RB Offset 18) Link <input type="checkbox"/> LTE(RB Size 38, RB Offset 37) Link <input type="checkbox"/> LTE(RB Size 75, RB Offset 0) Link	QPSK
	20 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 49) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 99) Link <input type="checkbox"/> LTE(RB Size 50, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 50, RB Offset 25) Link <input type="checkbox"/> LTE(RB Size 50, RB Offset 50) Link <input type="checkbox"/> LTE(RB Size 100, RB Offset 0) Link	QPSK
LTE Band 13	5 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 12) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 24) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 6) Link <input type="checkbox"/> LTE(RB Size 12, RB Offset 13) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 0) Link	QPSK
	10 MHz	<input checked="" type="checkbox"/> LTE(RB Size 1, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 24) Link <input type="checkbox"/> LTE(RB Size 1, RB Offset 49) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 0) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 12) Link <input type="checkbox"/> LTE(RB Size 25, RB Offset 25) Link <input type="checkbox"/> LTE(RB Size 50, RB Offset 0) Link	QPSK

1.3. EUT Exercise Software

1	Setup the EUT and Base Station (CMW500) as shown on 1.4.
2	Turn on the power of all equipment.
3	EUT run test program test.

1.4. Configuration of Test System Details



1.5. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

1.6. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Average Power	Pass
§27. 50	Equivalent Isotropic Radiated Power / Equivalent Radiated Power	Pass
§2.1055 §27. 54	Frequency Stability	Pass
§2.1049	Emission Bandwidth & Occupied Bandwidth	Pass
§27.50	Peak to average ratio	Pass
§27.53	Band Edge	Pass
§2.1051 §27.53	Conducted Spurious Emissions	Pass
§2.1053 §27.53	Radiated Spurious Emissions	Pass

2 Conducted Output Average Power Test

2.1. Limit

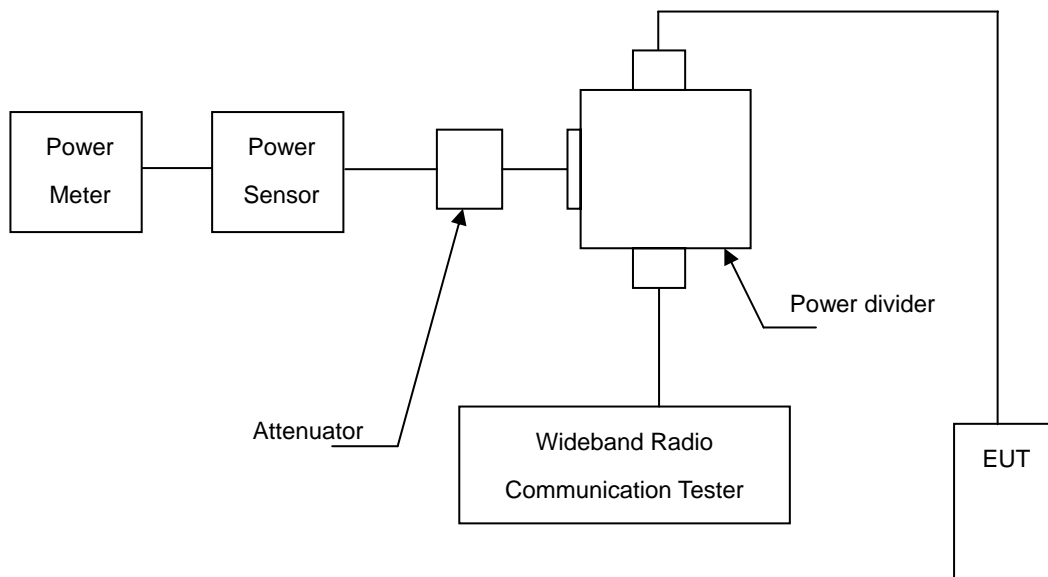
N/A

2.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Wideband Radio Communication Tester	R & S	CMW500	103168	10/30/2015	1 year
Wideband Power Sensor	Agilent	N1921A	MY45241957	12/15/2014	1 year
Single Channel PK Power Meter	Agilent	N1911A	MY45101619	12/15/2014	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

2.3. Test Setup



2.4. Test Procedure

- The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

2.5. Uncertainty

The measurement uncertainty is defined as for Conducted Power measurement is 1.2 dB.

2.6. Test Result

Model Number	HL7618
Test Item	Conducted Output Average Power
Date of Test	11/16/2015

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 4	1.4 MHz	QPSK	19957	1710.7	1	0	22.39	0.173
					1	2	22.36	0.172
					1	5	22.34	0.171
					3	0	22.34	0.171
					3	1	22.31	0.170
					3	3	22.29	0.169
			6	0	21.37	0.137		
			20175	1732.5	1	0	22.42	0.175
					1	2	22.40	0.174
					1	5	22.40	0.174
					3	0	22.40	0.174
					3	1	22.36	0.172
					3	3	22.33	0.171
			6	0	21.36	0.137		
			20393	1754.3	1	0	22.69	0.186
					1	2	22.65	0.184
					1	5	22.65	0.184
					3	0	22.62	0.183
		3			1	22.61	0.182	
		3			3	22.58	0.181	
		6	0	21.65	0.146			
		16QAM	19957	1710.7	1	0	21.91	0.155
					1	2	21.78	0.151
					1	5	21.66	0.147
					3	0	21.50	0.141
					3	1	21.49	0.141
					3	3	21.45	0.140
			6	0	21.37	0.137		
			20175	1732.5	1	0	21.64	0.146
					1	2	21.60	0.145
					1	5	21.50	0.141
					3	0	21.39	0.138
					3	1	21.32	0.136
					3	3	21.26	0.134
			6	0	20.50	0.112		
			20393	1754.3	1	0	22.38	0.173
					1	2	22.31	0.170
					1	5	22.00	0.158
					3	0	21.90	0.155
		3			1	21.82	0.152	
		3			3	21.79	0.151	
		6	0	20.96	0.125			

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power			
					Size	Offset	(dBm)	(W)		
LTE Band 4	3 MHz	QPSK	19965	1711.5	1	0	22.60	0.182		
					1	8	22.52	0.179		
					1	14	22.40	0.174		
					8	0	21.65	0.146		
					8	4	21.62	0.145		
					8	7	21.61	0.145		
			15	0	21.56	0.143				
			20175	1732.5	1	0	22.60	0.182		
					1	8	22.54	0.179		
					1	14	22.49	0.177		
					8	0	21.65	0.146		
					8	4	21.63	0.146		
					8	7	21.62	0.145		
			15	0	21.56	0.143				
			20385	1753.5	1	0	22.93	0.196		
					1	8	22.89	0.195		
					1	14	22.84	0.192		
					8	0	21.98	0.158		
		8			4	21.92	0.156			
		8			7	21.91	0.155			
		15	0	21.89	0.155					
		16QAM	19965	1711.5	1	0	21.96	0.157		
					1	8	21.82	0.152		
					1	14	21.55	0.143		
					8	0	20.79	0.120		
					8	4	20.75	0.119		
					8	7	20.66	0.116		
					15	0	20.63	0.116		
					20175	1732.5	1	0	22.02	0.159
							1	8	21.77	0.150
							1	14	21.68	0.147
							8	0	20.72	0.118
							8	4	20.71	0.118
			8	7			20.65	0.116		
			15	0	20.55	0.114				
			20385	1753.5	1	0	22.38	0.173		
					1	8	22.12	0.163		
					1	14	21.85	0.153		
					8	0	21.11	0.129		
					8	4	21.10	0.129		
					8	7	21.03	0.127		
			15	0	20.92	0.124				

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 4	5 MHz	QPSK	19975	1712.5	1	0	22.55	0.180
					1	12	22.54	0.179
					1	24	22.39	0.173
					12	0	21.50	0.141
					12	6	21.46	0.140
					12	13	21.46	0.140
					25	0	21.40	0.138
					1	0	22.54	0.179
			20175	1732.5	1	12	22.46	0.176
					1	24	22.33	0.171
					12	0	21.57	0.144
					12	6	21.56	0.143
					12	13	21.55	0.143
					25	0	21.55	0.143
					1	0	22.91	0.195
					1	12	22.86	0.193
			20375	1752.5	1	24	22.70	0.186
					12	0	21.87	0.154
					12	6	21.85	0.153
					12	13	21.83	0.152
					25	0	21.82	0.152
					1	0	21.80	0.151
					1	12	21.76	0.150
					1	24	21.61	0.145
		16QAM	19975	1712.5	12	0	20.65	0.116
					12	6	20.62	0.115
					12	13	20.57	0.114
					25	0	20.54	0.113
					1	0	22.15	0.164
					1	12	21.88	0.154
					1	24	21.58	0.144
					12	0	20.76	0.119
			20175	1732.5	12	6	20.75	0.119
					12	13	20.57	0.114
					25	0	20.54	0.113
					1	0	22.39	0.173
					1	12	22.34	0.171
					1	24	22.25	0.168
					12	0	21.08	0.128
					12	6	21.00	0.126
			20375	1752.5	12	13	20.89	0.123
					25	0	20.88	0.122

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 4	10 MHz	QPSK	20000	1715.0	1	0	22.66	0.185
					1	24	22.46	0.176
					1	49	22.46	0.176
					25	0	22.22	0.167
					25	12	22.03	0.160
					25	25	21.65	0.146
			50	0	21.39	0.138		
			1	0	22.92	0.196		
			1	24	22.50	0.178		
			1	49	22.43	0.175		
			25	0	21.67	0.147		
			25	12	21.62	0.145		
			25	25	21.61	0.145		
			50	0	21.50	0.141		
			1	0	22.84	0.192		
			1	24	22.78	0.190		
			1	49	22.74	0.188		
			25	0	21.94	0.156		
		25	12	21.88	0.154			
		25	25	21.82	0.152			
		50	0	21.78	0.151			
		1	0	21.78	0.151			
		1	24	21.62	0.145			
		1	49	21.33	0.136			
		25	0	20.69	0.117			
		25	12	20.59	0.115			
		25	25	20.57	0.114			
		50	0	20.41	0.110			
		1	0	22.30	0.170			
		1	24	22.17	0.165			
		1	49	22.01	0.159			
		25	0	20.77	0.119			
		25	12	20.66	0.116			
		25	25	20.62	0.115			
		50	0	20.60	0.115			
		1	0	22.35	0.172			
1	24	22.32	0.171					
1	49	22.19	0.166					
25	0	20.99	0.126					
25	12	20.97	0.125					
25	25	20.93	0.124					
50	0	20.89	0.123					

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 4	15 MHz	QPSK	20025	1717.5	1	0	22.54	0.179
					1	38	22.46	0.176
					1	74	22.03	0.160
					38	0	21.67	0.147
					38	18	21.63	0.146
					38	37	21.49	0.141
			75	0	21.31	0.135		
			1	0	22.77	0.189		
			1	38	22.57	0.181		
			1	74	22.52	0.179		
			38	0	21.75	0.150		
			38	18	21.61	0.145		
			38	37	21.49	0.141		
			75	0	21.44	0.139		
			1	0	23.01	0.200		
			1	38	22.74	0.188		
			1	74	22.61	0.182		
			38	0	22.01	0.159		
		38	18	21.90	0.155			
		38	37	21.87	0.154			
		75	0	21.75	0.150			
		1	0	21.74	0.149			
		1	38	21.72	0.149			
		1	74	21.61	0.145			
		38	0	20.72	0.118			
		38	18	20.52	0.113			
		38	37	20.52	0.113			
		75	0	20.44	0.111			
		1	0	21.98	0.158			
		1	38	21.72	0.149			
		1	74	21.71	0.148			
		38	0	20.76	0.119			
		38	18	20.70	0.117			
		38	37	20.67	0.117			
		75	0	20.51	0.112			
		1	0	22.23	0.167			
1	38	22.22	0.167					
1	74	21.99	0.158					
38	0	20.99	0.126					
38	18	20.91	0.123					
38	37	20.91	0.123					
75	0	20.78	0.120					

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 4	20 MHz	QPSK	20050	1720.0	1	0	22.69	0.186
					1	49	22.16	0.164
					1	99	22.01	0.159
					50	0	21.70	0.148
					50	25	21.50	0.141
					50	50	21.49	0.141
			100	0	21.28	0.134		
			20175	1732.5	1	0	22.49	0.177
					1	49	22.32	0.171
					1	99	22.01	0.159
					50	0	21.67	0.147
					50	25	21.57	0.144
					50	50	21.50	0.141
			100	0	21.33	0.136		
			20300	1745.0	1	0	22.74	0.188
					1	49	22.48	0.177
					1	99	22.29	0.169
					50	0	21.89	0.155
		50			25	21.85	0.153	
		50			50	21.69	0.148	
		100	0	21.67	0.147			
		16QAM	20050	1720.0	1	0	22.01	0.159
					1	49	21.44	0.139
					1	99	21.17	0.131
					50	0	20.75	0.119
					50	25	20.50	0.112
					50	50	20.44	0.111
			100	0	20.42	0.110		
			20175	1732.5	1	0	22.05	0.160
					1	49	21.68	0.147
					1	99	21.60	0.145
					50	0	20.68	0.117
					50	25	20.54	0.113
					50	50	20.49	0.112
			100	0	20.41	0.110		
			20300	1745.0	1	0	22.05	0.160
1	49				21.91	0.155		
1	99				21.81	0.152		
50	0				20.90	0.123		
50	25	20.78			0.120			
50	50	20.71			0.118			
100	0	20.60	0.115					

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 13	5 MHz	QPSK	23205	779.5	1	0	22.20	0.166
					1	12	22.11	0.163
					1	24	22.08	0.161
					12	0	21.30	0.135
					12	6	21.25	0.133
			12	13	21.19	0.132		
			25	0	21.18	0.131		
			23230	782.0	1	0	22.19	0.166
					1	12	22.16	0.164
					1	24	22.11	0.163
					12	0	21.29	0.135
					12	6	21.28	0.134
			23255	784.5	12	13	21.28	0.134
					25	0	21.27	0.134
					1	0	22.28	0.169
		1			12	22.24	0.167	
		1			24	22.02	0.159	
		16QAM	23205	779.5	12	0	21.26	0.134
					12	6	21.21	0.132
					12	13	21.19	0.132
					25	0	21.16	0.131
					1	0	21.85	0.153
			23230	782.0	1	12	21.57	0.144
					1	24	21.21	0.132
					12	0	20.32	0.108
					12	6	20.30	0.107
					12	13	20.23	0.105
			23255	784.5	25	0	20.17	0.104
					1	0	21.67	0.147
					1	12	21.64	0.146
					1	24	21.39	0.138
					12	0	20.49	0.112
		23255	784.5	12	6	20.41	0.110	
				12	13	20.36	0.109	
				25	0	20.29	0.107	
				1	0	21.44	0.139	
1	12			21.40	0.138			
1	24			21.08	0.128			
12	0			20.37	0.109			
12	6	20.31	0.107					
12	13	20.30	0.107					
25	0	20.27	0.106					

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band 13	10 MHz	QPSK	23230	782.0	1	0	22.02	0.159
					1	24	21.77	0.150
					1	49	21.53	0.142
					25	0	21.29	0.135
					25	12	21.28	0.134
					25	25	21.27	0.134
					50	0	21.11	0.129
		16QAM	23230	782.0	1	0	21.78	0.151
					1	24	21.15	0.130
					1	49	20.77	0.119
					25	0	20.46	0.111
					25	12	20.37	0.109
					25	25	20.32	0.108
					50	0	20.20	0.105

3 Effective Radiated Power / Equivalent Isotropic Radiated Power Test

3.1. Limit

For FCC Part 27: The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 1 Watts.

For FCC Part 27.50(b)(9): Control stations and mobile stations transmitting in the 746-757 MHz, and 776-788 MHz bands are limited to 30 watts ERP.

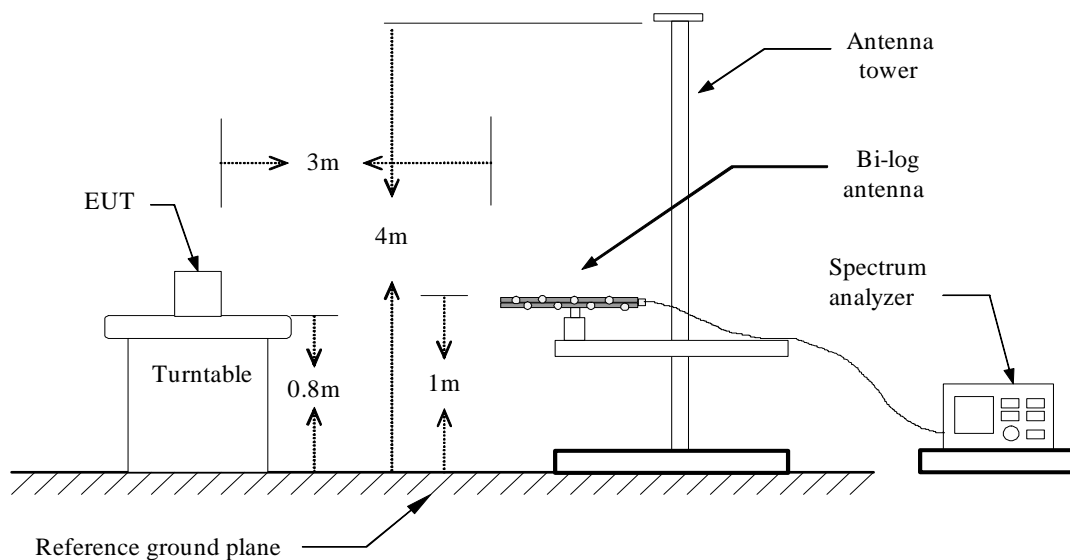
3.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
RF Pre-selector	Agilent	N9039A	MY46520256	01/06/2015	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/06/2015	1 year
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2015	1 year
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2015	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	08/11/2015	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/12/2015	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/06/2015	1 year
Test Site	ATL	TE01	888001	08/27/2015	1 year

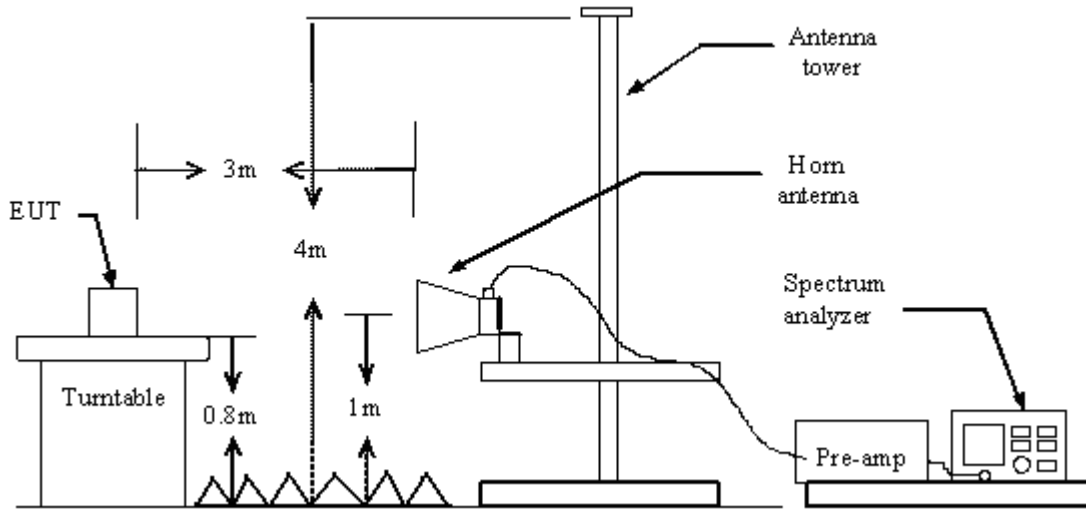
Note: N.C.R. = No Calibration Request.

3.3. Test Setup

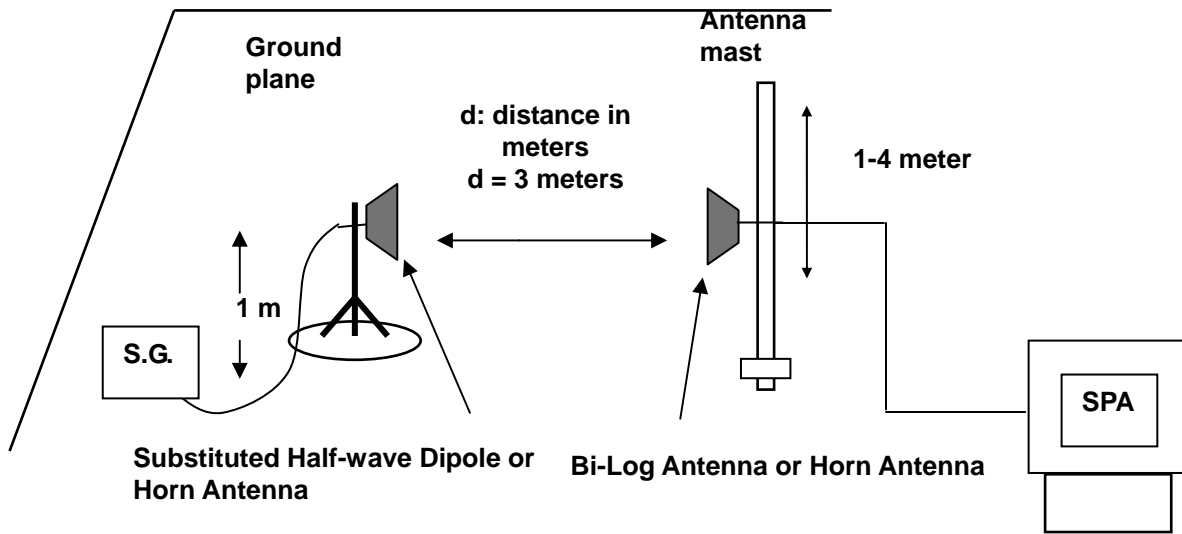
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



3.4. Test Procedure

- a. The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RWB and VBW is 5MHz for LTE mode.
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P- 2.15 dB

3.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

3.6. Test Result

Model Number	HL7618
Test Item	E.I.R.P. / E.R.P.
Date of Test	11/16/2015

LTE Band 4										
Channel Bandwidth	Modulation	CH	Frequency (MHz)	RB Configuration		Average Power (dBm)	Antenna Gain (dBi)	E.I.R.P.		Limit (W)
				Size	Offset			(dBm)	(W)	
1.4 M	QPSK	20393	1754.3	1	0	22.69	6.99	29.68	0.929	< 1
	16QAM	20393	1754.3	1	0	22.38	6.99	29.37	0.865	< 1
3 MHz	QPSK	20385	1753.5	1	0	22.93	6.99	29.92	0.982	< 1
	16QAM	20385	1753.5	1	0	22.38	6.99	29.37	0.865	< 1
5 MHz	QPSK	20375	1752.5	1	0	22.91	6.99	29.90	0.977	< 1
	16QAM	20375	1752.5	1	0	22.39	6.99	29.38	0.867	< 1
10 MHz	QPSK	20175	1732.5	1	0	22.92	6.99	29.91	0.979	< 1
	16QAM	20350	1750.0	1	0	22.35	6.99	29.34	0.859	< 1
15 MHz	QPSK	20325	1747.5	1	0	23.01	6.99	30.00	1.000	< 1
	16QAM	20325	1747.5	1	0	22.23	6.99	29.22	0.836	< 1
20 MHz	QPSK	20300	1745.0	1	0	22.74	6.99	29.73	0.940	< 1
	16QAM	20175	1732.5	1	0	22.05	6.99	29.04	0.802	< 1

LTE Band 13										
Channel Bandwidth	Modulation	CH	Frequency (MHz)	RB Configuration		Average Power (dBm)	Antenna Gain (dBi)	E.R.P.		Limit (W)
				Size	Offset			(dBm)	(W)	
5 MHz	QPSK	23255	784.5	1	0	22.28	11.87	32.00	1.585	< 30
	16QAM	23205	779.5	1	0	21.85	11.87	31.57	1.435	< 30
10 MHz	QPSK	23230	782.0	1	0	22.02	11.87	31.74	1.493	< 30
	16QAM	23230	782.0	1	0	21.78	11.87	31.50	1.413	< 30

4 Frequency Stability Test

4.1. Limit

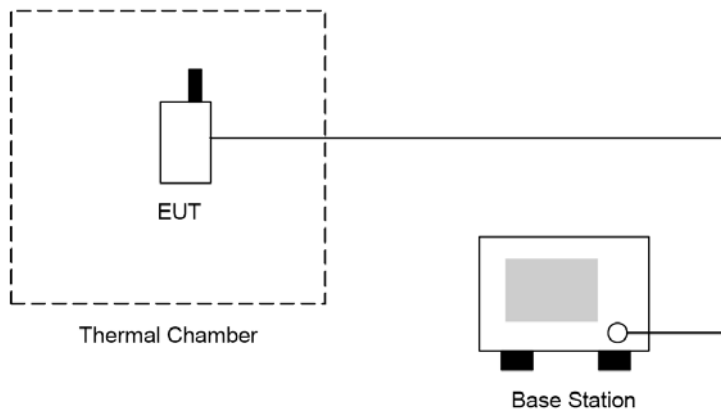
According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation. The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with the 2.1055(a)(1) -30°C ~ 50°C.

4.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Wideband Radio Communication Test	R & S	CMW500	103168	10/30/2015	1 year
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/27/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

4.3. Setup



4.4. Test Procedure

The measurement is made according to FCC rules part 27:

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

4.5. Uncertainty

The measurement uncertainty is defined as for Frequency Stability measurement is $\pm 10\text{Hz}$.

4.6. Test Result

Model Number	HL7618
Test Item	Frequency Stability
Date of Test	11/16/2015

LTE Band 4 _ QPSK					
Voltage					
Channel Bandwidth	Frequency (MHz)	Voltage (Vdc)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
20 MHz	1732.5	4.5	1.13	0.001	± 2.5
		3.7	1.64	0.001	± 2.5
		3.2	-13.62	-0.008	± 2.5
Temperature					
Channel Bandwidth	Frequency (MHz)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
20 MHz	1732.5	-30	-15.34	-0.009	± 2.5
		-20	8.18	0.005	± 2.5
		-10	4.40	0.003	± 2.5
		0	-10.84	-0.006	± 2.5
		10	-12.40	-0.007	± 2.5
		20	-11.48	-0.007	± 2.5
		30	-0.24	0.000	± 2.5
		40	-16.53	-0.010	± 2.5
		50	-4.58	-0.003	± 2.5
55	-15.99	-0.009	± 2.5		

LTE Band 13 _ QPSK					
Voltage					
Channel Bandwidth	Frequency (MHz)	Voltage (Vdc)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
10 MHz	782.0	4.5	5.80	0.007	± 2.5
		3.7	-7.23	-0.009	± 2.5
		3.2	-2.45	-0.003	± 2.5
Temperature					
Channel Bandwidth	Frequency (MHz)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
10 MHz	782.0	-30	-2.93	-0.004	± 2.5
		-20	-5.56	-0.007	± 2.5
		-10	-7.33	-0.009	± 2.5
		0	2.56	0.003	± 2.5
		10	1.33	0.002	± 2.5
		20	-0.77	-0.001	± 2.5
		30	-0.82	-0.001	± 2.5
		40	-11.90	-0.015	± 2.5
		50	-10.60	-0.014	± 2.5
55	-1.73	-0.002	± 2.5		

5 Emission Bandwidth & Occupied Bandwidth Test

5.1. Limit

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

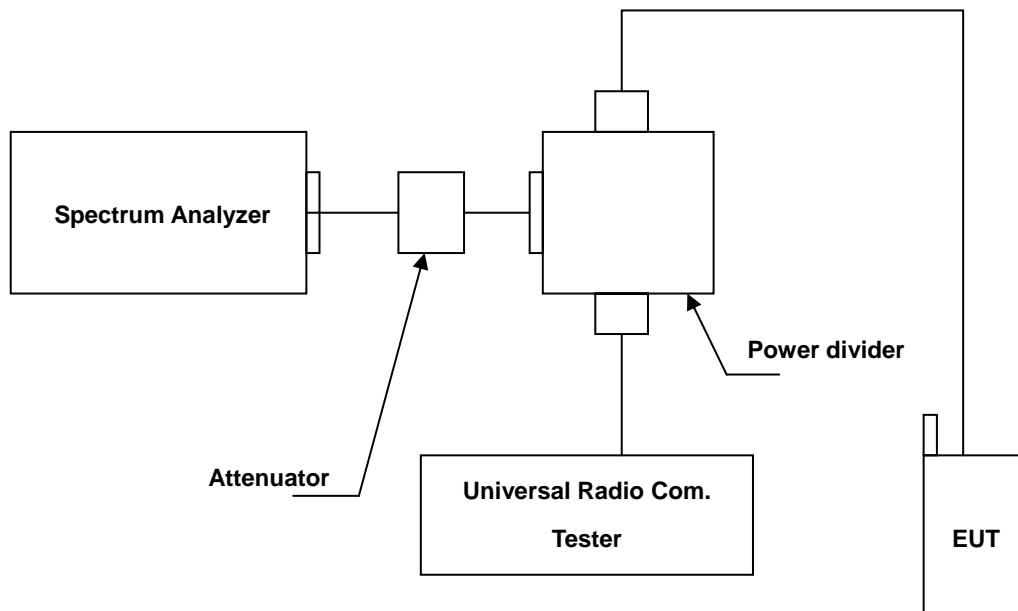
The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2015	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	10/30/2015	1 year
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

5.3. Setup



5.4. Test Procedure

The measurement is made according to FCC rules part 27:

- a. The EUT makes a phone call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels. (low, middle and high operational frequency range.)
- b. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

5.5. Uncertainty

The measurement uncertainty is defined as $\pm 10\text{Hz}$

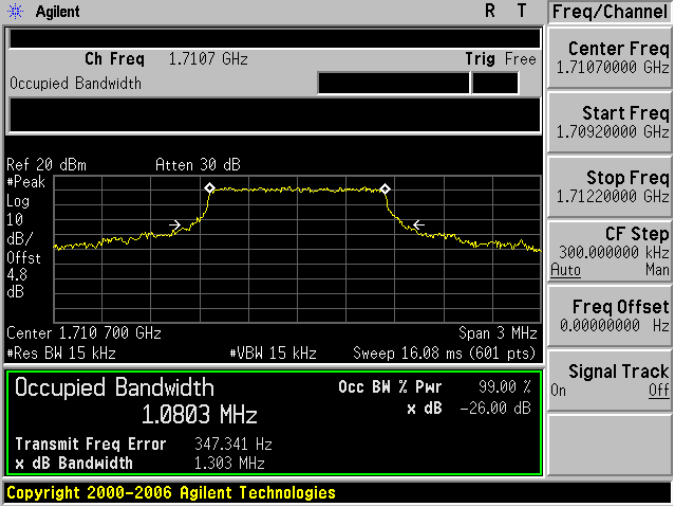
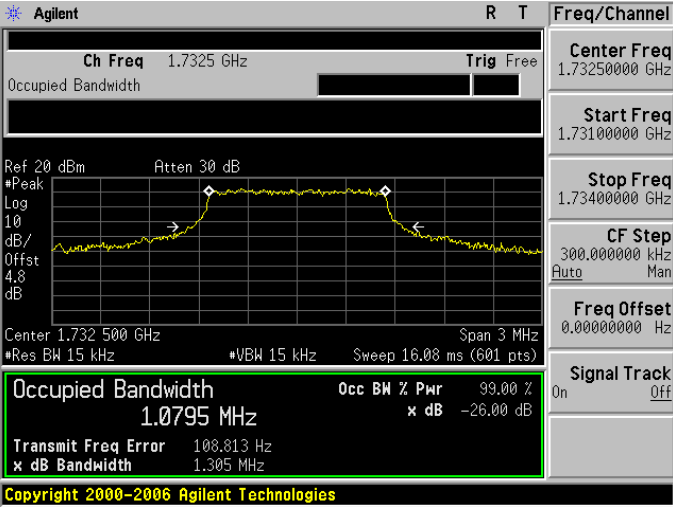
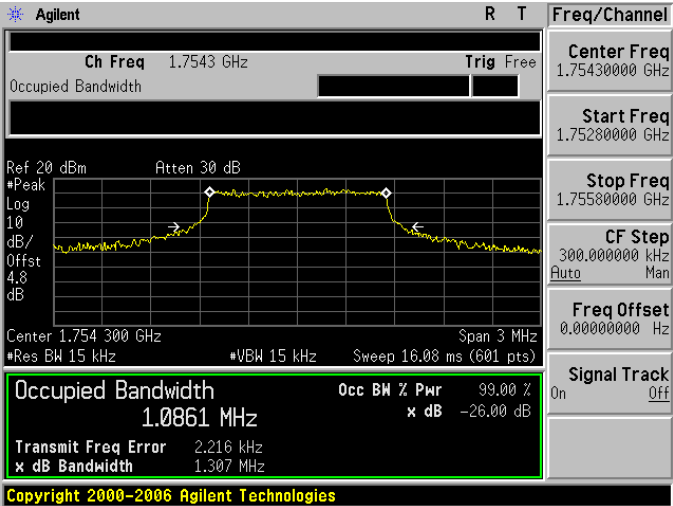
5.6. Test Result

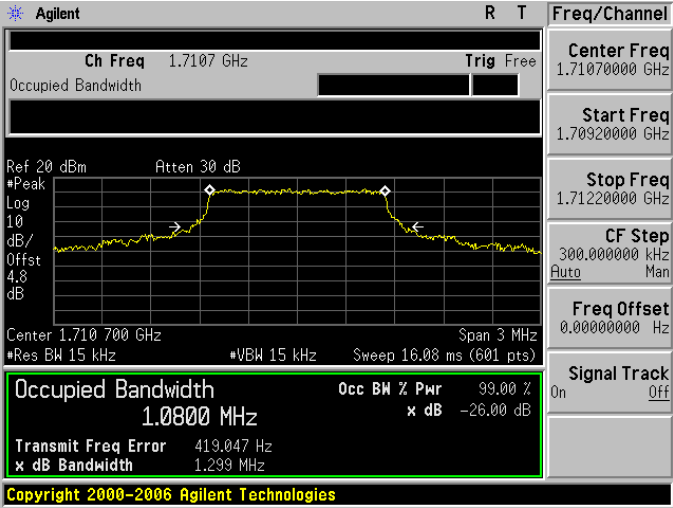
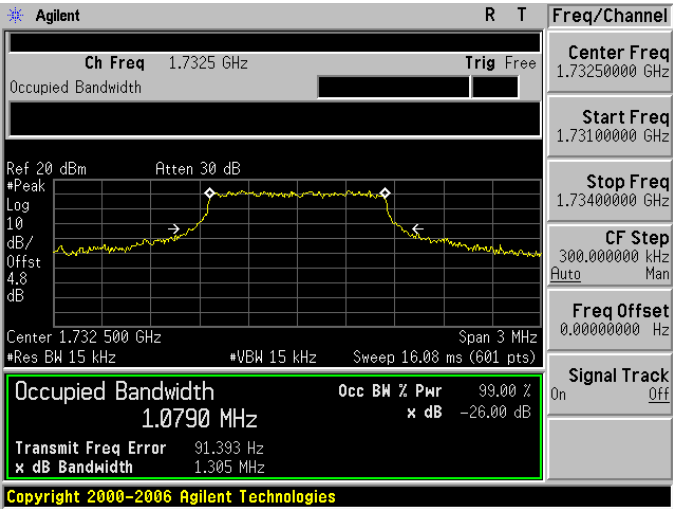
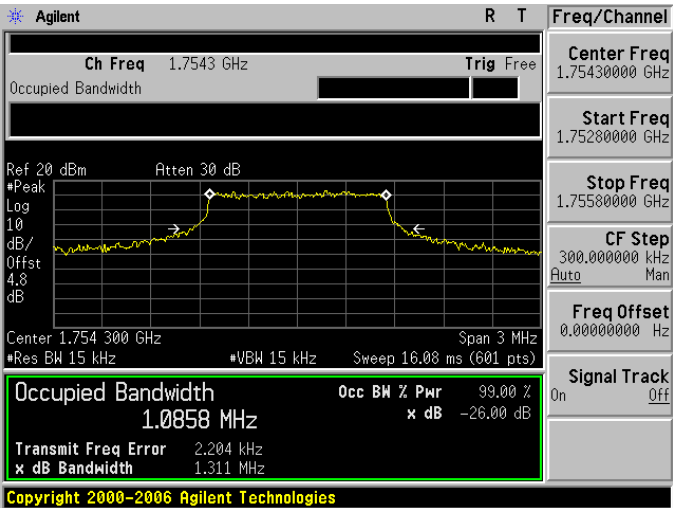
Model Number	HL7618
Test Item	Emission Bandwidth and Occupied Bandwidth
Date of Test	11/16/2015

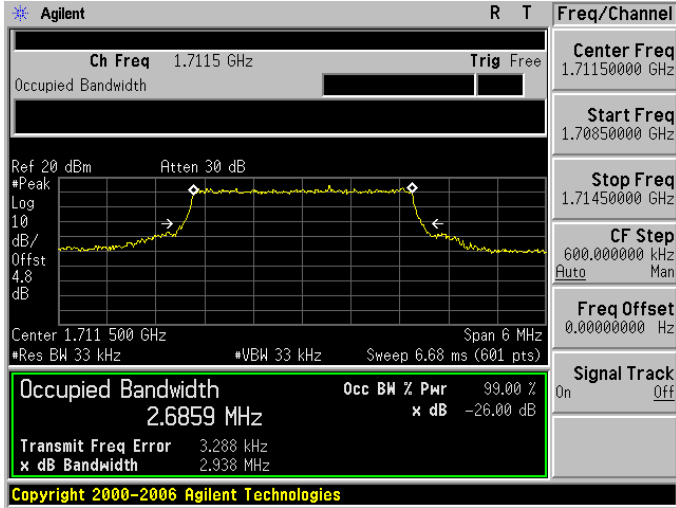
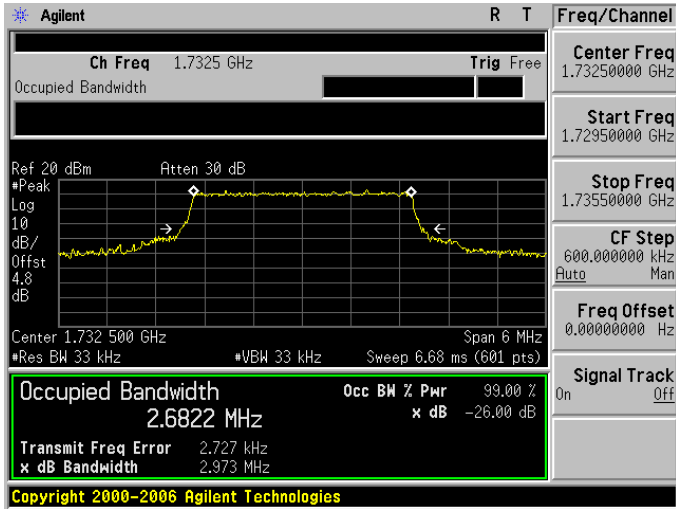
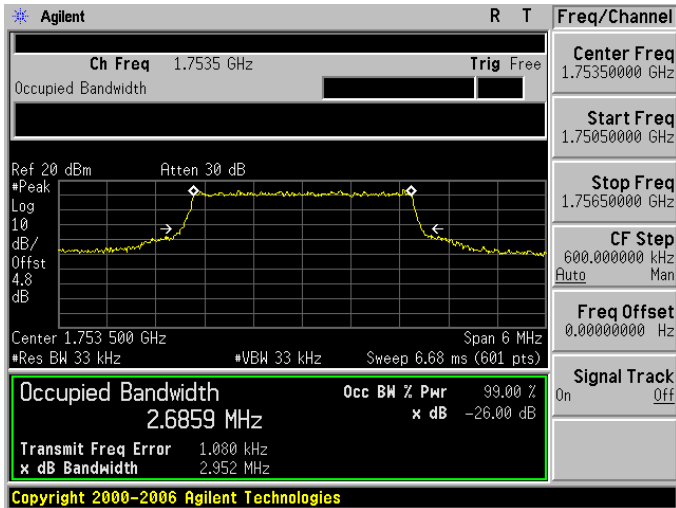
LTE Band 4				
Channel Bandwidth	Modulation	Frequency (MHz)	-26dB Bandwidth (MHz)	99% Bandwidth (MHz)
1.4 MHz	QPSK	1710.7	1.303	1.0803
		1732.5	1.305	1.0795
		1754.3	1.307	1.0861
	16QAM	1710.7	1.299	1.0800
		1732.5	1.305	1.0790
		1754.3	1.311	1.0858
3 MHz	QPSK	1711.5	2.938	2.6859
		1732.5	2.973	2.6822
		1753.5	2.952	2.6859
	16QAM	1711.5	2.962	2.6880
		1732.5	2.961	2.6808
		1753.5	2.940	2.6871
5 MHz	QPSK	1712.5	4.958	4.4722
		1732.5	4.864	4.4583
		1752.5	4.954	4.4614
	16QAM	1712.5	4.958	4.4683
		1732.5	4.929	4.4591
		1752.5	4.940	4.4599
10 MHz	QPSK	1715.0	9.992	8.9531
		1732.5	9.781	8.9420
		1750.0	10.019	8.9561
	16QAM	1715.0	9.975	8.9514
		1732.5	9.843	8.9451
		1750.0	9.958	8.9709
15 MHz	QPSK	1717.5	14.910	13.4179
		1732.5	14.639	13.4035
		1747.5	14.936	13.4267
	16QAM	1717.5	14.907	13.4274
		1732.5	14.579	13.4002
		1747.5	14.942	13.4285
20 MHz	QPSK	1720.0	19.452	17.8823
		1732.5	19.451	17.8305
		1745.0	19.464	17.9265
	16QAM	1720.0	19.717	17.8769
		1732.5	19.416	17.8443
		1745.0	19.464	17.9416

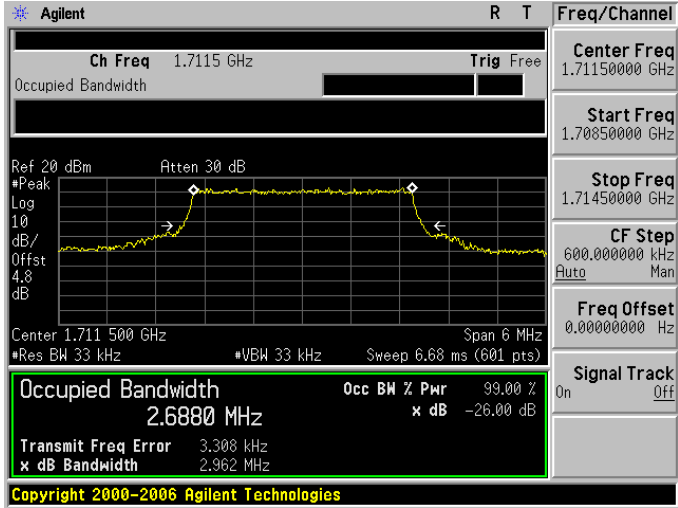
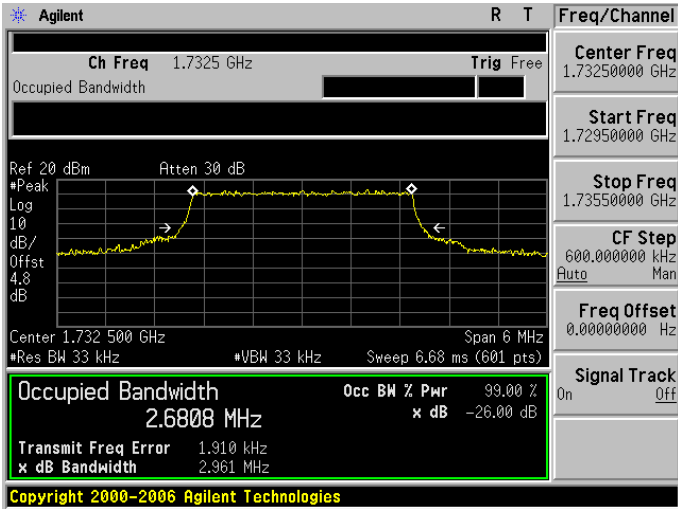
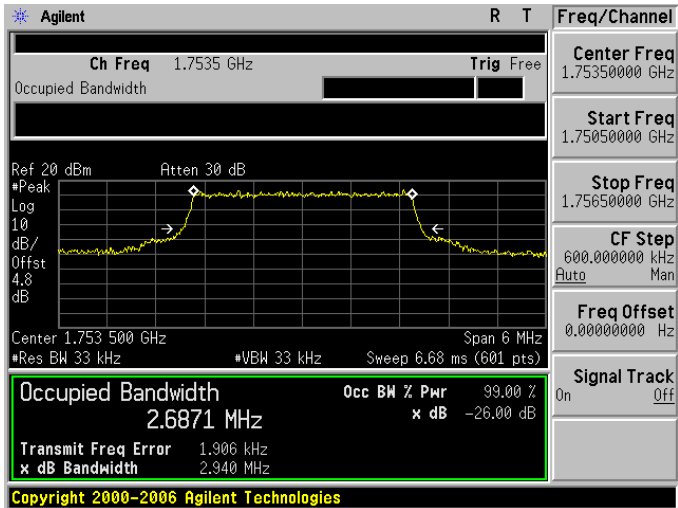
LTE Band 13				
Channel Bandwidth	Modulation	Frequency (MHz)	-26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5MHz	QPSK	779.5	4.915	4.4672
		782.0	4.906	4.4610
		784.5	4.965	4.4768
	16QAM	779.5	4.853	4.4630
		782.0	4.919	4.4679
		784.5	4.886	4.4677
10MHz	QPSK	782.0	9.920	8.9949
	16QAM	782.0	9.923	8.9967

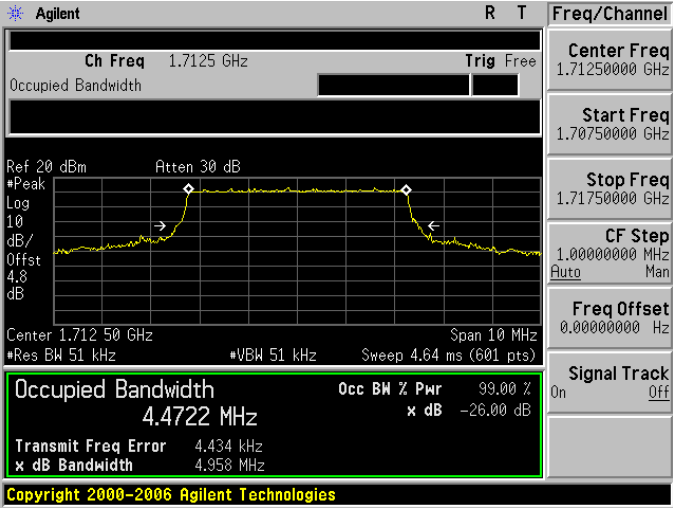
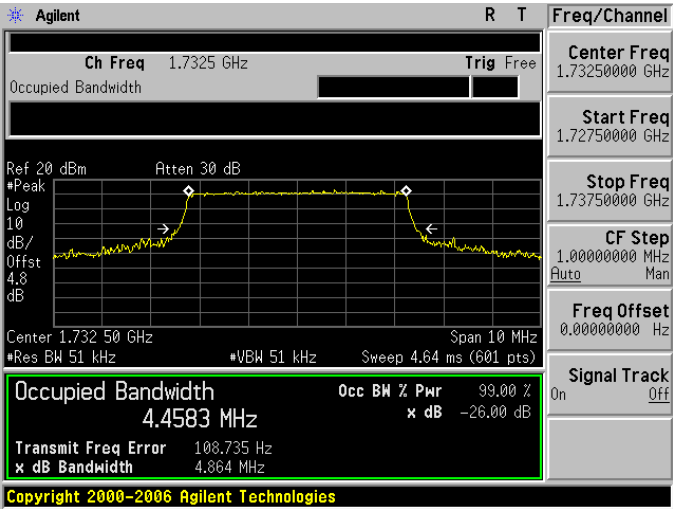
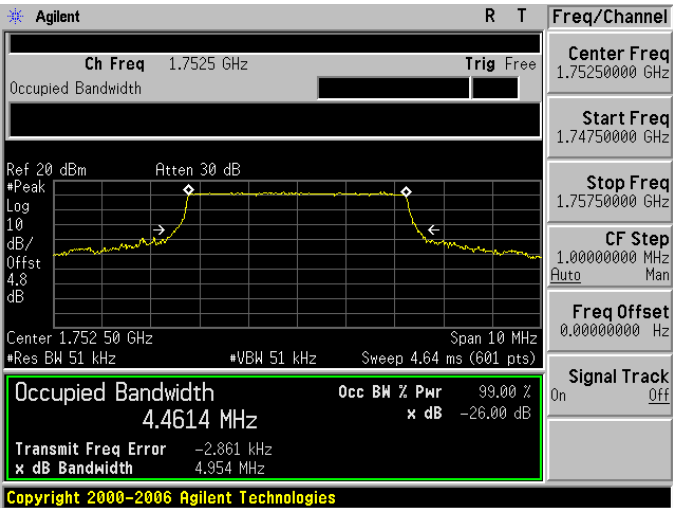
5.7. Test Graphs

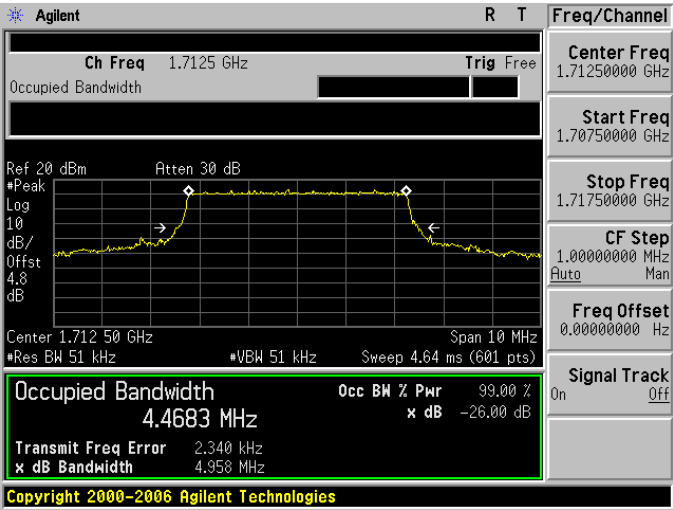
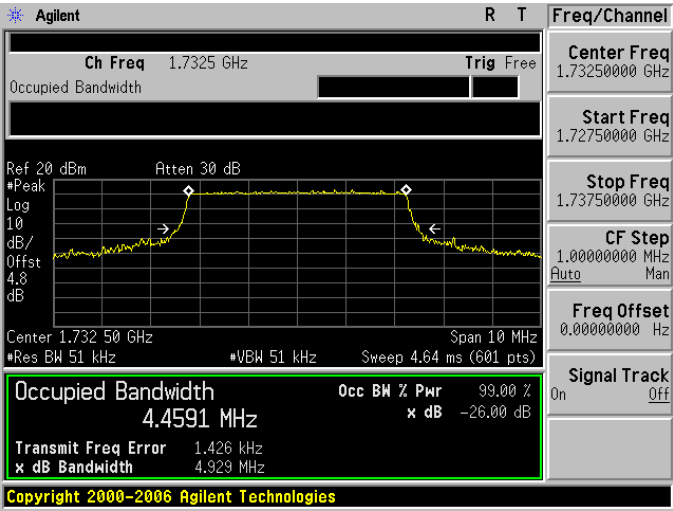
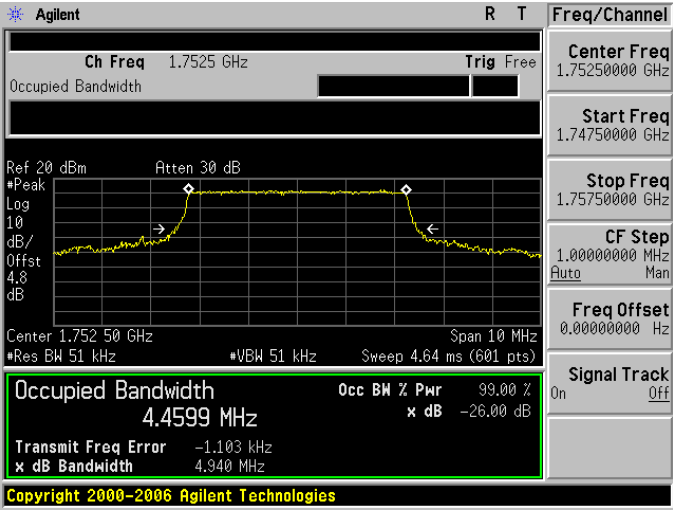
LTE Band 4 (Channel Bandwidth: 1.4 MHz) _ QPSK	
1710.7 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7107 GHz Trig Free</p> <p>Center Freq 1.71070000 GHz</p> <p>Start Freq 1.70920000 GHz</p> <p>Stop Freq 1.71220000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.710 700 GHz Span 3 MHz</p> <p>*Res BW 15 kHz *VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0803 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 347.341 Hz</p> <p>x dB Bandwidth 1.303 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.73100000 GHz</p> <p>Stop Freq 1.73400000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.732 500 GHz Span 3 MHz</p> <p>*Res BW 15 kHz *VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0795 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 108.813 Hz</p> <p>x dB Bandwidth 1.305 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1754.3 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7543 GHz Trig Free</p> <p>Center Freq 1.75430000 GHz</p> <p>Start Freq 1.75280000 GHz</p> <p>Stop Freq 1.75580000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.754 300 GHz Span 3 MHz</p> <p>*Res BW 15 kHz *VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0861 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.216 kHz</p> <p>x dB Bandwidth 1.307 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

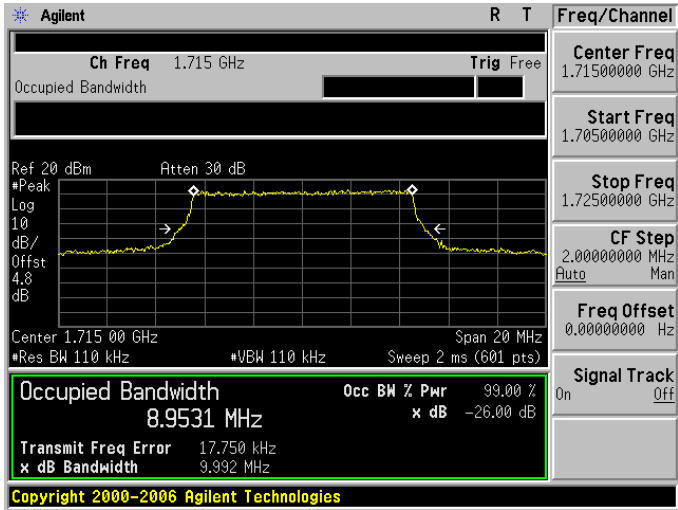
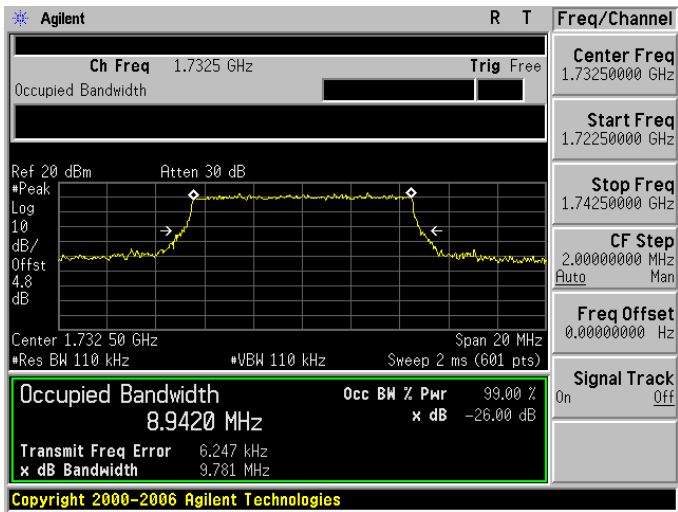
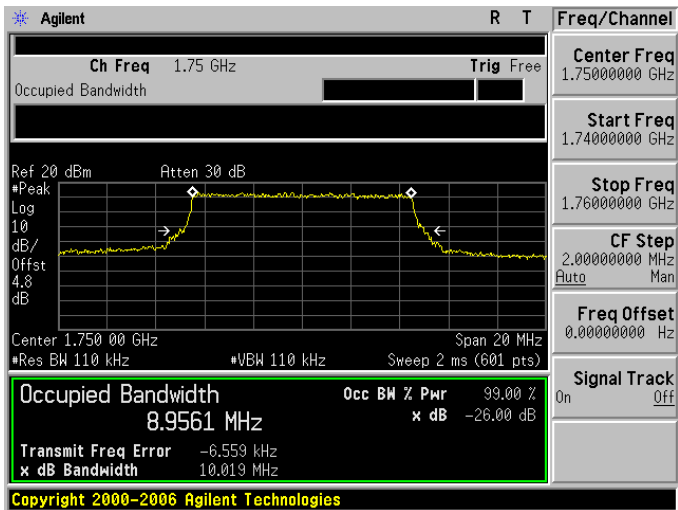
LTE Band 4 (Channel Bandwidth: 1.4 MHz) _ 16QAM	
1710.7 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7107 GHz Trig Free</p> <p>Center Freq 1.7107000 GHz</p> <p>Start Freq 1.7092000 GHz</p> <p>Stop Freq 1.7122000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.710 700 GHz Span 3 MHz</p> <p>Res BW 15 kHz VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0800 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 419.047 Hz</p> <p>x dB Bandwidth 1.299 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.7325000 GHz</p> <p>Start Freq 1.7310000 GHz</p> <p>Stop Freq 1.7340000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.732 500 GHz Span 3 MHz</p> <p>Res BW 15 kHz VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0790 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 91.393 Hz</p> <p>x dB Bandwidth 1.305 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1754.3 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7543 GHz Trig Free</p> <p>Center Freq 1.7543000 GHz</p> <p>Start Freq 1.7528000 GHz</p> <p>Stop Freq 1.7558000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.754 300 GHz Span 3 MHz</p> <p>Res BW 15 kHz VBW 15 kHz Sweep 16.08 ms (601 pts)</p> <p>Occupied Bandwidth 1.0858 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.204 kHz</p> <p>x dB Bandwidth 1.311 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 3 MHz) _ QPSK	
1711.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7115 GHz Trig Free</p> <p>Center Freq 1.71150000 GHz</p> <p>Start Freq 1.70850000 GHz</p> <p>Stop Freq 1.71450000 GHz</p> <p>CF Step 600.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.711 500 GHz Span 6 MHz</p> <p>Res BW 33 kHz VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6859 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 3.288 kHz</p> <p>x dB Bandwidth 2.938 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72950000 GHz</p> <p>Stop Freq 1.73550000 GHz</p> <p>CF Step 600.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.732 500 GHz Span 6 MHz</p> <p>Res BW 33 kHz VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6822 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.727 kHz</p> <p>x dB Bandwidth 2.973 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1753.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7535 GHz Trig Free</p> <p>Center Freq 1.75350000 GHz</p> <p>Start Freq 1.75050000 GHz</p> <p>Stop Freq 1.75650000 GHz</p> <p>CF Step 600.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.753 500 GHz Span 6 MHz</p> <p>Res BW 33 kHz VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6859 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.080 kHz</p> <p>x dB Bandwidth 2.952 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

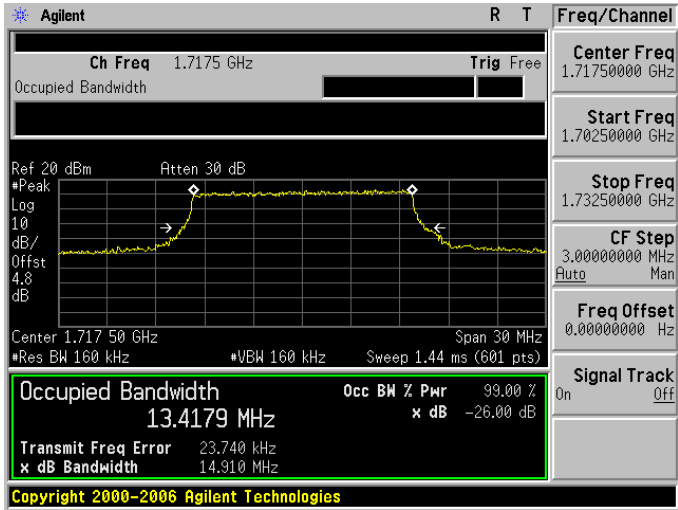
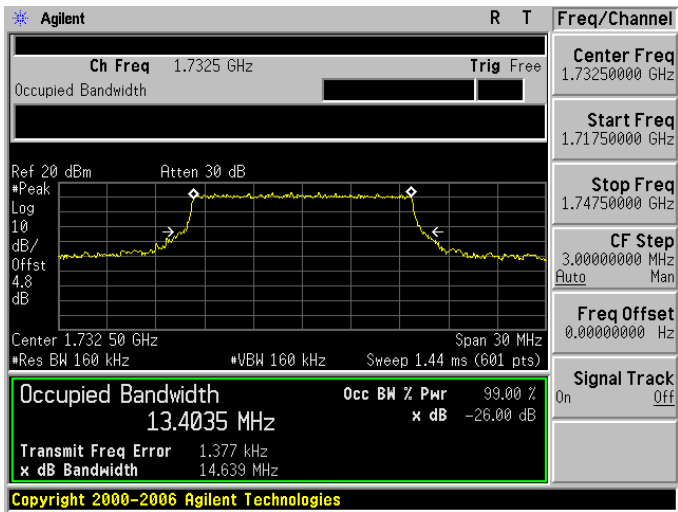
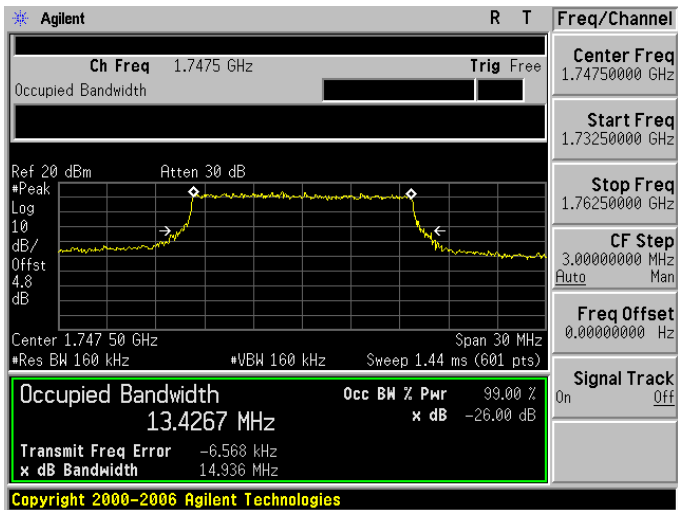
LTE Band 4 (Channel Bandwidth: 3 MHz) _ 16QAM	
1711.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7115 GHz Trig Free</p> <p>Center Freq 1.71150000 GHz</p> <p>Start Freq 1.70850000 GHz</p> <p>Stop Freq 1.71450000 GHz</p> <p>CF Step 600.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.711 500 GHz Span 6 MHz</p> <p>*Res BW 33 kHz *VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6880 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 2.962 MHz</p> <p>Transmit Freq Error 3.308 kHz</p> <p>x dB Bandwidth 2.962 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72950000 GHz</p> <p>Stop Freq 1.73550000 GHz</p> <p>CF Step 600.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.732 500 GHz Span 6 MHz</p> <p>*Res BW 33 kHz *VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6808 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 2.961 MHz</p> <p>Transmit Freq Error 1.910 kHz</p> <p>x dB Bandwidth 2.961 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1753.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7535 GHz Trig Free</p> <p>Center Freq 1.75350000 GHz</p> <p>Start Freq 1.75050000 GHz</p> <p>Stop Freq 1.75650000 GHz</p> <p>CF Step 600.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.753 500 GHz Span 6 MHz</p> <p>*Res BW 33 kHz *VBW 33 kHz Sweep 6.68 ms (601 pts)</p> <p>Occupied Bandwidth 2.6871 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 2.940 MHz</p> <p>Transmit Freq Error 1.906 kHz</p> <p>x dB Bandwidth 2.940 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 5MHz) _ QPSK	
1712.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7125 GHz Trig Free</p> <p>Center Freq 1.7125000 GHz</p> <p>Start Freq 1.7075000 GHz</p> <p>Stop Freq 1.7175000 GHz</p> <p>CF Step 1.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.712 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4722 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 4.958 MHz</p> <p>Transmit Freq Error 4.434 kHz</p> <p>x dB Bandwidth 4.958 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.7325000 GHz</p> <p>Start Freq 1.7275000 GHz</p> <p>Stop Freq 1.7375000 GHz</p> <p>CF Step 1.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4583 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 4.864 MHz</p> <p>Transmit Freq Error 108.735 Hz</p> <p>x dB Bandwidth 4.864 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1752.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7525 GHz Trig Free</p> <p>Center Freq 1.7525000 GHz</p> <p>Start Freq 1.7475000 GHz</p> <p>Stop Freq 1.7575000 GHz</p> <p>CF Step 1.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.752 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4614 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth 4.954 MHz</p> <p>Transmit Freq Error -2.861 kHz</p> <p>x dB Bandwidth 4.954 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

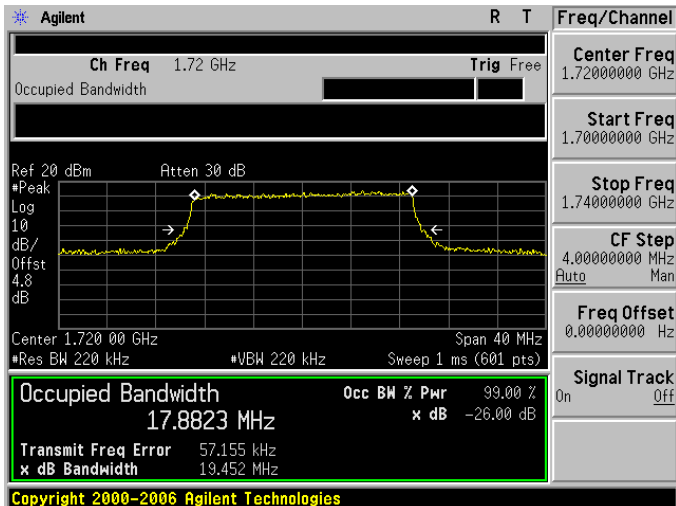
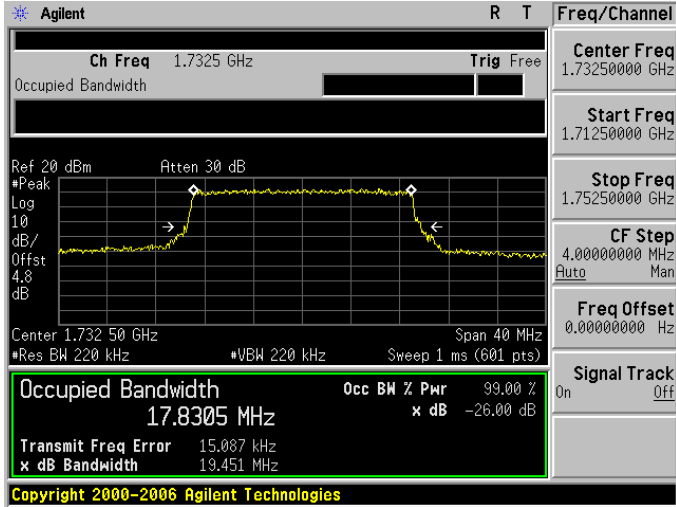
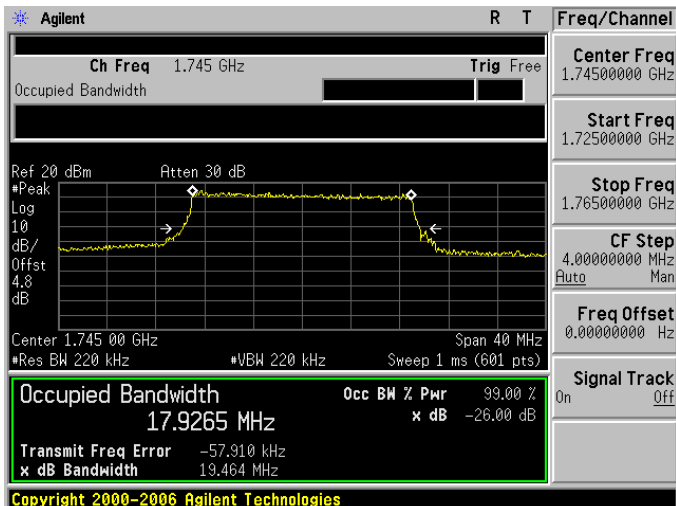
LTE Band 4 (Channel Bandwidth: 5 MHz) _ 16QAM	
1712.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7125 GHz Trig Free</p> <p>Center Freq 1.71250000 GHz</p> <p>Start Freq 1.70750000 GHz</p> <p>Stop Freq 1.71750000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.712 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4683 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 2.340 kHz</p> <p>x dB Bandwidth 4.958 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72750000 GHz</p> <p>Stop Freq 1.73750000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4591 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 1.426 kHz</p> <p>x dB Bandwidth 4.929 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1752.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7525 GHz Trig Free</p> <p>Center Freq 1.75250000 GHz</p> <p>Start Freq 1.74750000 GHz</p> <p>Stop Freq 1.75750000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.8 dB</p> <p>Center 1.752 50 GHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4599 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error -1.103 kHz</p> <p>x dB Bandwidth 4.940 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

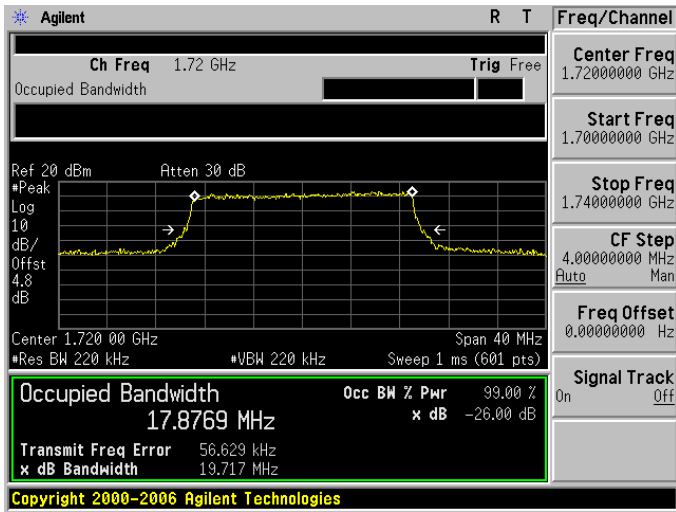
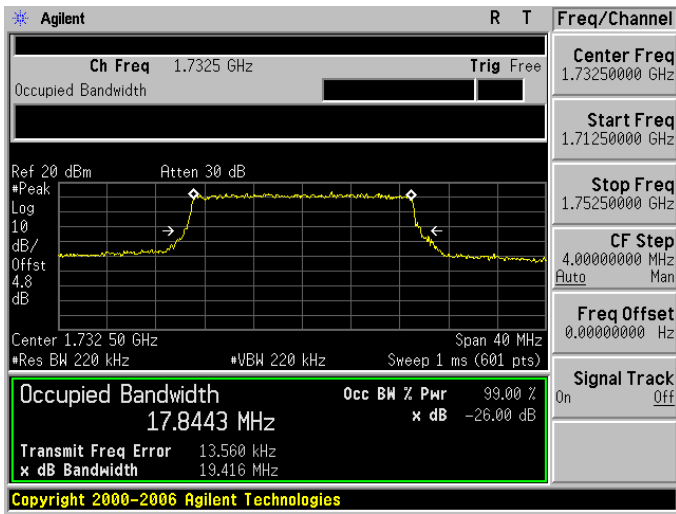
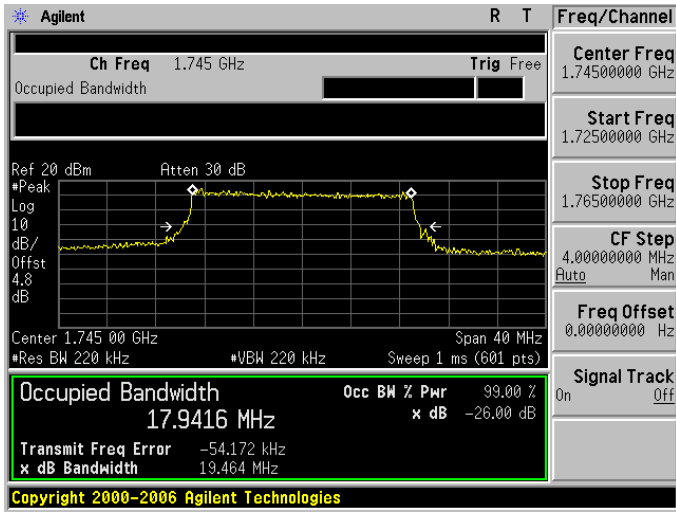
LTE Band 4 (Channel Bandwidth: 10 MHz) _ QPSK	
1715.0 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.715 GHz Trig Free</p> <p>Center Freq 1.7150000 GHz</p> <p>Start Freq 1.7050000 GHz</p> <p>Stop Freq 1.7250000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.715 00 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9531 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 17.750 kHz</p> <p>x dB Bandwidth 9.992 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.7325000 GHz</p> <p>Start Freq 1.7225000 GHz</p> <p>Stop Freq 1.7425000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9420 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 6.247 kHz</p> <p>x dB Bandwidth 9.781 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1750.0 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.75 GHz Trig Free</p> <p>Center Freq 1.7500000 GHz</p> <p>Start Freq 1.7400000 GHz</p> <p>Stop Freq 1.7600000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.750 00 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9561 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error -6.559 kHz</p> <p>x dB Bandwidth 10.019 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 10 MHz) _ 16QAM	
1715.0 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.715 GHz Trig Free</p> <p>Center Freq 1.7150000 GHz</p> <p>Start Freq 1.7050000 GHz</p> <p>Stop Freq 1.7250000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.715 00 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9514 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 16.957 kHz</p> <p>x dB Bandwidth 9.975 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.7325000 GHz</p> <p>Start Freq 1.7225000 GHz</p> <p>Stop Freq 1.7425000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9451 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 4.266 kHz</p> <p>x dB Bandwidth 9.843 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1750.0 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.75 GHz Trig Free</p> <p>Center Freq 1.7500000 GHz</p> <p>Start Freq 1.7400000 GHz</p> <p>Stop Freq 1.7600000 GHz</p> <p>CF Step 2.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 4.8 dB</p> <p>Center 1.750 00 GHz Span 20 MHz</p> <p>#Res BW 110 kHz #VBW 110 kHz Sweep 2 ms (601 pts)</p> <p>Occupied Bandwidth 8.9709 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error -5.666 kHz</p> <p>x dB Bandwidth 9.958 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 15 MHz) _ QPSK	
1717.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7175 GHz Trig Free</p> <p>Center Freq 1.71750000 GHz</p> <p>Start Freq 1.70250000 GHz</p> <p>Stop Freq 1.73250000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.717 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4179 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 23.740 kHz</p> <p>x dB Bandwidth 14.910 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.71750000 GHz</p> <p>Stop Freq 1.74750000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4035 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 1.377 kHz</p> <p>x dB Bandwidth 14.639 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1747.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7475 GHz Trig Free</p> <p>Center Freq 1.74750000 GHz</p> <p>Start Freq 1.73250000 GHz</p> <p>Stop Freq 1.76250000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.747 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4267 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error -6.568 kHz</p> <p>x dB Bandwidth 14.936 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

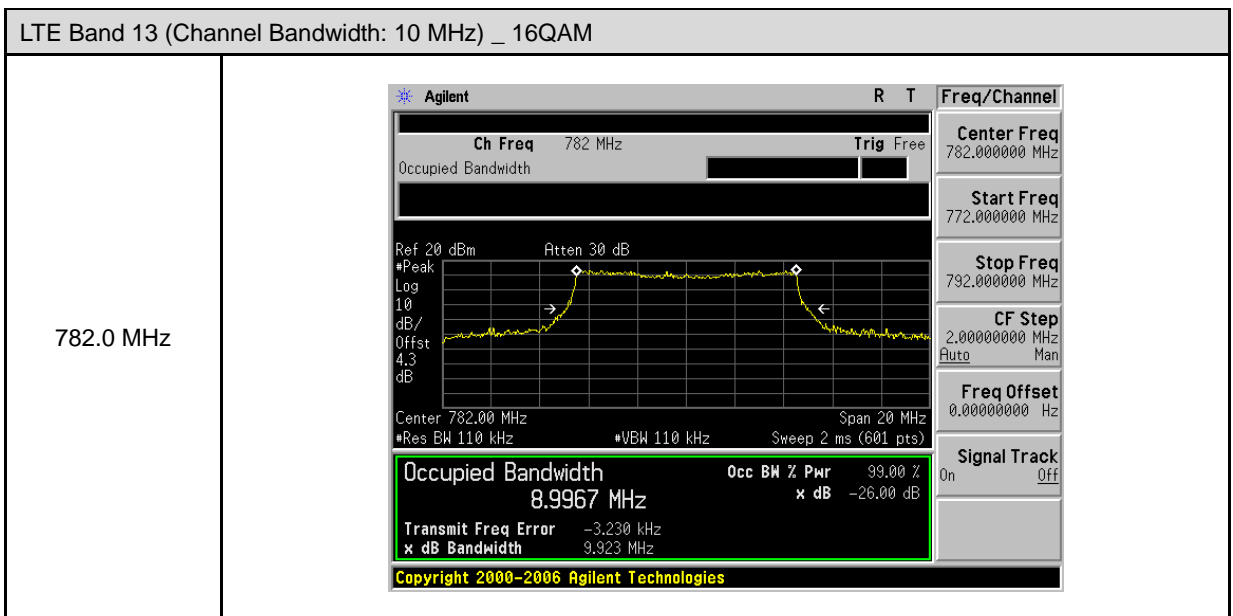
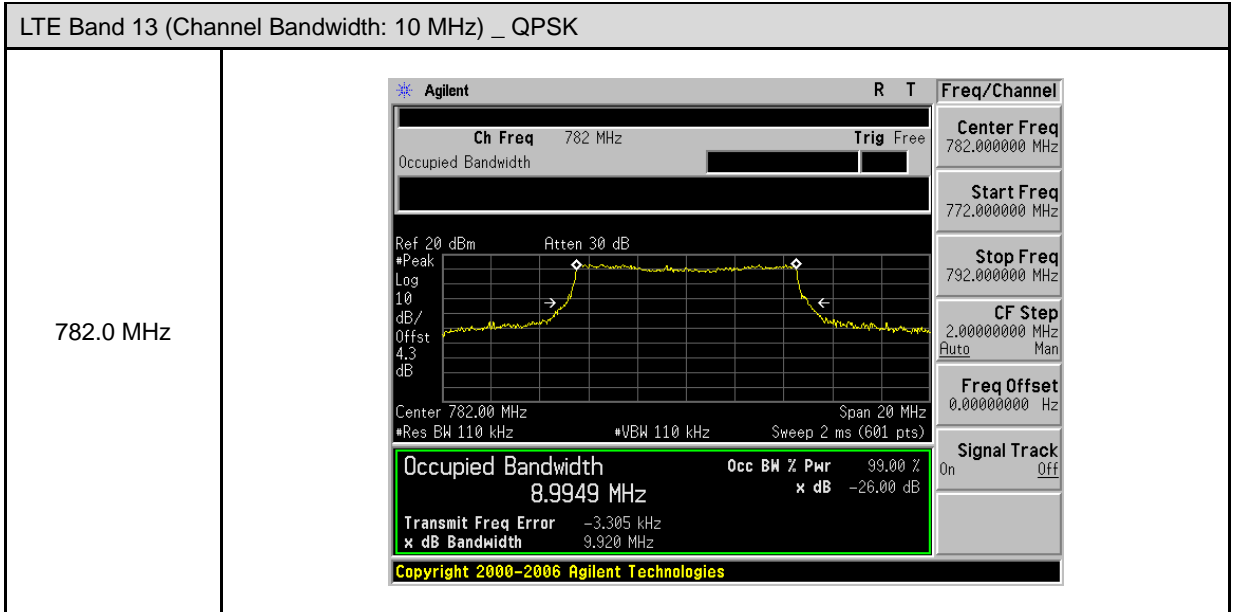
LTE Band 4 (Channel Bandwidth: 15 MHz) _ 16QAM	
1717.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7175 GHz Trig Free</p> <p>Center Freq 1.71750000 GHz</p> <p>Start Freq 1.70250000 GHz</p> <p>Stop Freq 1.73250000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.717 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4274 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 24.627 kHz</p> <p>x dB Bandwidth 14.907 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.71750000 GHz</p> <p>Stop Freq 1.74750000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4002 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error 103.634 Hz</p> <p>x dB Bandwidth 14.579 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1747.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7475 GHz Trig Free</p> <p>Center Freq 1.74750000 GHz</p> <p>Start Freq 1.73250000 GHz</p> <p>Stop Freq 1.76250000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.747 50 GHz Span 30 MHz</p> <p>Res BW 160 kHz VBW 160 kHz Sweep 1.44 ms (601 pts)</p> <p>Occupied Bandwidth 13.4285 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB Bandwidth -26.00 dB</p> <p>Transmit Freq Error -6.483 kHz</p> <p>x dB Bandwidth 14.942 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 20 MHz) _ QPSK	
1720.0 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.72 GHz Trig Free</p> <p>Center Freq 1.7200000 GHz</p> <p>Start Freq 1.7000000 GHz</p> <p>Stop Freq 1.7400000 GHz</p> <p>CF Step 4.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.720 00 GHz Span 40 MHz</p> <p>Res BW 220 kHz VBW 220 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 17.8823 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 57.155 kHz</p> <p>x dB Bandwidth 19.452 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.7325000 GHz</p> <p>Start Freq 1.7125000 GHz</p> <p>Stop Freq 1.7525000 GHz</p> <p>CF Step 4.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.732 50 GHz Span 40 MHz</p> <p>Res BW 220 kHz VBW 220 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 17.8305 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 15.087 kHz</p> <p>x dB Bandwidth 19.451 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
1745.0 MHz	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 1.745 GHz Trig Free</p> <p>Center Freq 1.7450000 GHz</p> <p>Start Freq 1.7250000 GHz</p> <p>Stop Freq 1.7650000 GHz</p> <p>CF Step 4.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak</p> <p>Log</p> <p>10 dB/Offst 4.8 dB</p> <p>Center 1.745 00 GHz Span 40 MHz</p> <p>Res BW 220 kHz VBW 220 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 17.9265 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -57.910 kHz</p> <p>x dB Bandwidth 19.464 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 4 (Channel Bandwidth: 20 MHz) _ 16QAM	
1720.0 MHz	 <p>Copyright 2000-2006 Agilent Technologies</p>
1732.5 MHz	 <p>Copyright 2000-2006 Agilent Technologies</p>
1745.0 MHz	 <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 13 (Channel Bandwidth: 5 MHz) _ QPSK	
779.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 779.5 MHz Trig Free</p> <p>Center Freq 779.500000 MHz</p> <p>Start Freq 774.500000 MHz</p> <p>Stop Freq 784.500000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 779.50 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4672 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.099 kHz</p> <p>x dB Bandwidth 4.915 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
782.0 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 782 MHz Trig Free</p> <p>Center Freq 782.000000 MHz</p> <p>Start Freq 777.000000 MHz</p> <p>Stop Freq 787.000000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 782.00 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4610 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -4.636 kHz</p> <p>x dB Bandwidth 4.906 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
784.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 784.5 MHz Trig Free</p> <p>Center Freq 784.500000 MHz</p> <p>Start Freq 779.500000 MHz</p> <p>Stop Freq 789.500000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 784.50 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4768 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 12.651 kHz</p> <p>x dB Bandwidth 4.965 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>

LTE Band 13 (Channel Bandwidth: 5 MHz) _ 16QAM	
779.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 779.5 MHz Trig Free</p> <p>Center Freq 779.500000 MHz</p> <p>Start Freq 774.500000 MHz</p> <p>Stop Freq 784.500000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 779.50 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4630 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.134 kHz</p> <p>x dB Bandwidth 4.853 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
782.0 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 782 MHz Trig Free</p> <p>Center Freq 782.000000 MHz</p> <p>Start Freq 777.000000 MHz</p> <p>Stop Freq 787.000000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 782.00 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4679 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.454 kHz</p> <p>x dB Bandwidth 4.919 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>
784.5 MHz	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 784.5 MHz Trig Free</p> <p>Center Freq 784.500000 MHz</p> <p>Start Freq 779.500000 MHz</p> <p>Stop Freq 789.500000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 30 dB</p> <p>Peak 10 dB/Offst 4.3 dB</p> <p>Center 784.50 MHz Span 10 MHz</p> <p>Res BW 51 kHz VBW 51 kHz Sweep 4.64 ms (601 pts)</p> <p>Occupied Bandwidth 4.4677 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 14.293 kHz</p> <p>x dB Bandwidth 4.886 MHz</p> <p>Copyright 2000-2006 Agilent Technologies</p>



6 Peak to Average Ratio Test

6.1. Limit

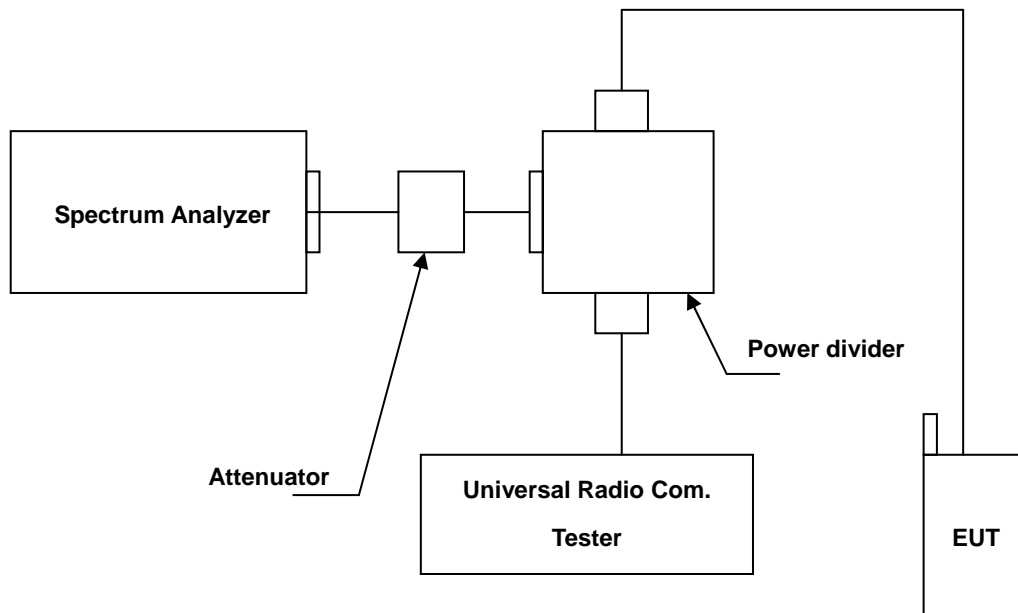
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

6.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2015	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	10/30/2015	1 year
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

6.3. Setup



6.4. Test Procedure

The measurement is made according to FCC rules part 27:

- a. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- b. Set the number of counts to a value that stabilizes the measured CCDF curve;
- c. Record the maximum PAPR level associated with a probability of 0.1%.

6.5. Uncertainty

The measurement uncertainty is defined as for Conducted Power measurement is 1.2 dB.

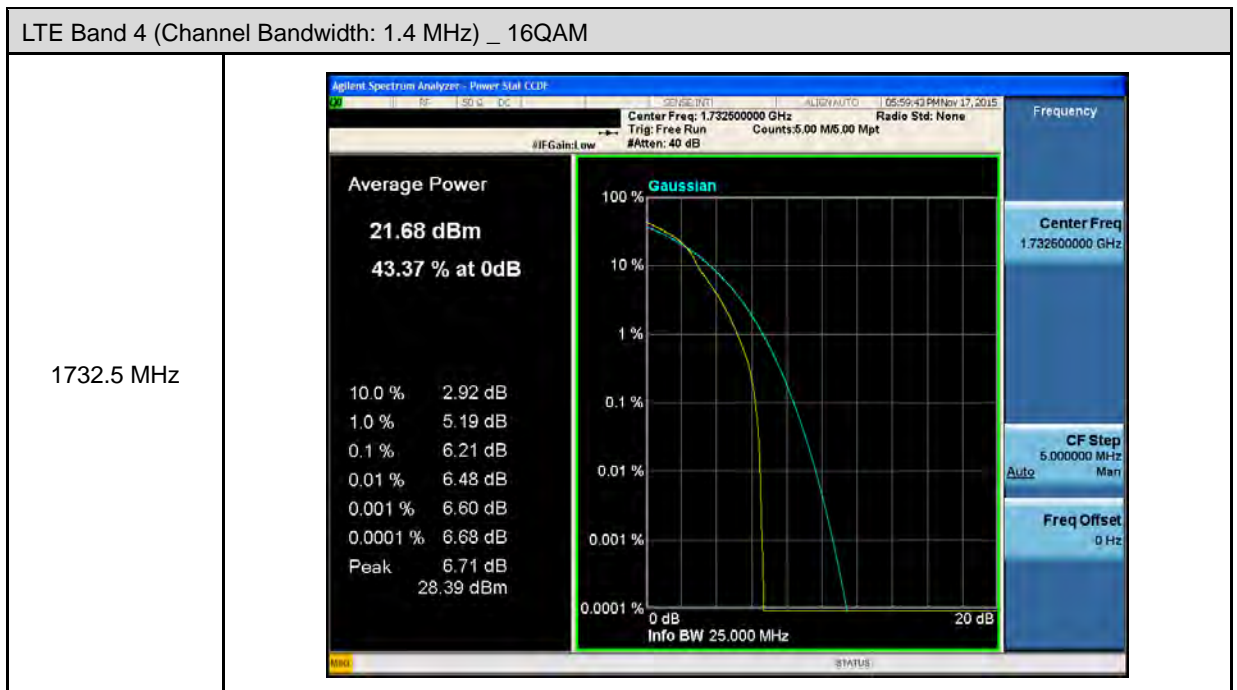
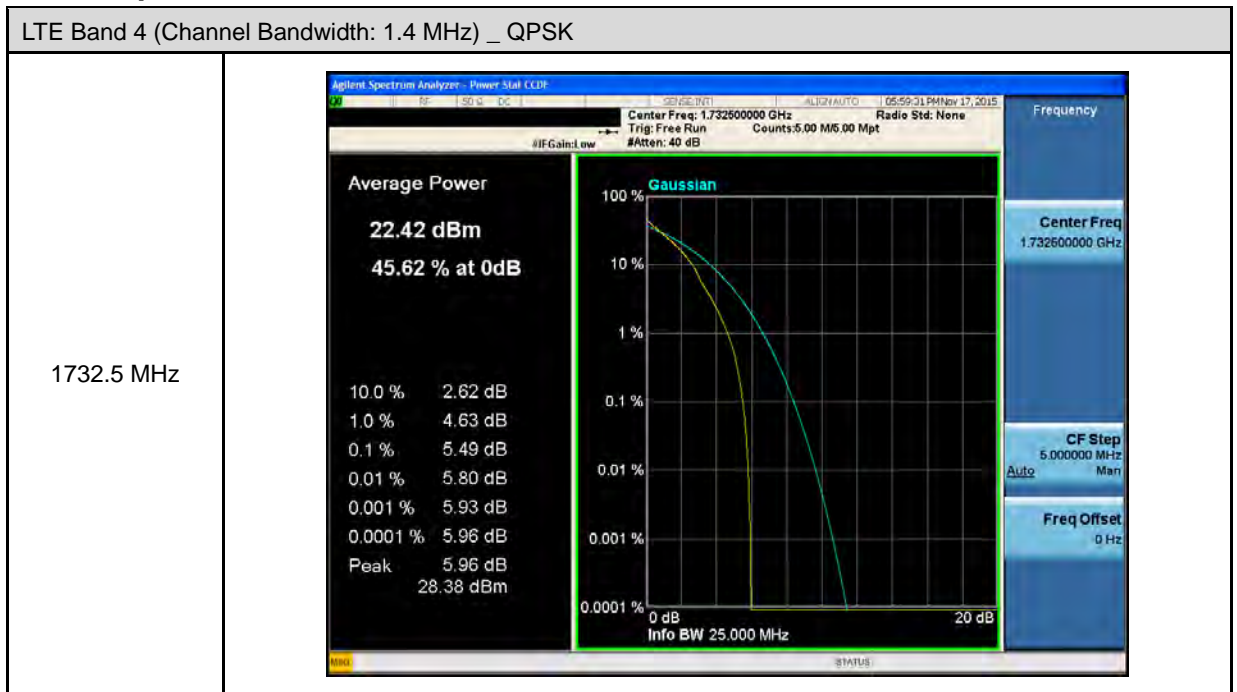
6.6. Test Result

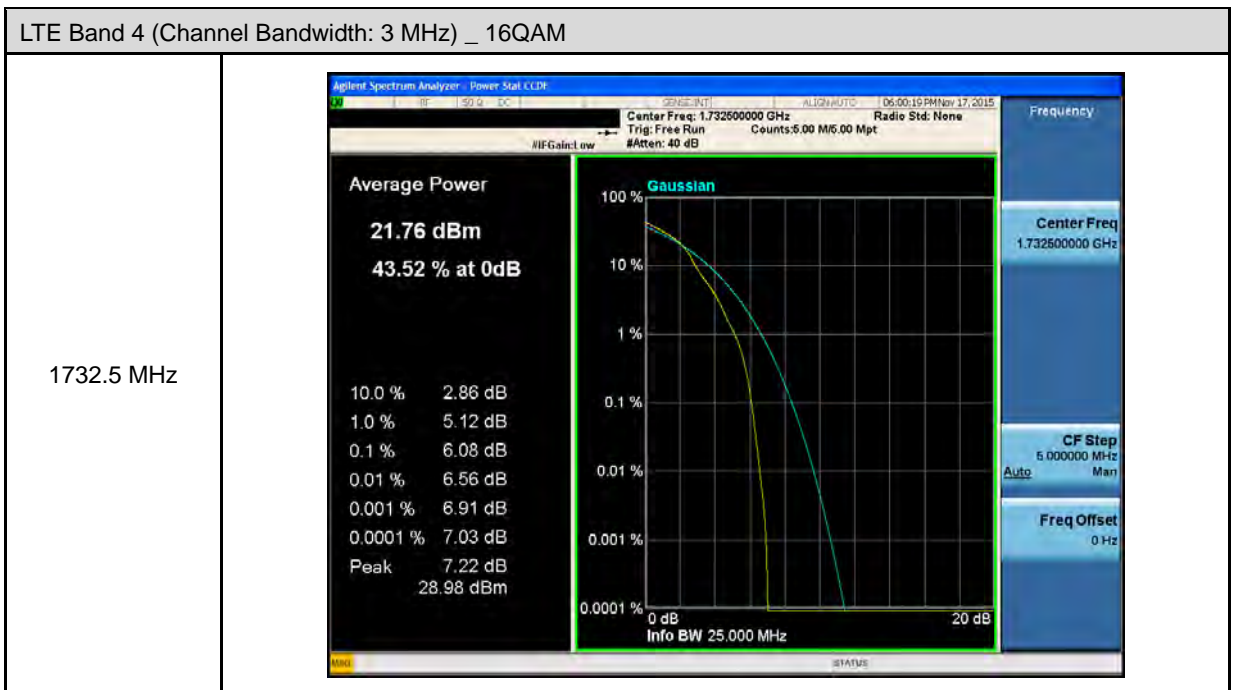
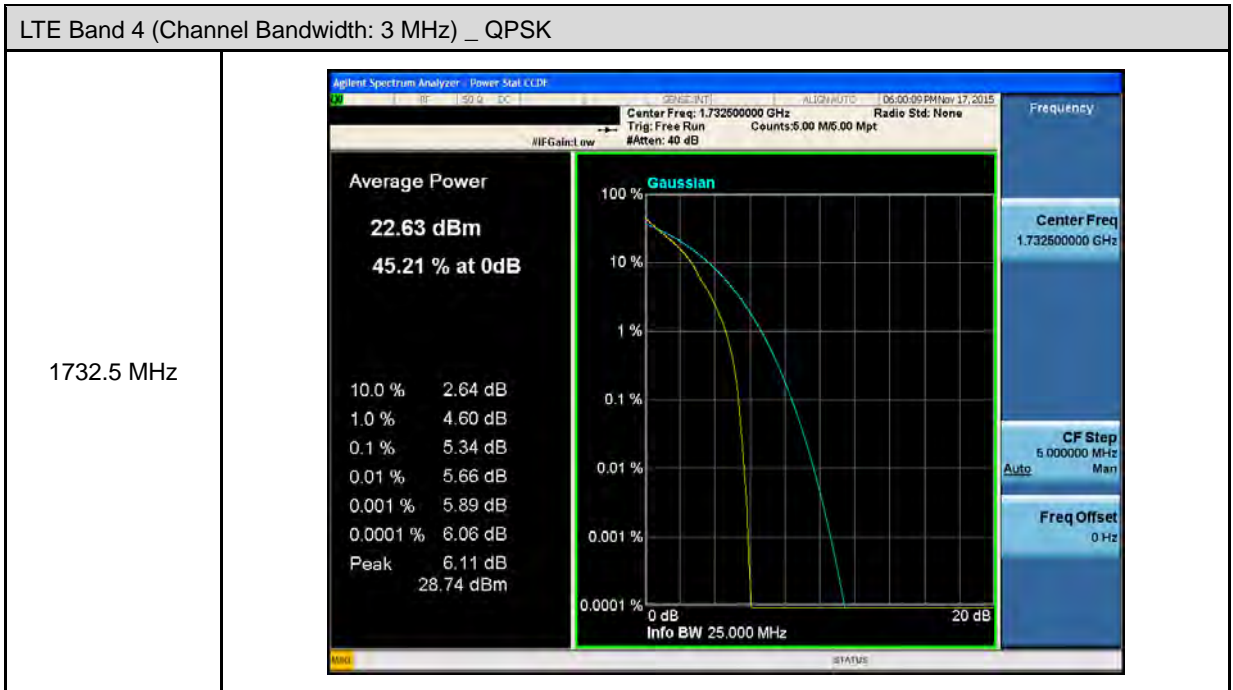
Model Number	HL7618
Test Item	Peak to Average Ratio
Date of Test	11/17/2015

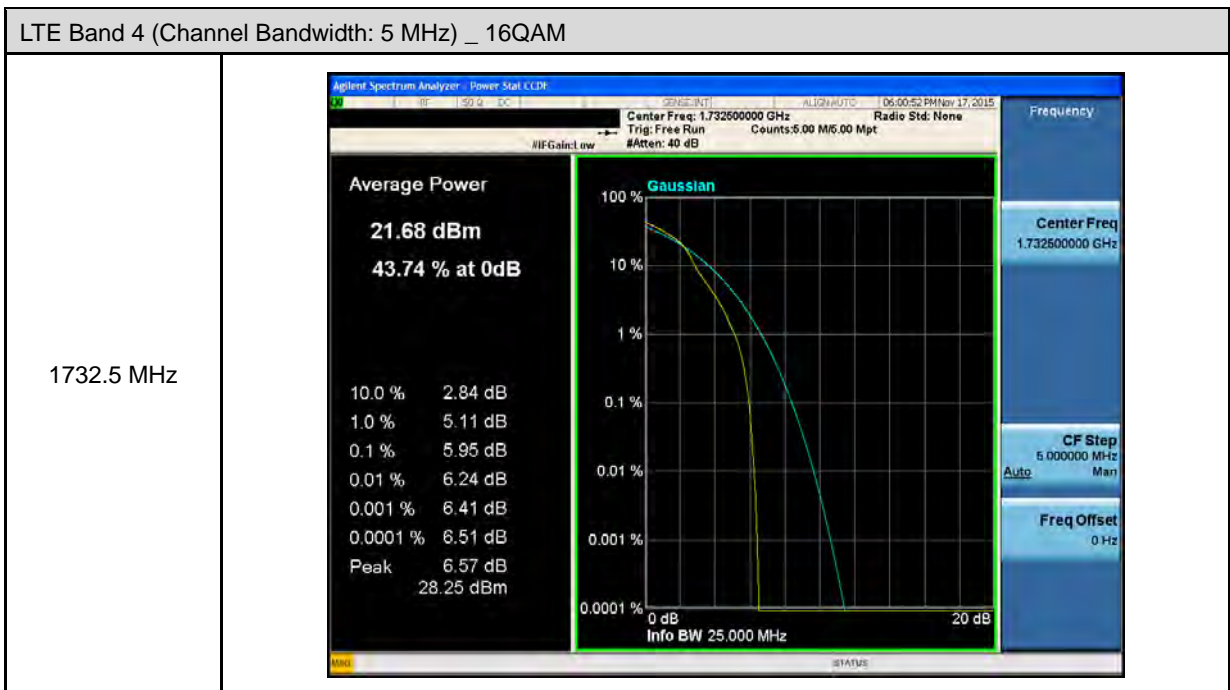
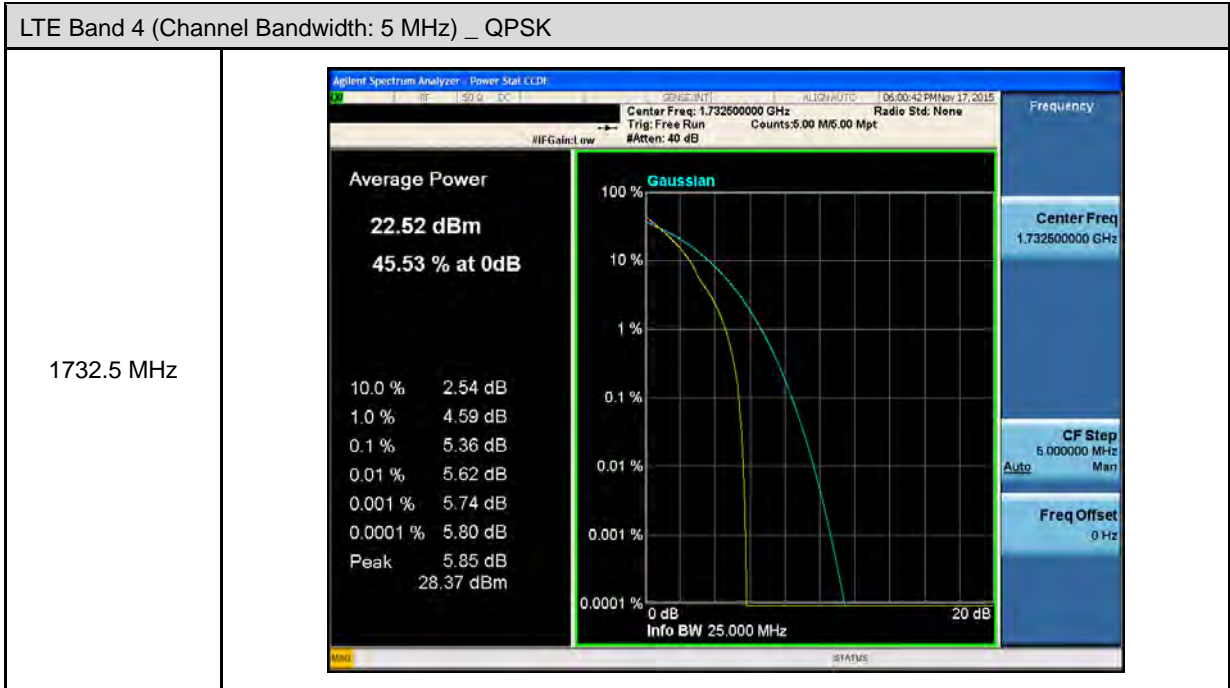
LTE Band 4				
Channel Bandwidth	Modulation	Frequency (MHz)	Peak to Average Ratio (dB)	Limit (dB)
1.4 MHz	QPSK	1732.5	5.49	< 13
	16QAM	1732.5	6.21	< 13
3 MHz	QPSK	1732.5	5.34	< 13
	16QAM	1732.5	6.08	< 13
5 MHz	QPSK	1732.5	5.36	< 13
	16QAM	1732.5	5.95	< 13
10 MHz	QPSK	1732.5	5.58	< 13
	16QAM	1732.5	6.39	< 13
15 MHz	QPSK	1732.5	5.61	< 13
	16QAM	1732.5	6.53	< 13
20 MHz	QPSK	1732.5	5.56	< 13
	16QAM	1732.5	6.09	< 13

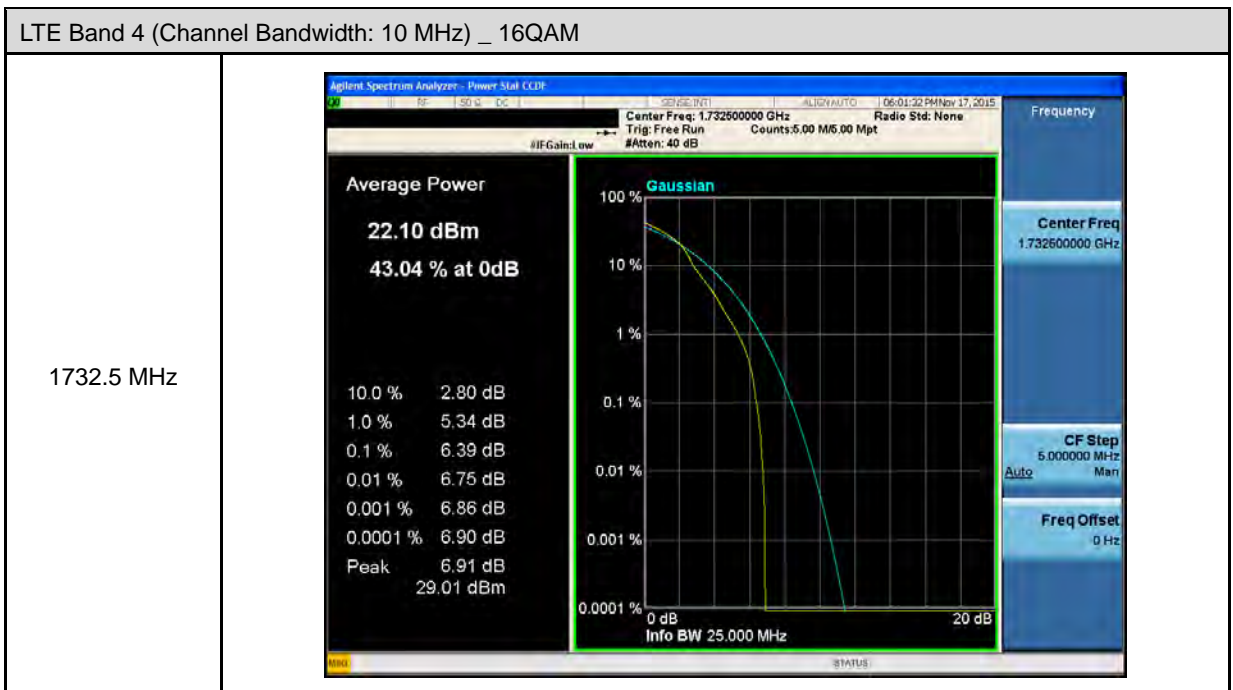
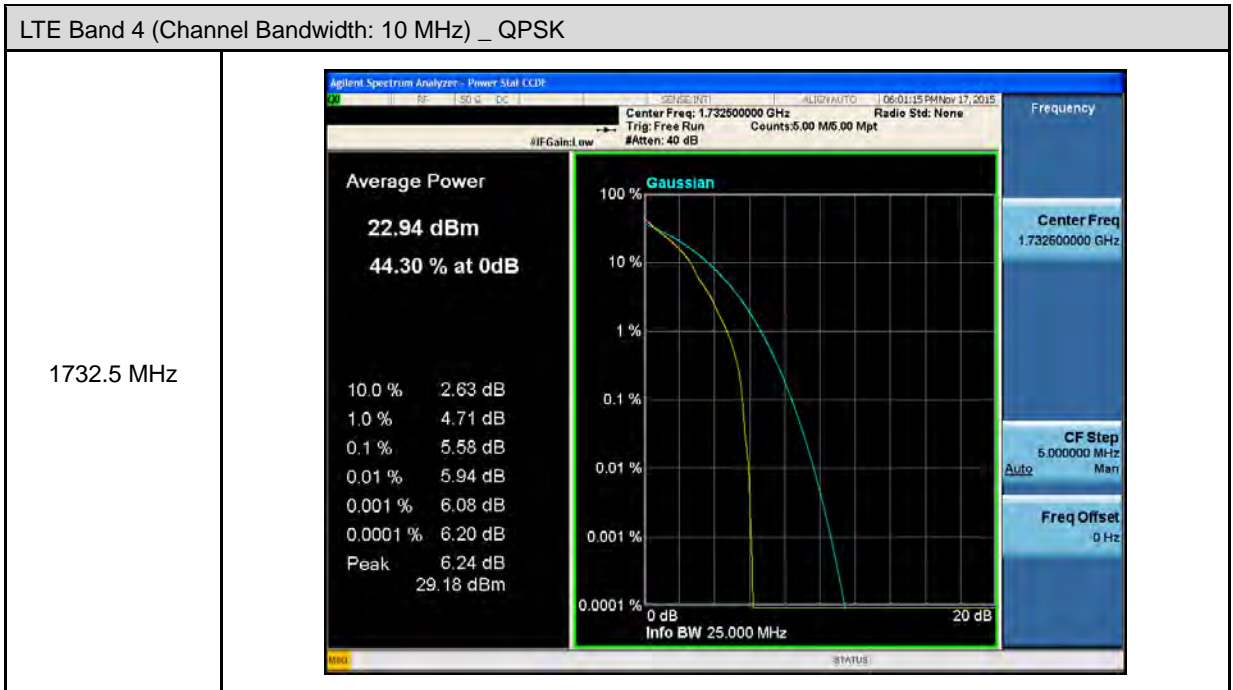
LTE Band 13				
Channel Bandwidth	Modulation	Frequency (MHz)	Peak to Average Ratio (dB)	Limit (dB)
5 MHz	QPSK	782.0	5.08	< 13
	16QAM	782.0	5.71	< 13
10 MHz	QPSK	782.0	5.49	< 13
	16QAM	782.0	6.31	< 13

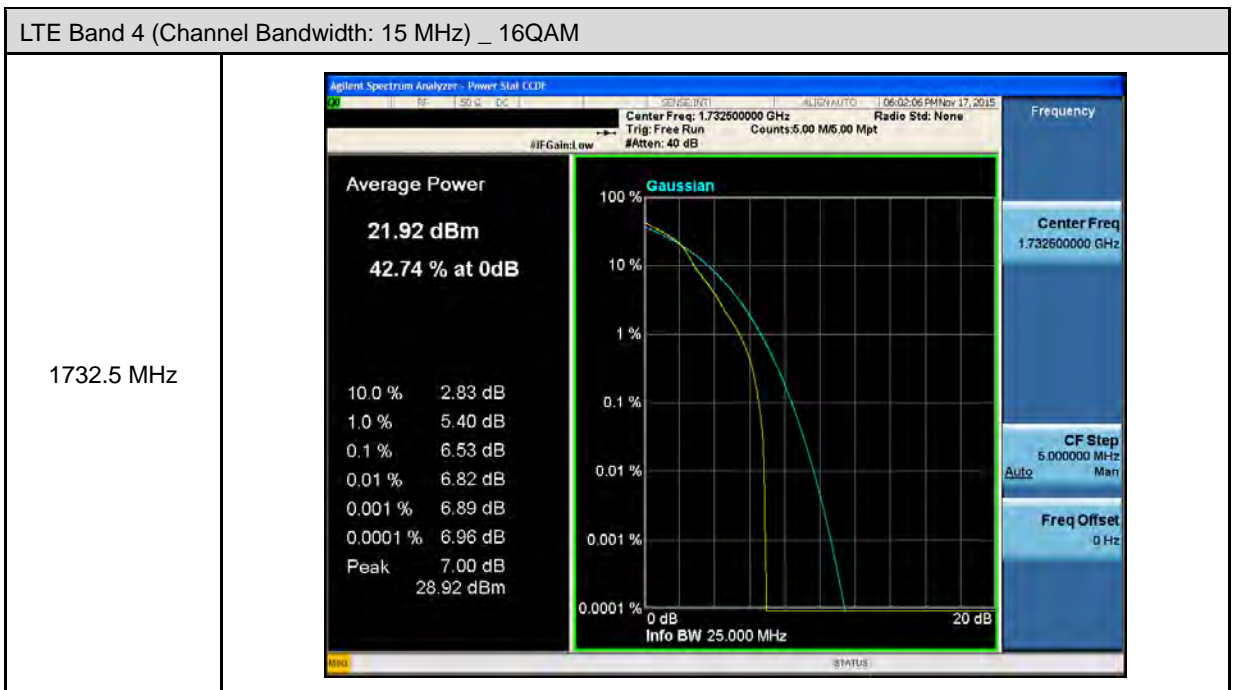
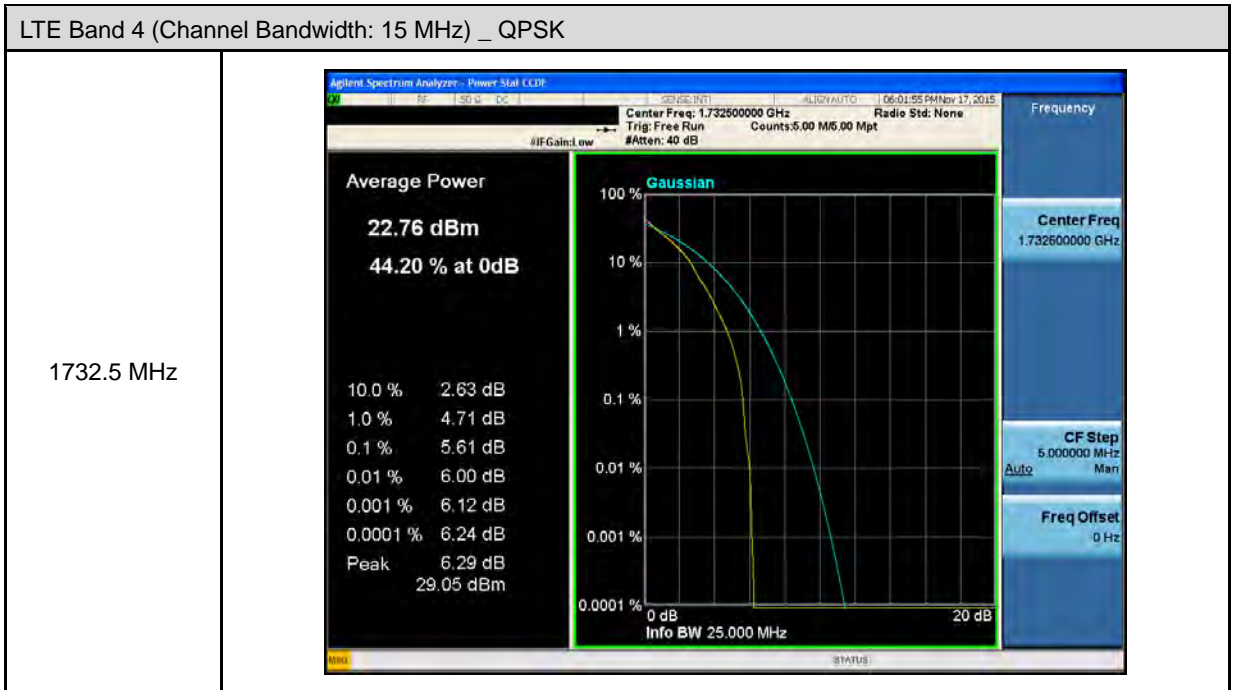
6.7. Test Graphs

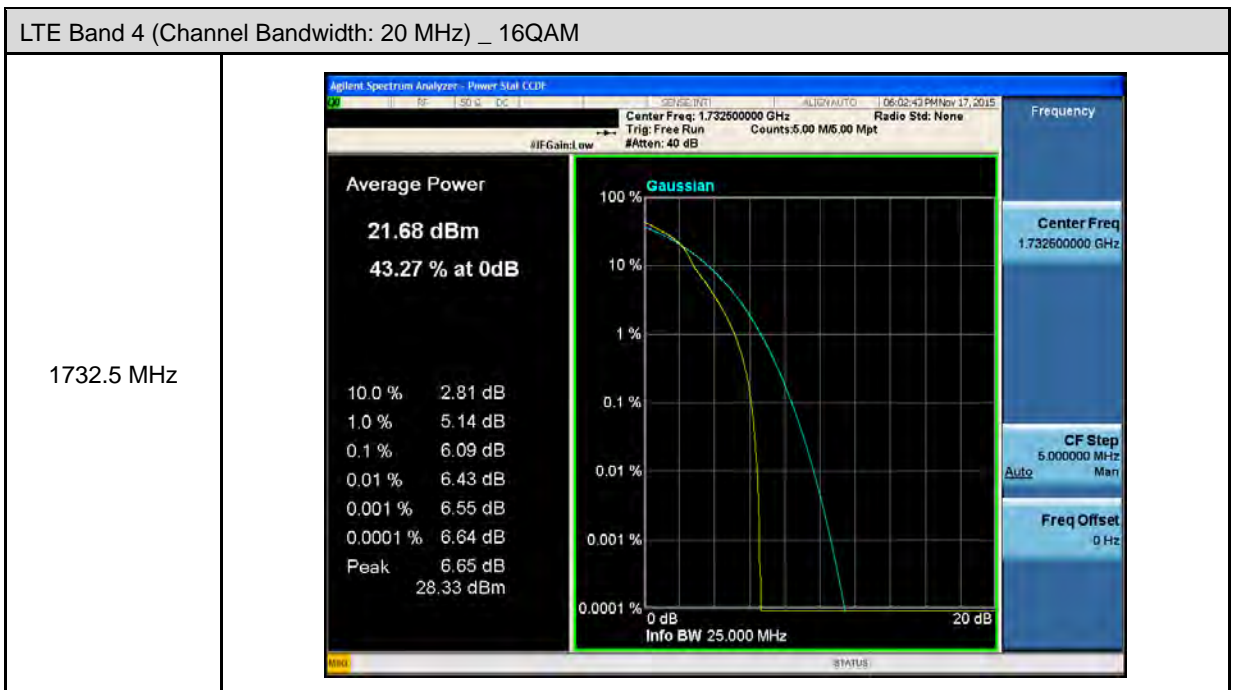
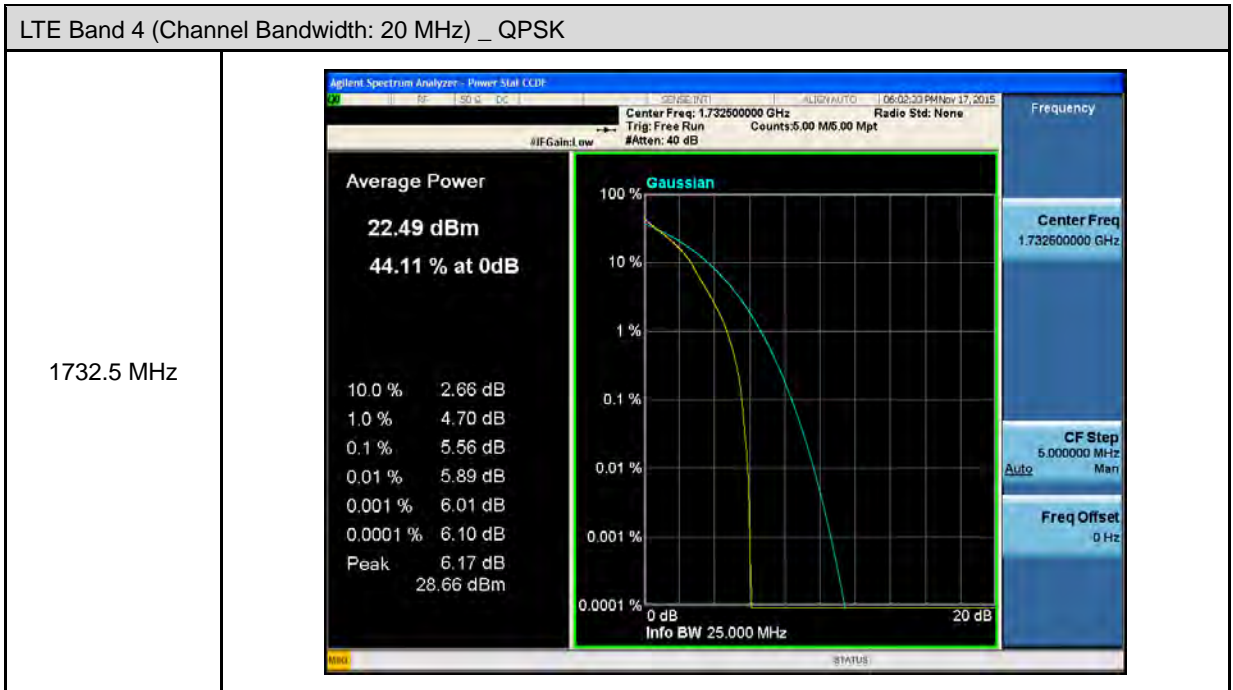


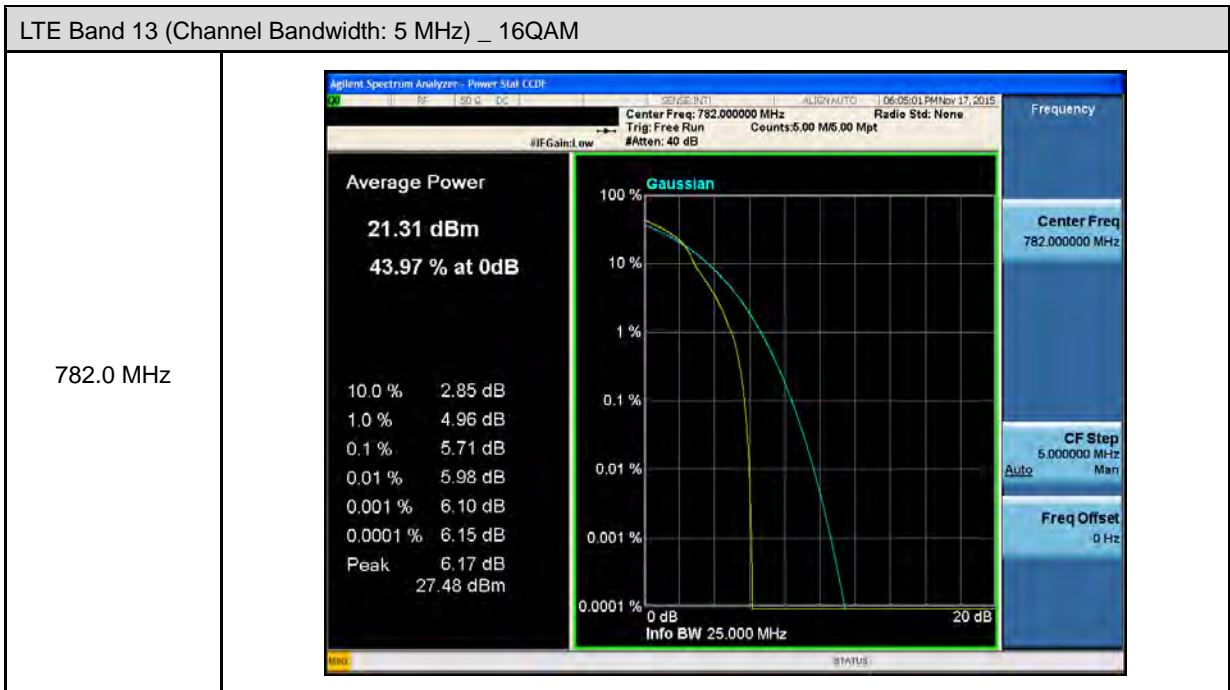
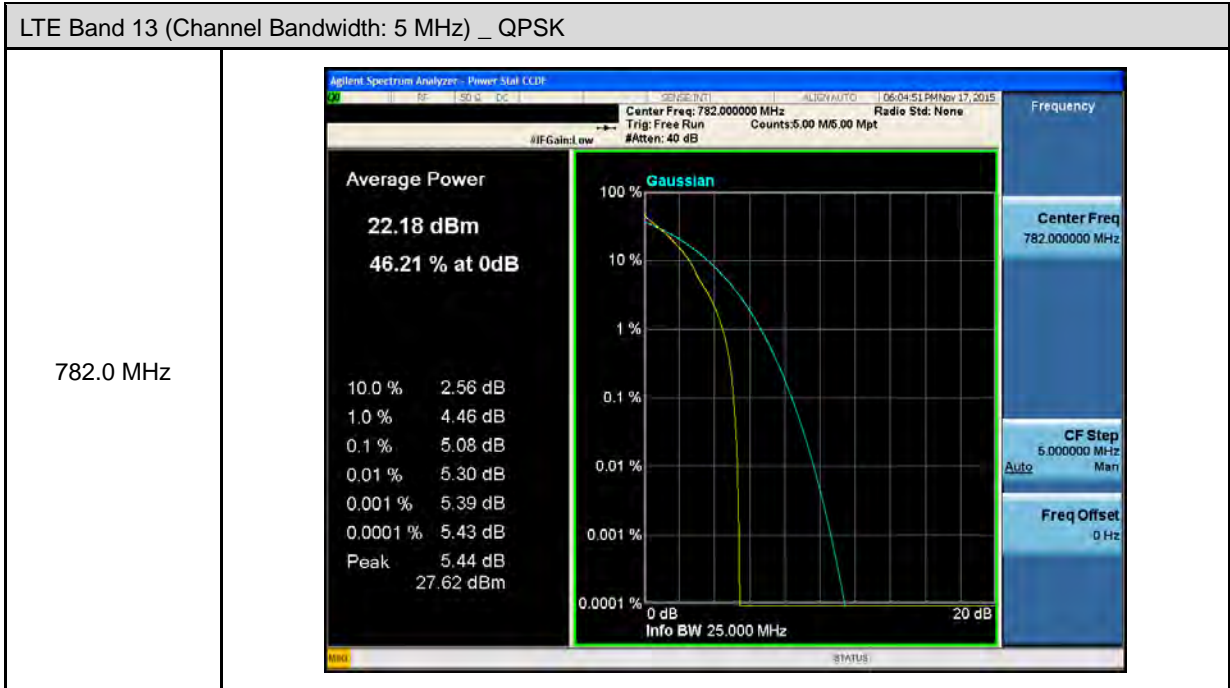


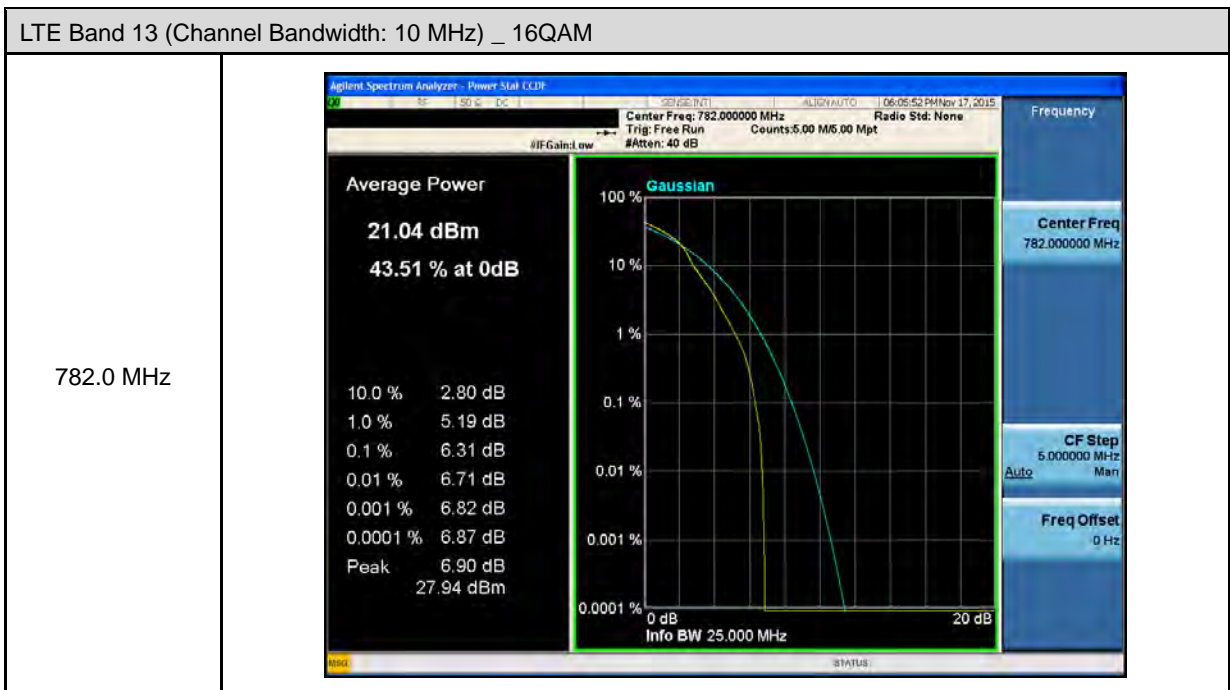
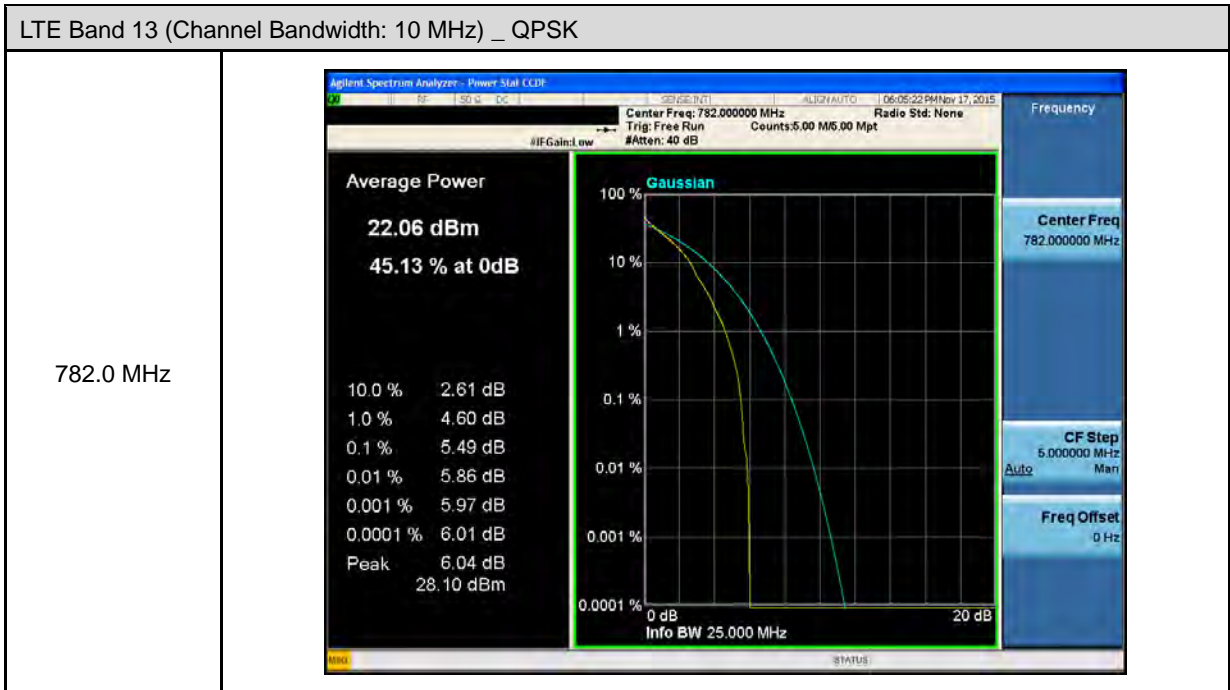












7 Band Edge Test

7.1. Limit

For operations in the 698 ~ 746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

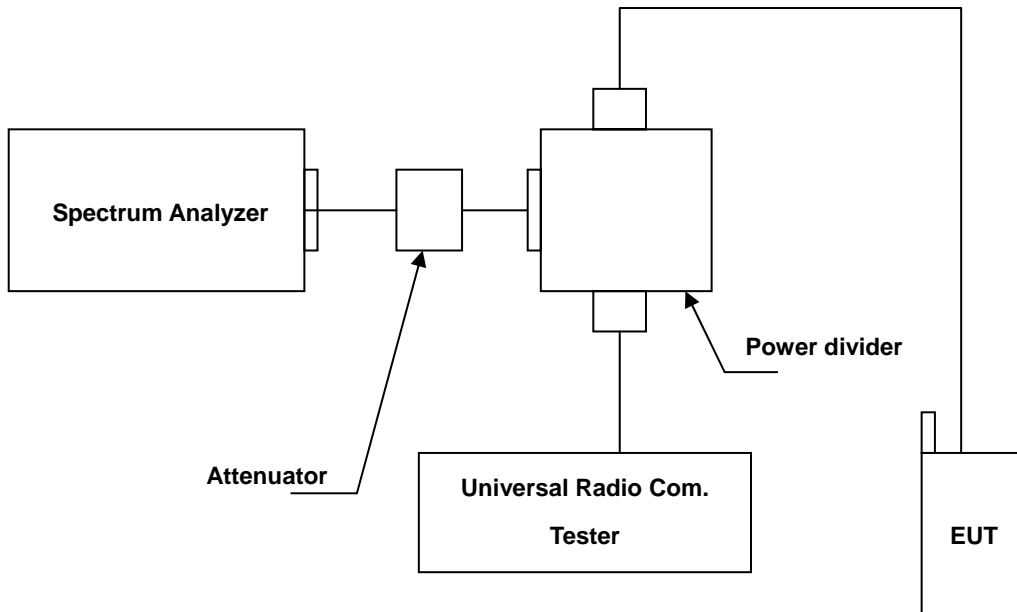
For operations in the 1710 ~ 1755 MHz and 2110 ~ 2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

7.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2015	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	10/30/2015	1 year
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

7.3. Setup



7.4. Test Procedure

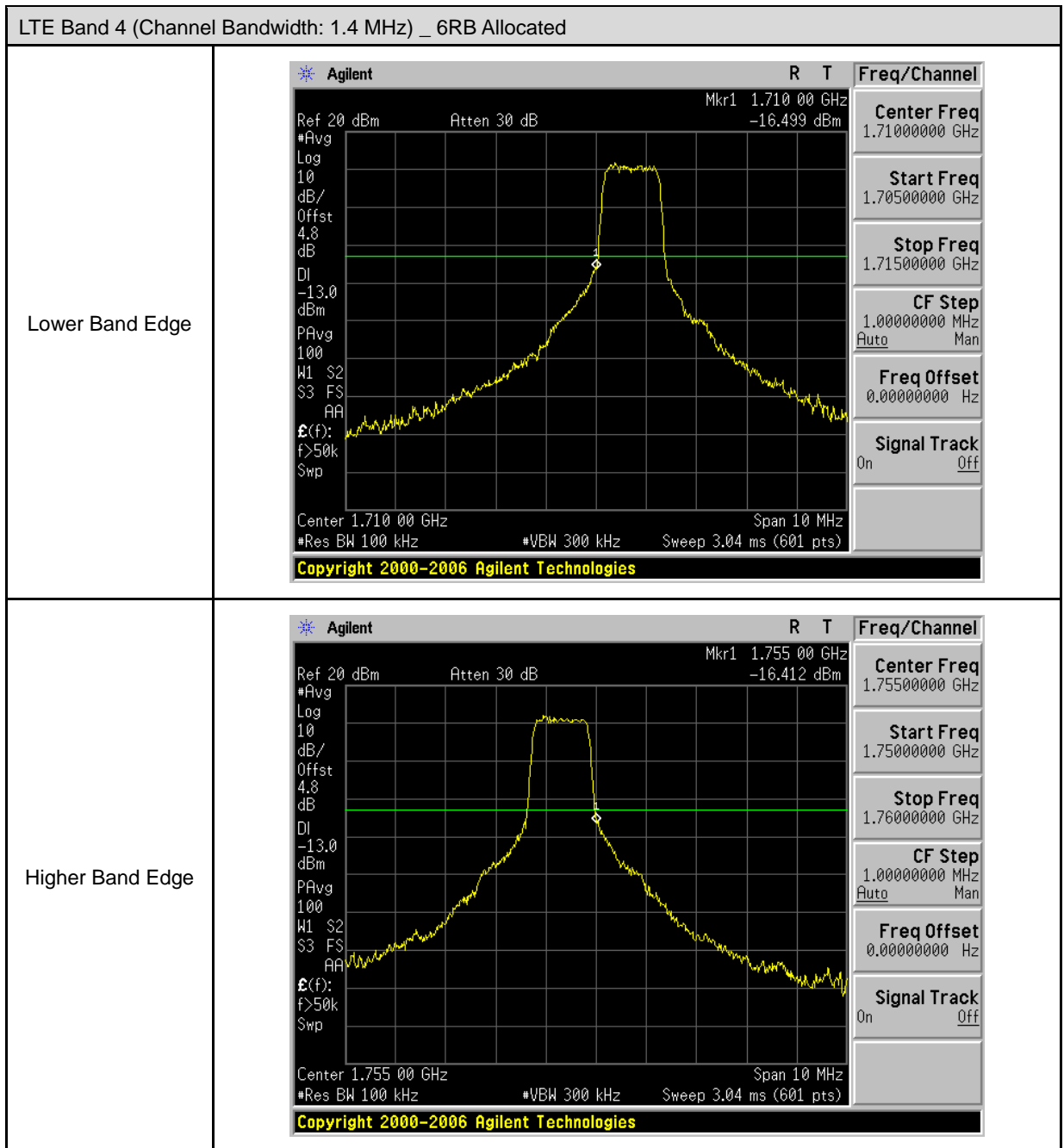
The measurement is made according to FCC rules:

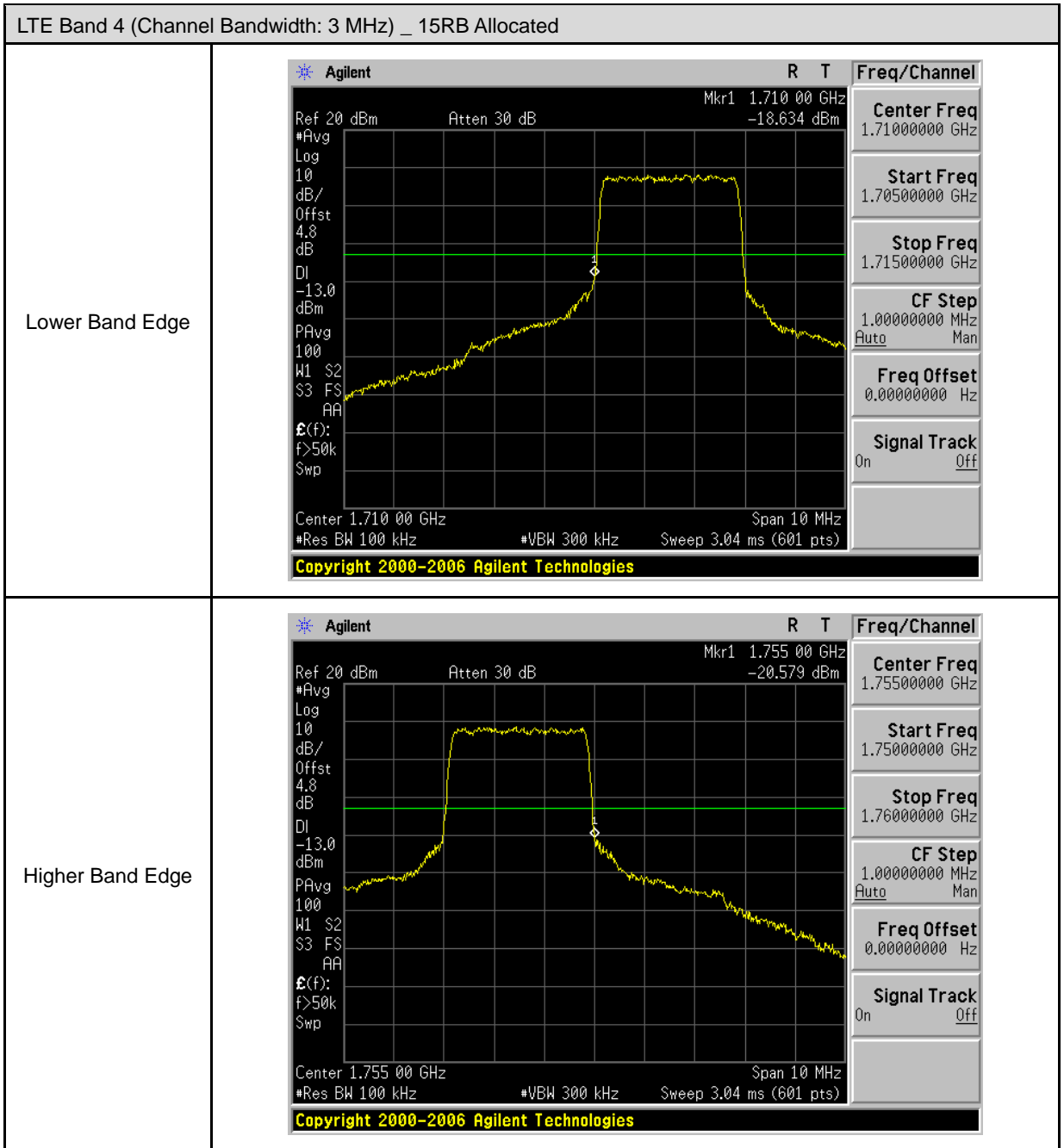
- a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Spectrum Analyzer.
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. Record the max trace plot into the test report.

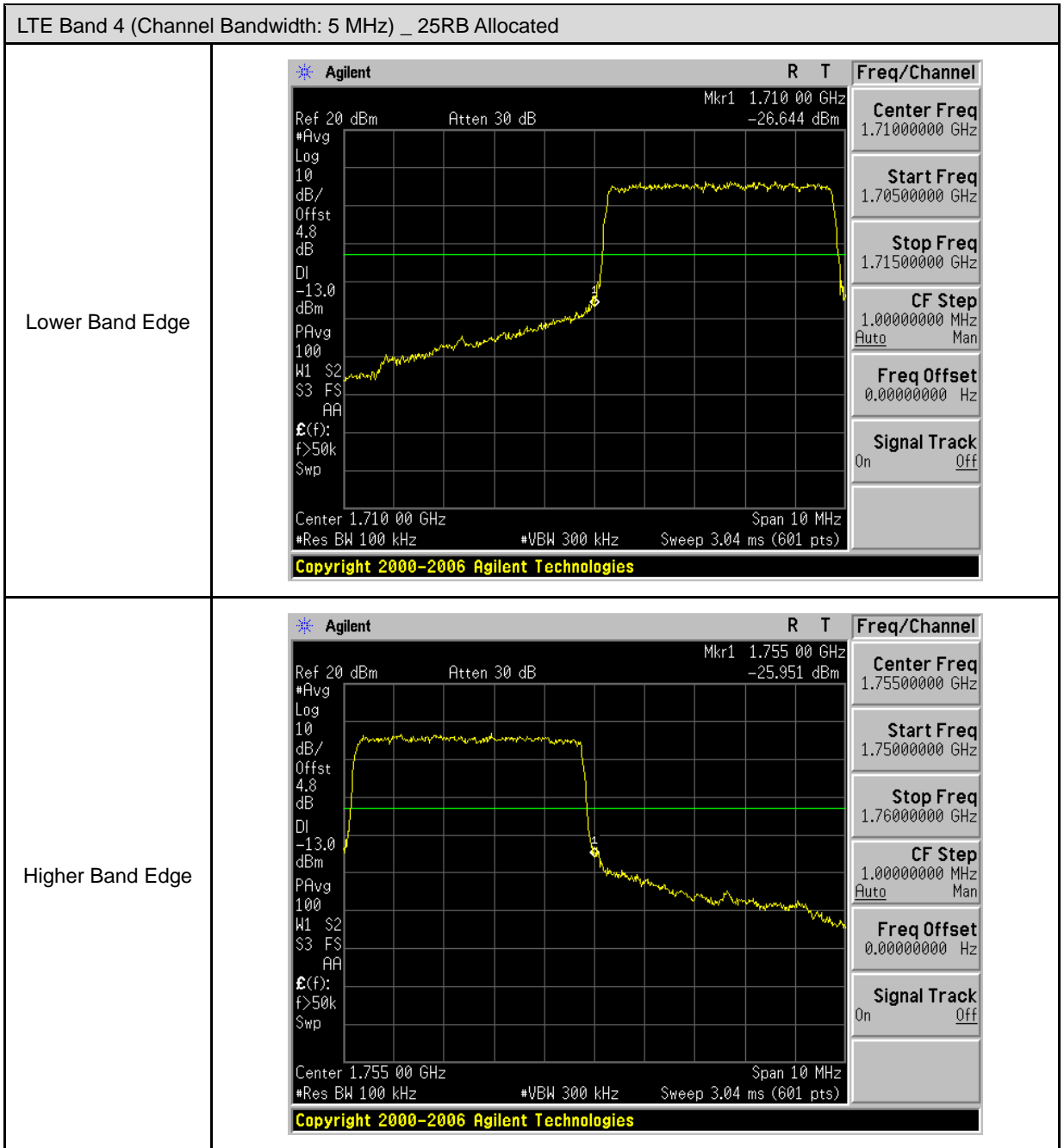
7.5. Uncertainty

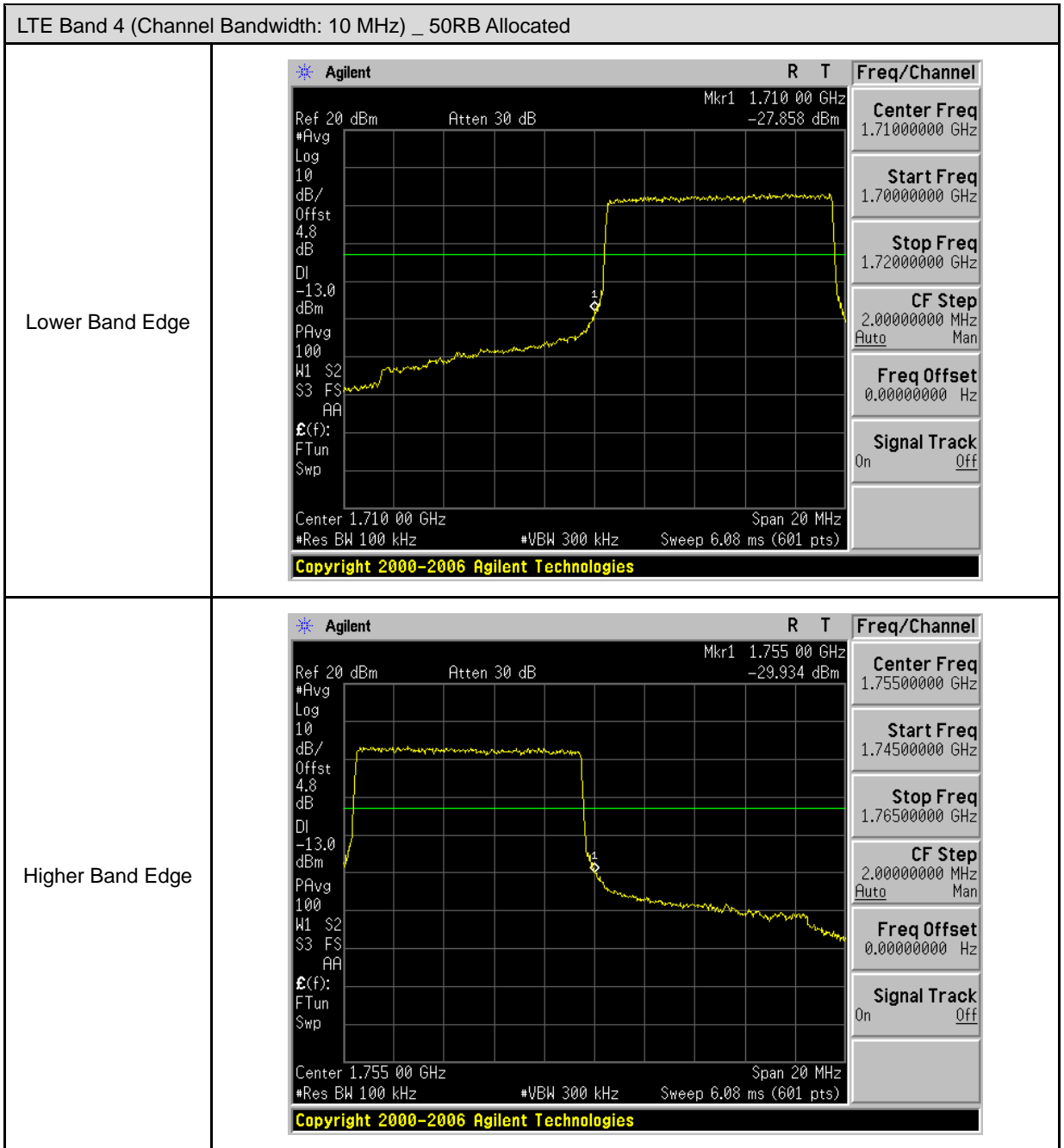
The measurement uncertainty is defined as for Conducted Power measurement is 1.2 dB.

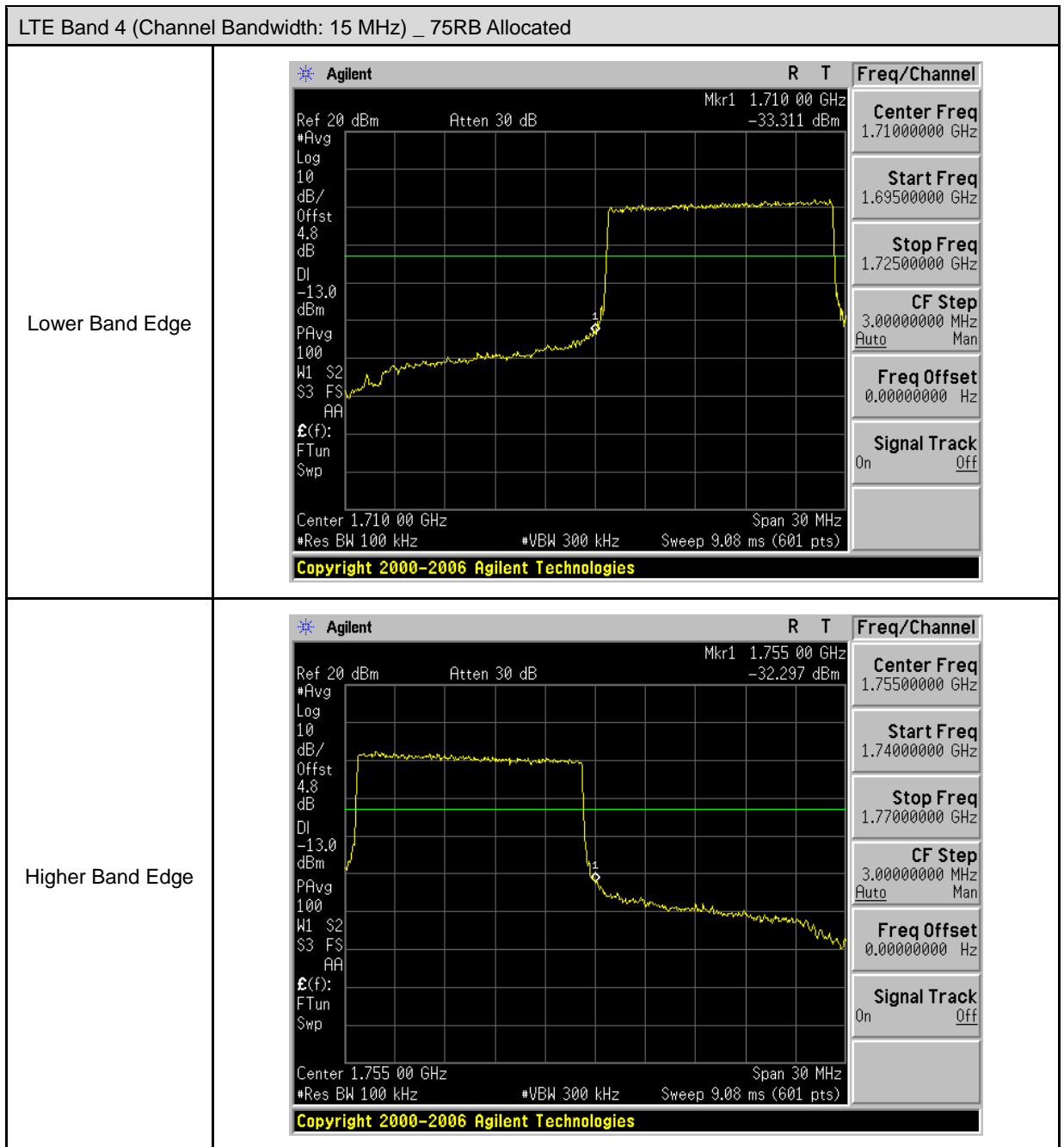
7.6. Test Result

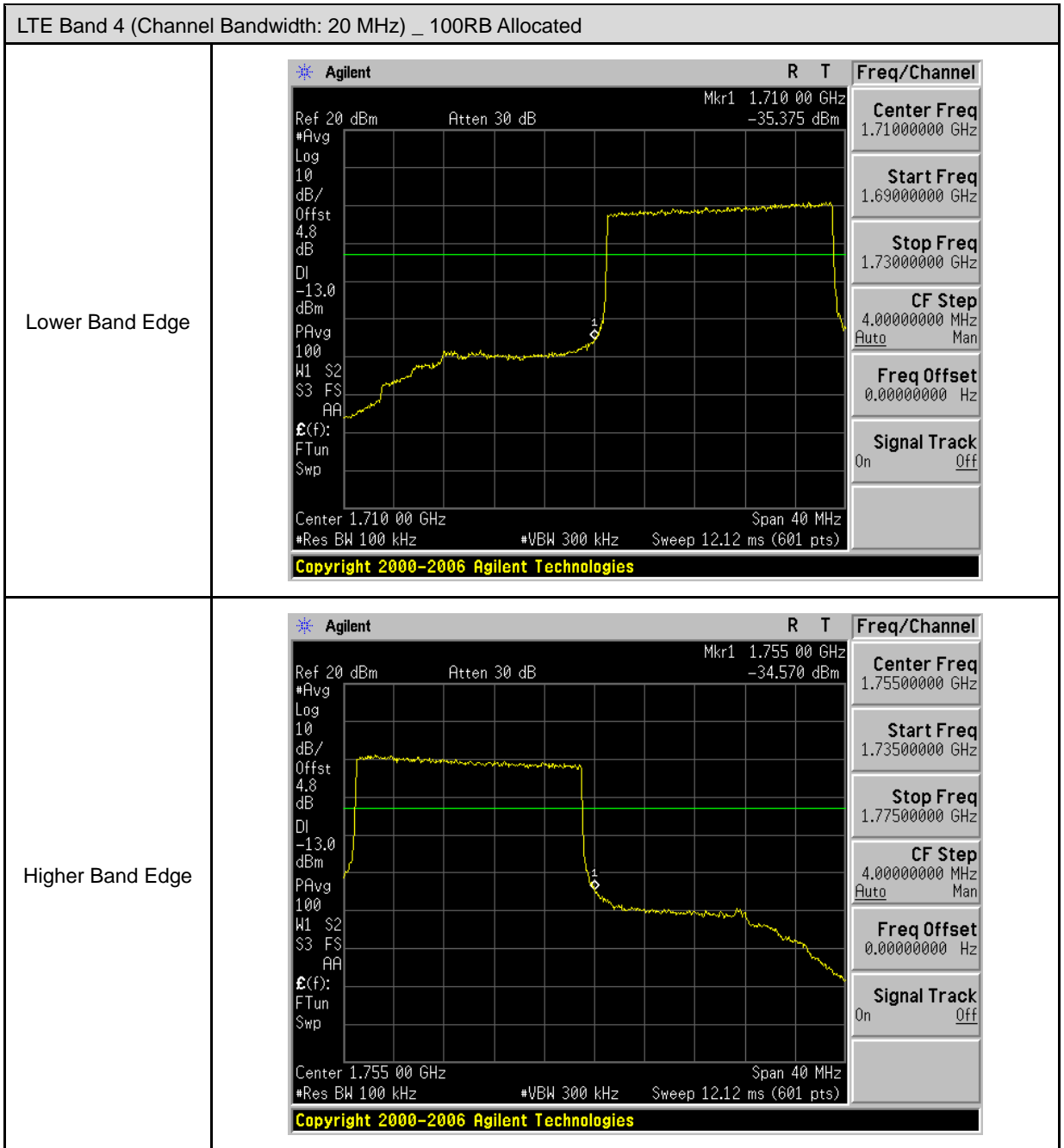






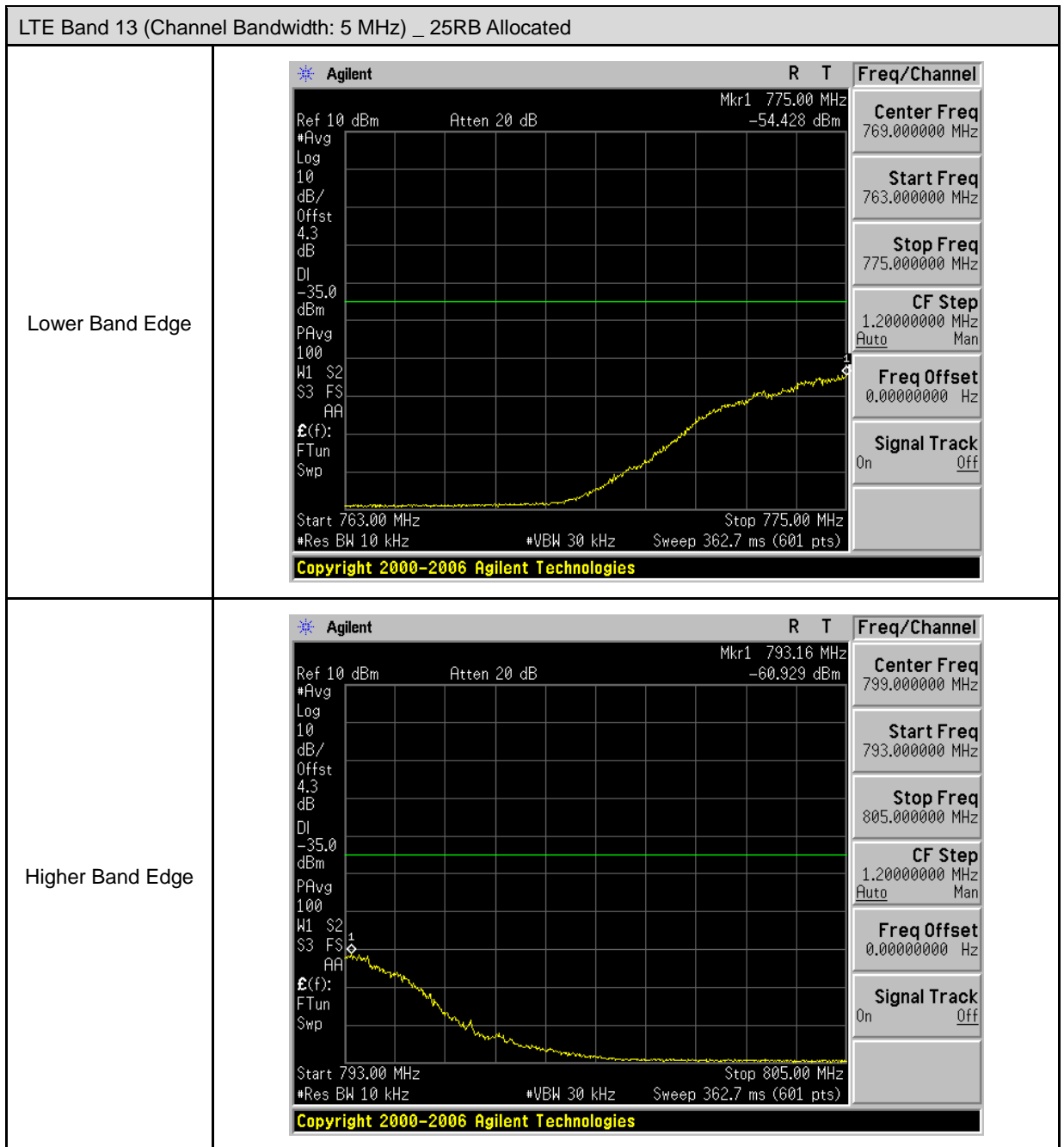


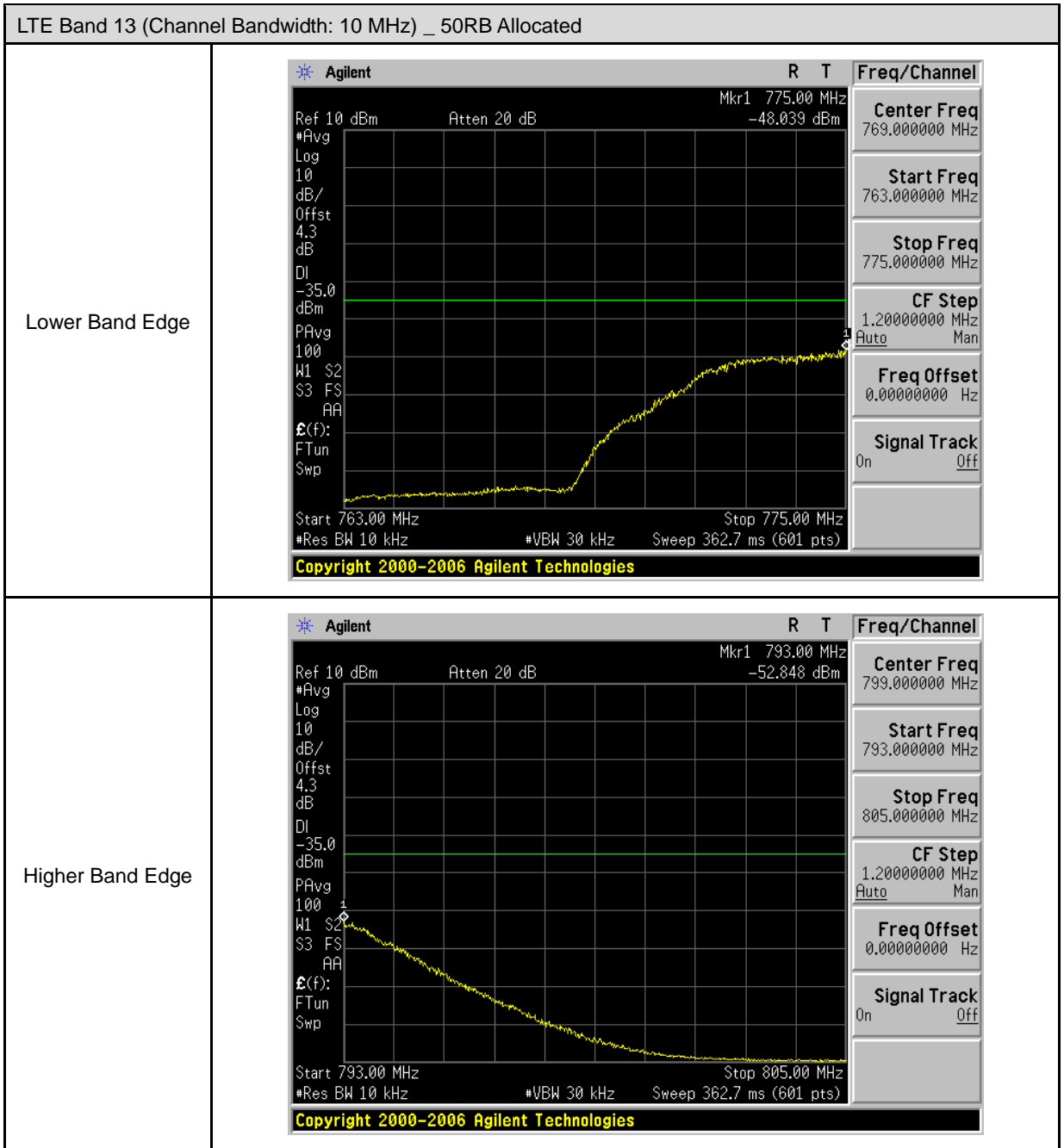




LTE Band 13_BW=5M				
Frequency (MHz)	RBW=10kHz Measurement (dBm)	RBW=6.25kHz Measurement (dBm)	Limit -35dBm/6.25kHz	Result
763 ~ 775	-54.428	-56.469	-35	PASS
793 ~ 805	-60.929	-62.970	-35	PASS

LTE Band 13_BW=10M				
Frequency (MHz)	RBW=10kHz Measurement (dBm)	RBW=6.25kHz Measurement (dBm)	Limit -35dBm/6.25kHz	Result
763 ~775	-48.039	-50.080	-35	PASS
793 ~805	-52.848	-54.889	-35	PASS





8 Conducted Spurious Emission and Radiation Spurious Emission Test

8.1. Limit

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

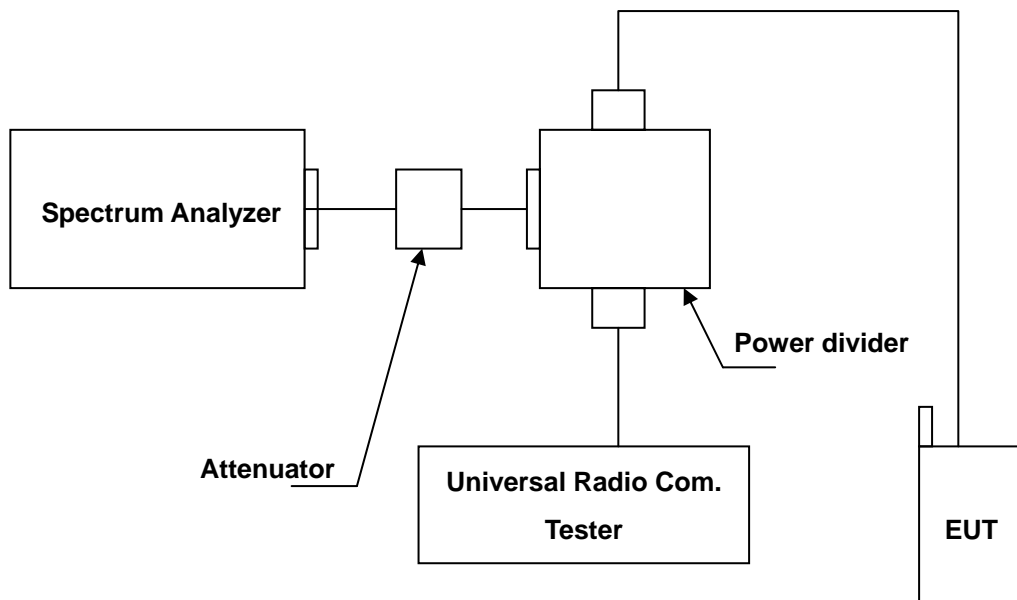
8.2. Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2015	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	10/30/2015	1 year
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE02	TE02	N.C.R.	-----

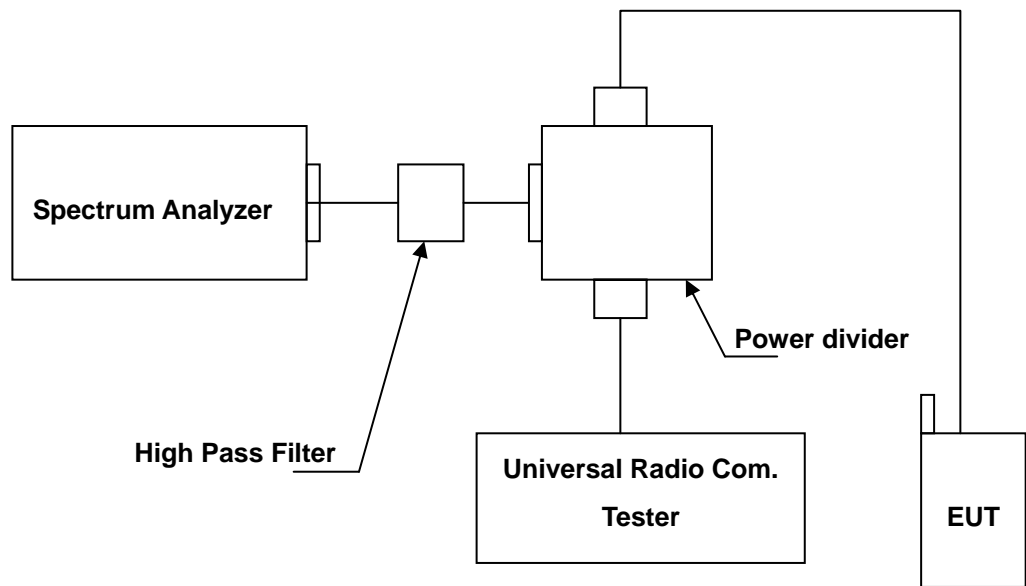
Note: N.C.R. = No Calibration Request.

8.3. Setup

Below 2.8GHz



Above 2.8GHz



8.4. Test Procedure

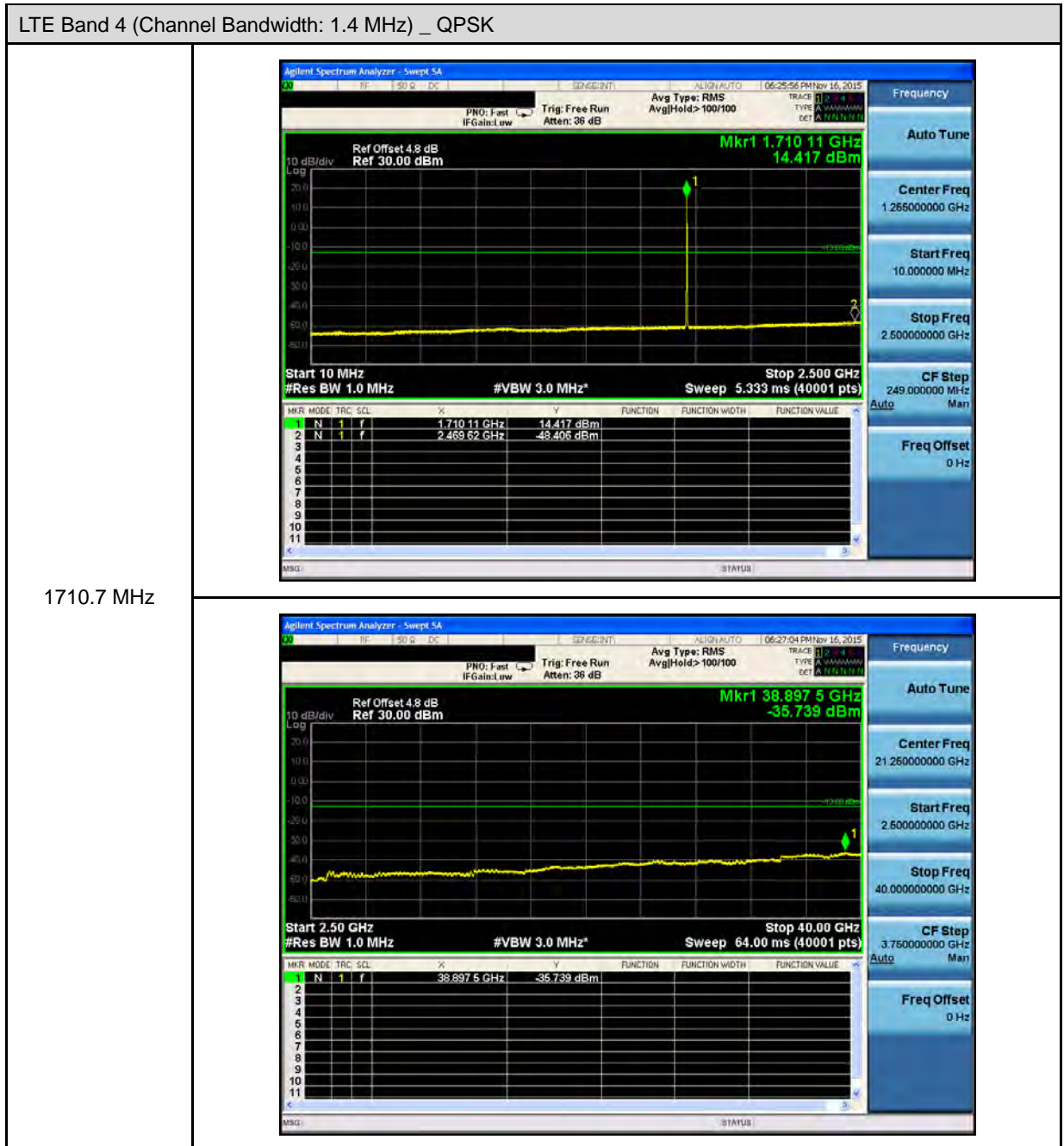
- The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range.).
- The conducted spurious emission used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- When the spectrum scanned from 10MHz to 2.5GHz (Band 7 and Band 41: scanned from 10MHz to 4GHz), it shall be connected to the band reject filter attenuated the carried frequency. The spectrum set RB=1MHz, VB=1MHz.
- When the spectrum scanned from 2.5GHz to 10th harmonic (Band 7 and Band 41: scanned from 4GHz to 10th harmonic), it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set RB=1MHz, VB=1MHz.

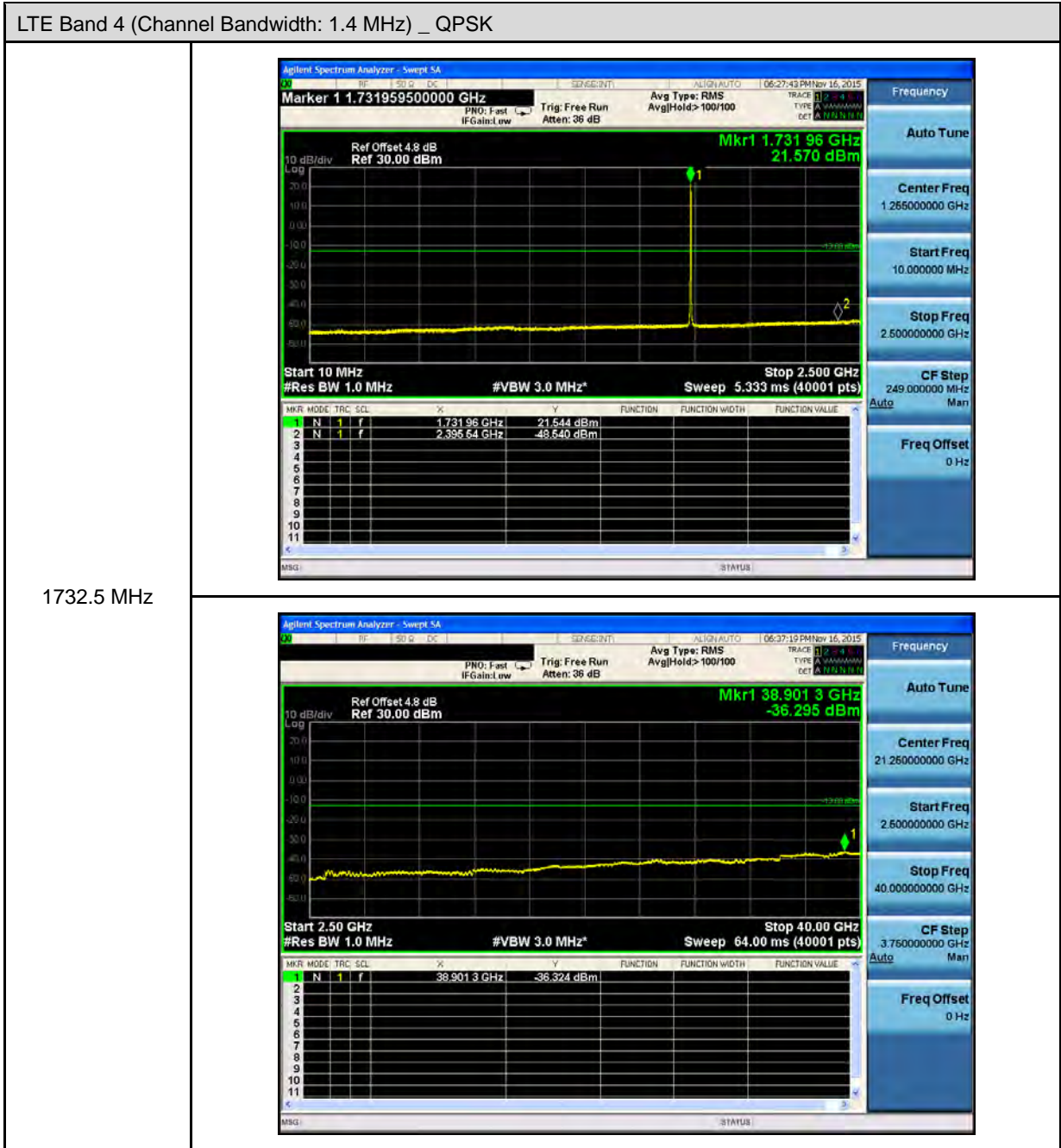
8.5. Uncertainty

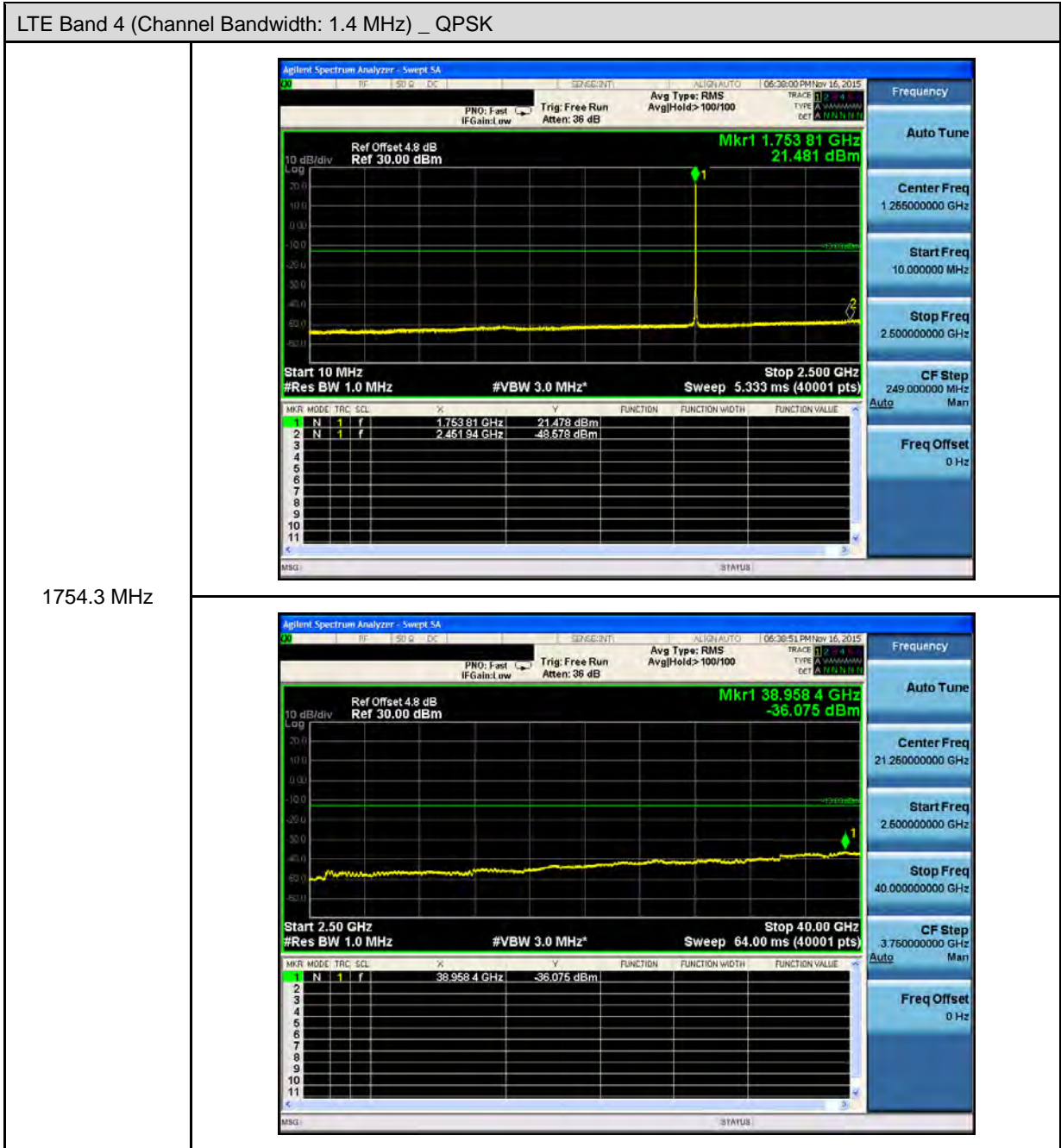
The measurement uncertainty is evaluated as ± 2.24 dB.

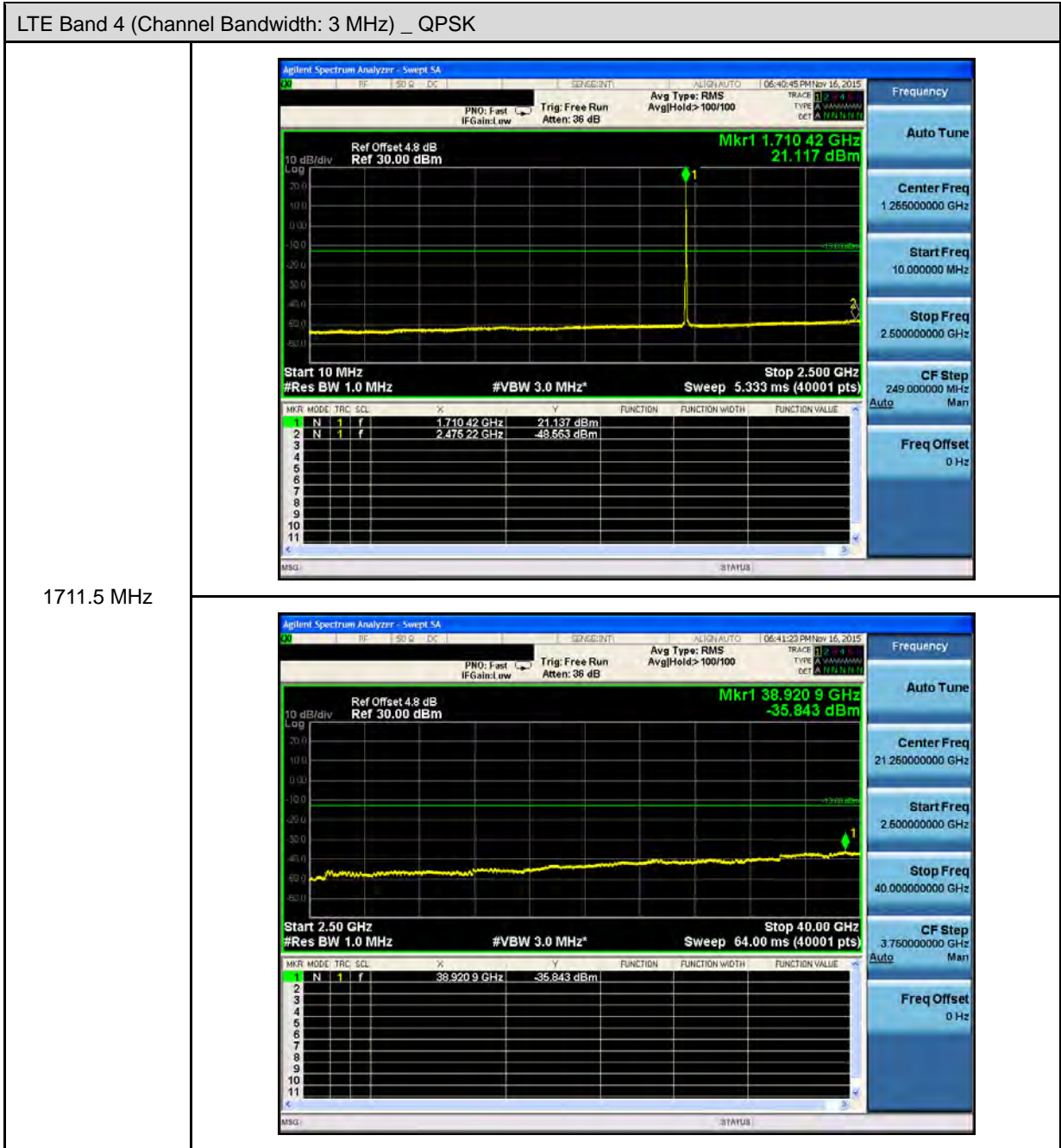
8.6. Test Results

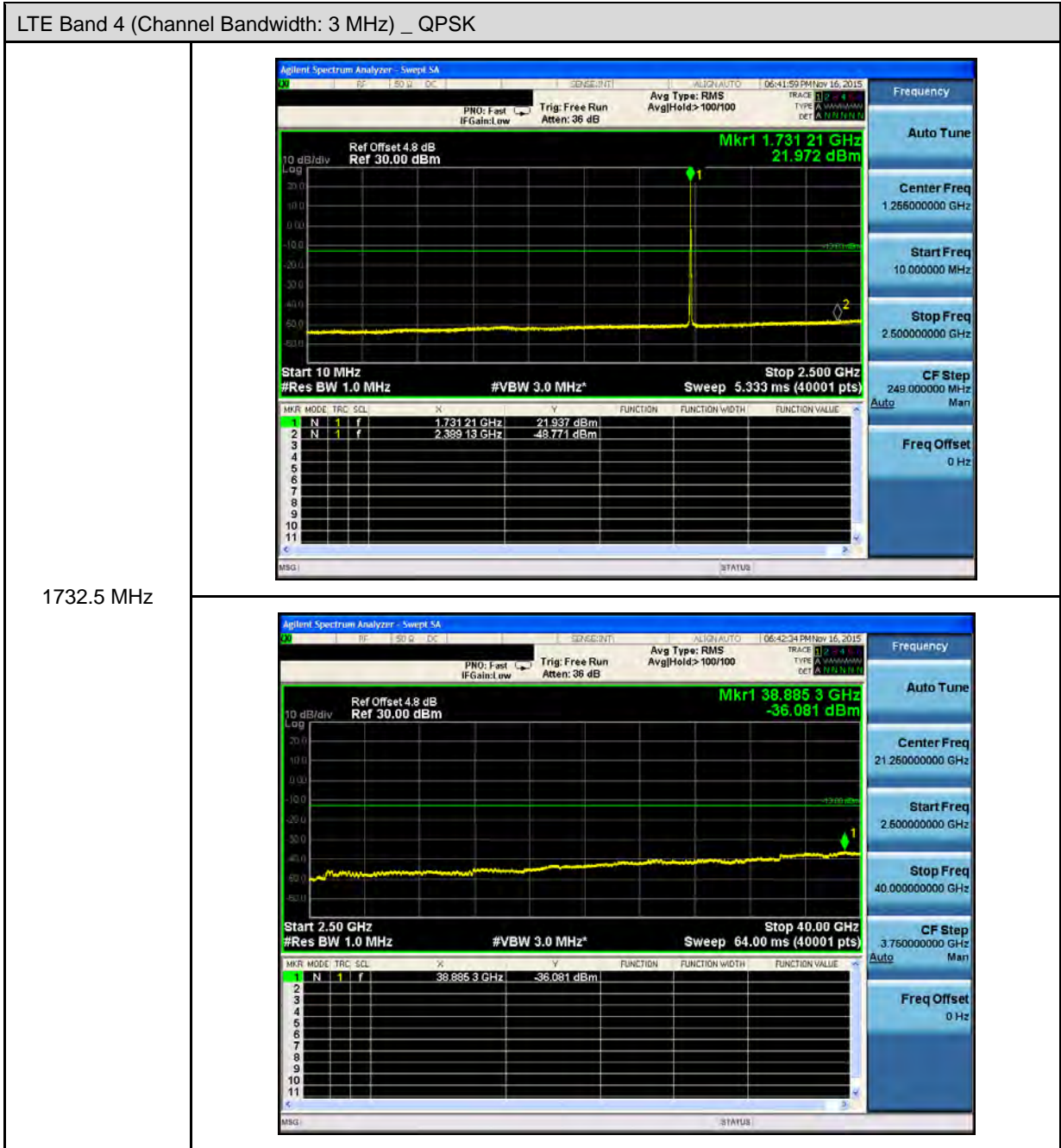
Model Number	HL7618
Test Item	Conducted Spurious Emission
Date of Test	11/16/2015

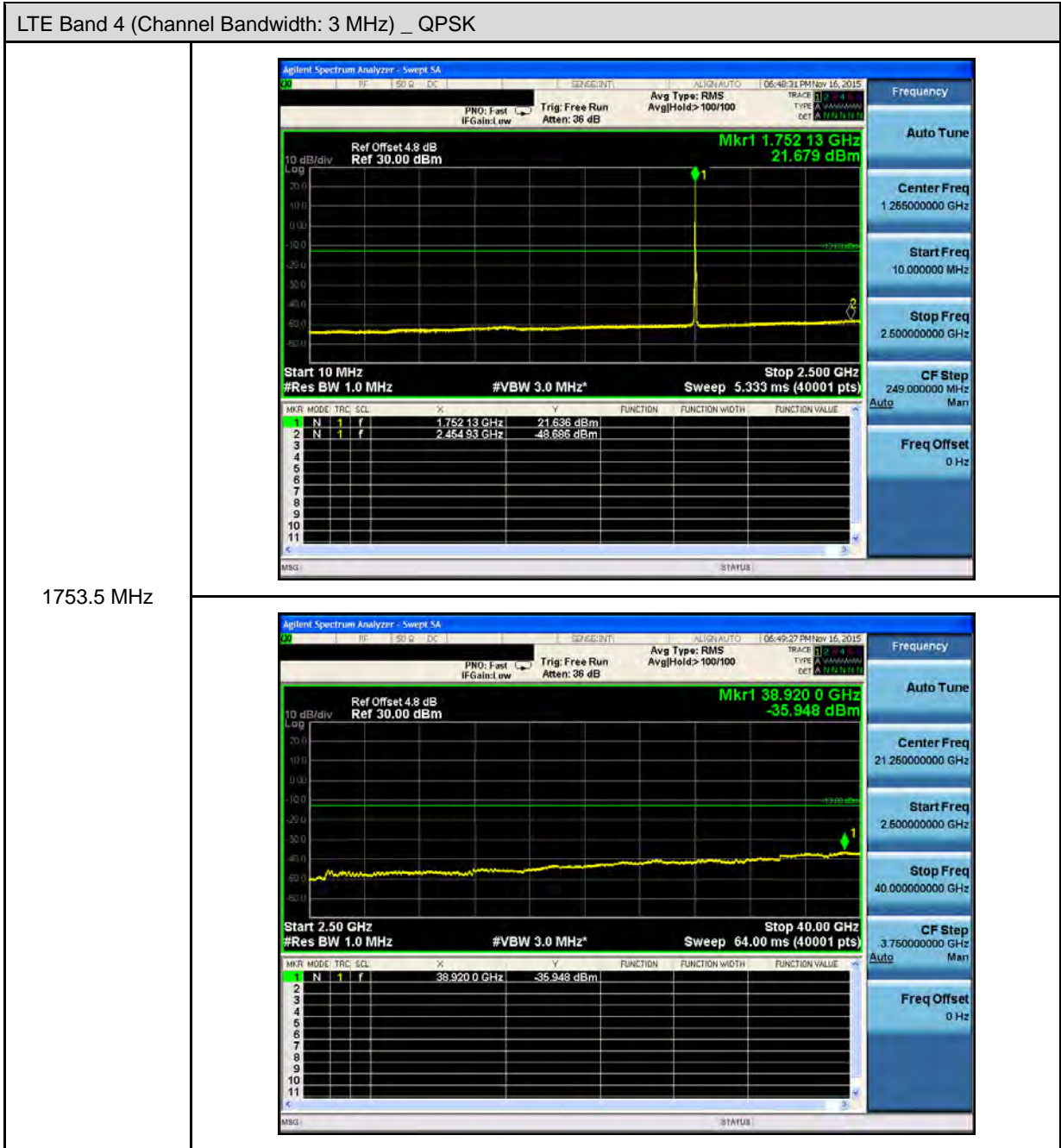


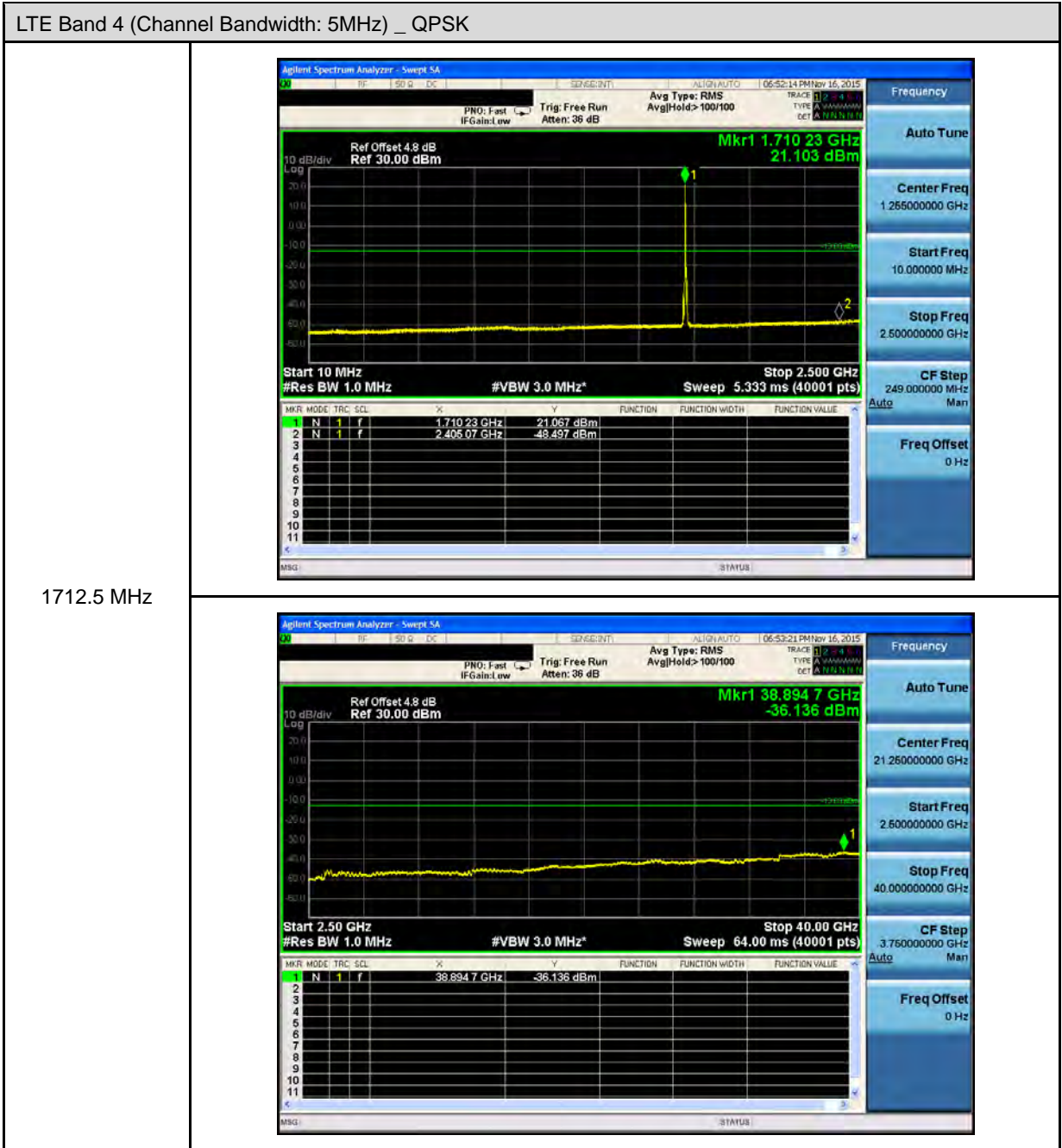


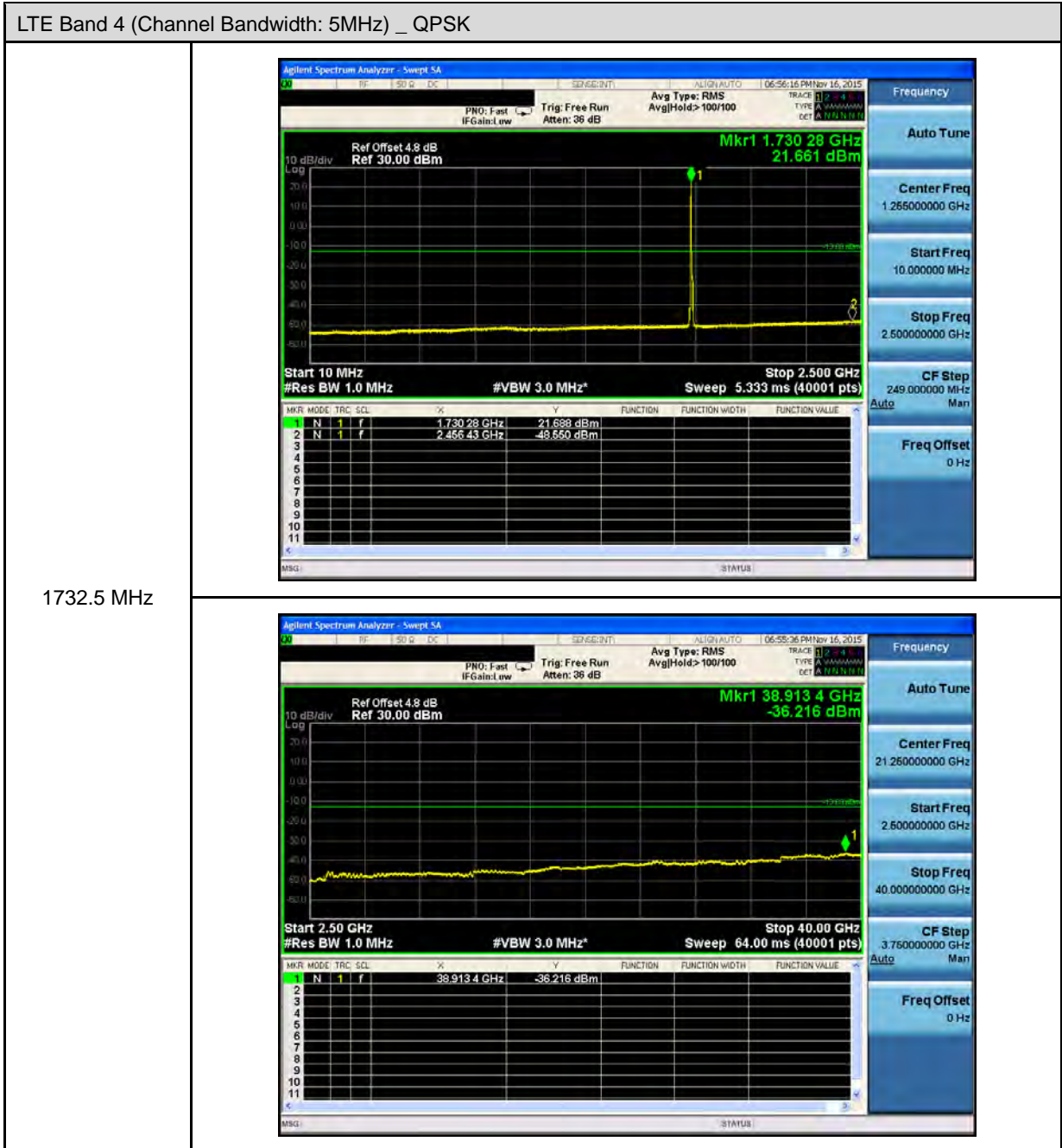


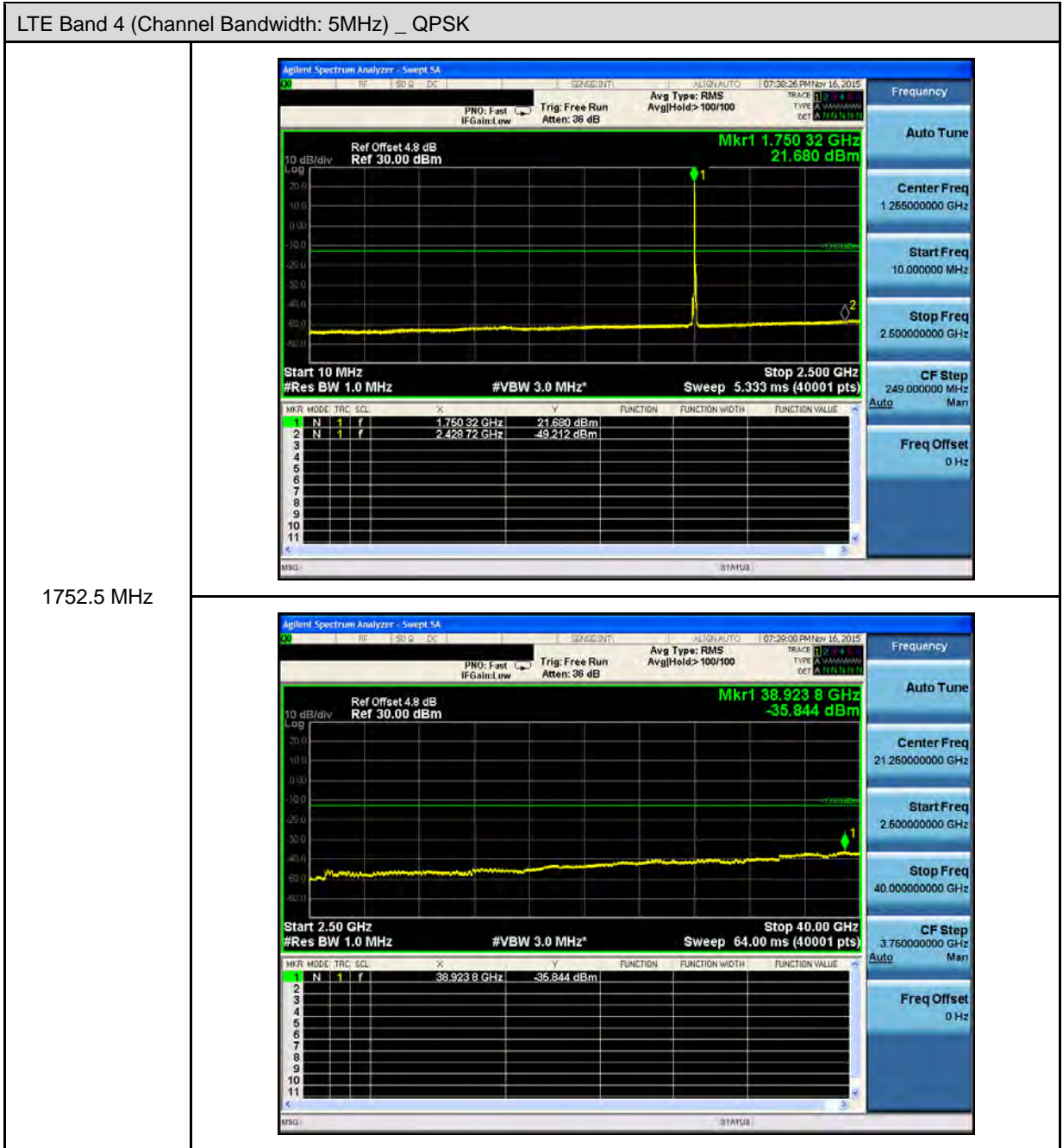


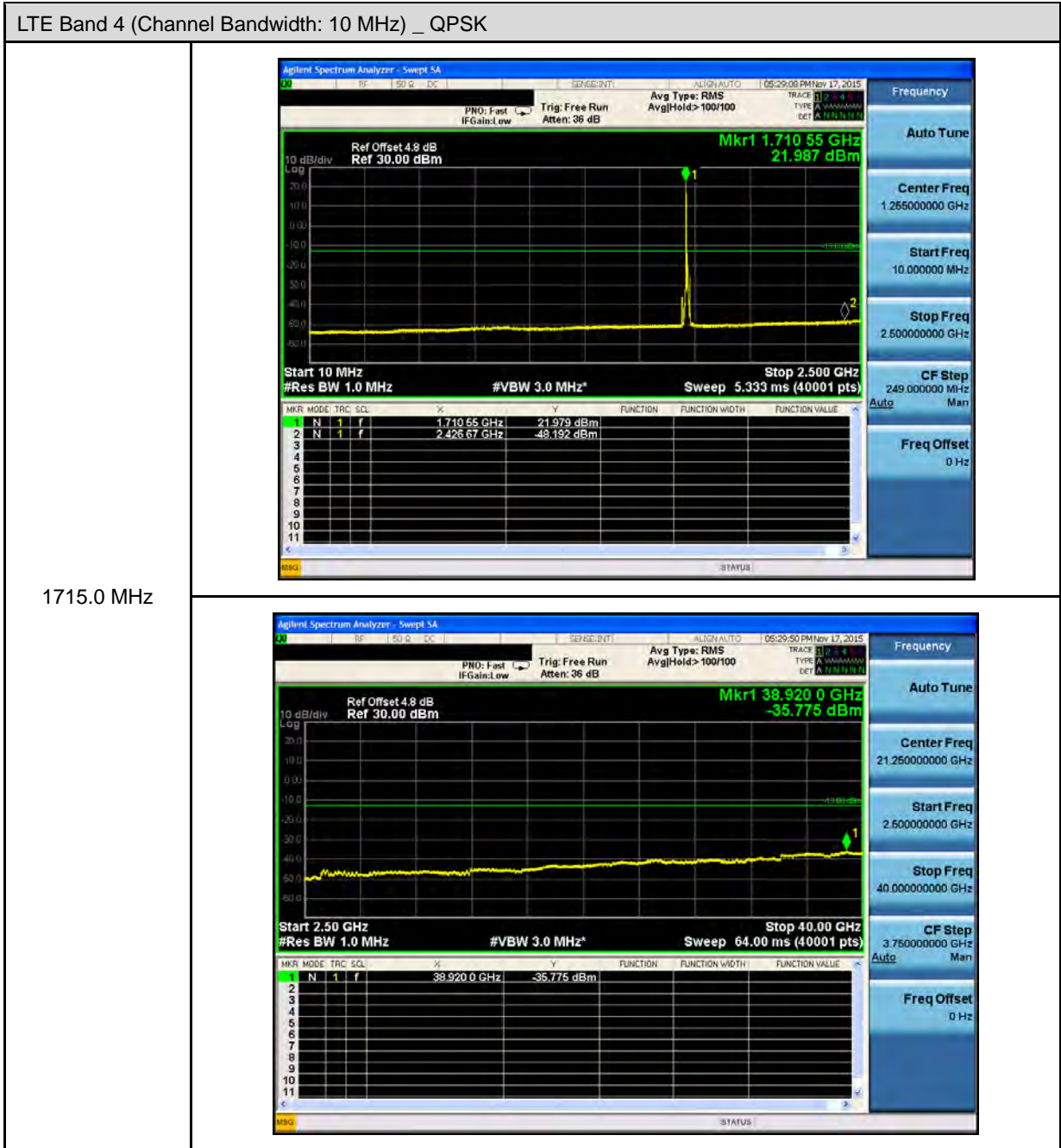


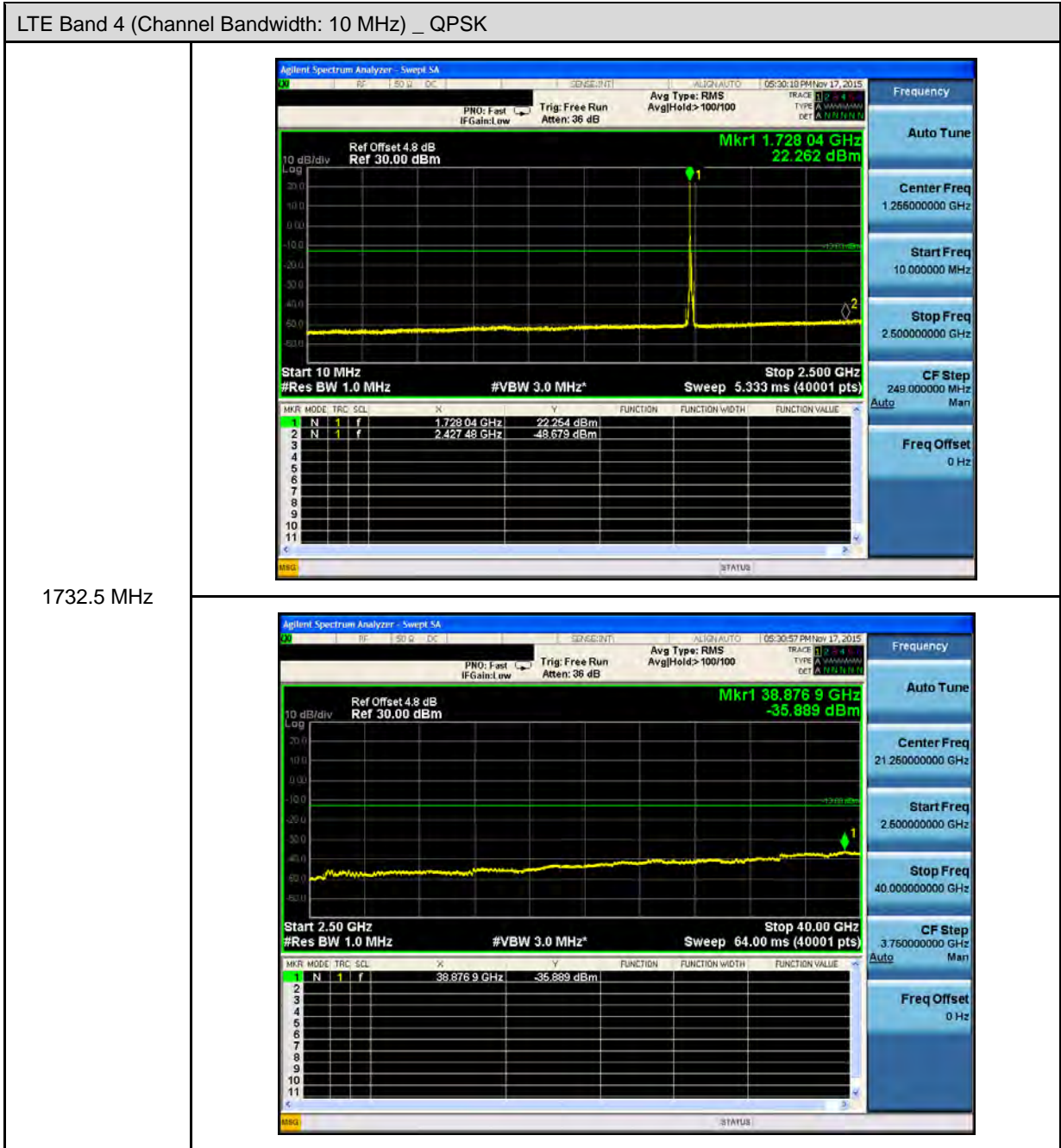


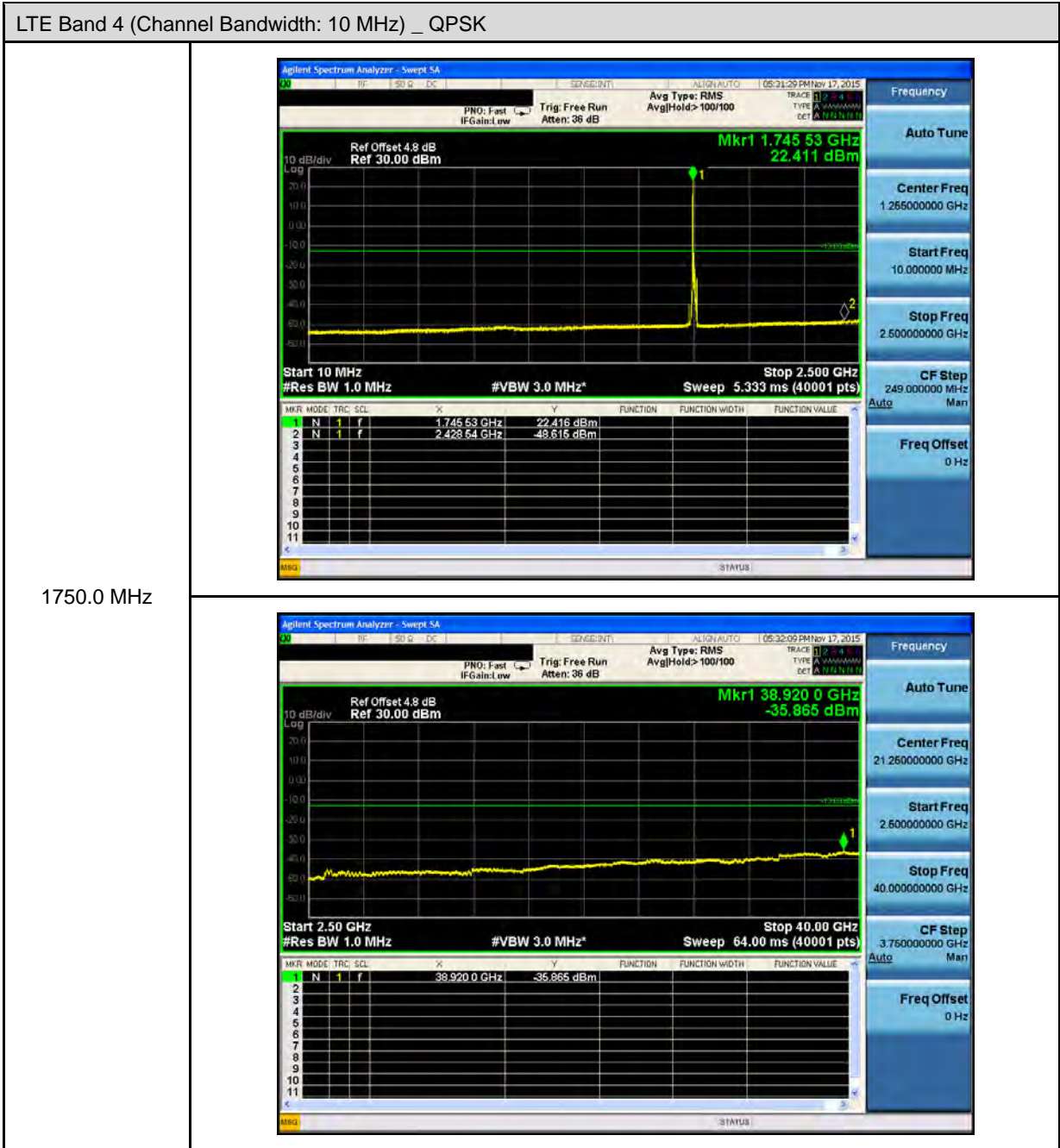


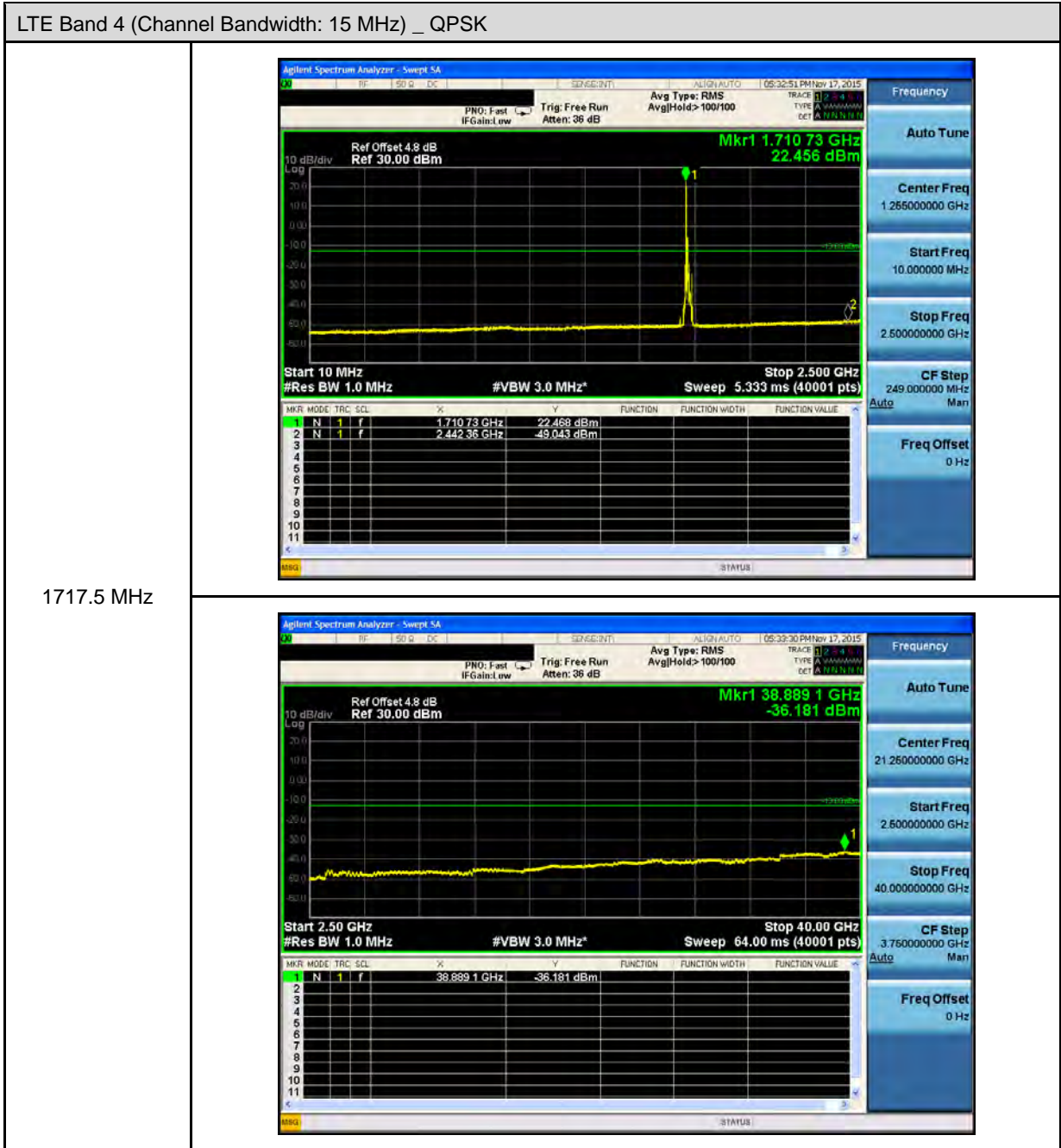


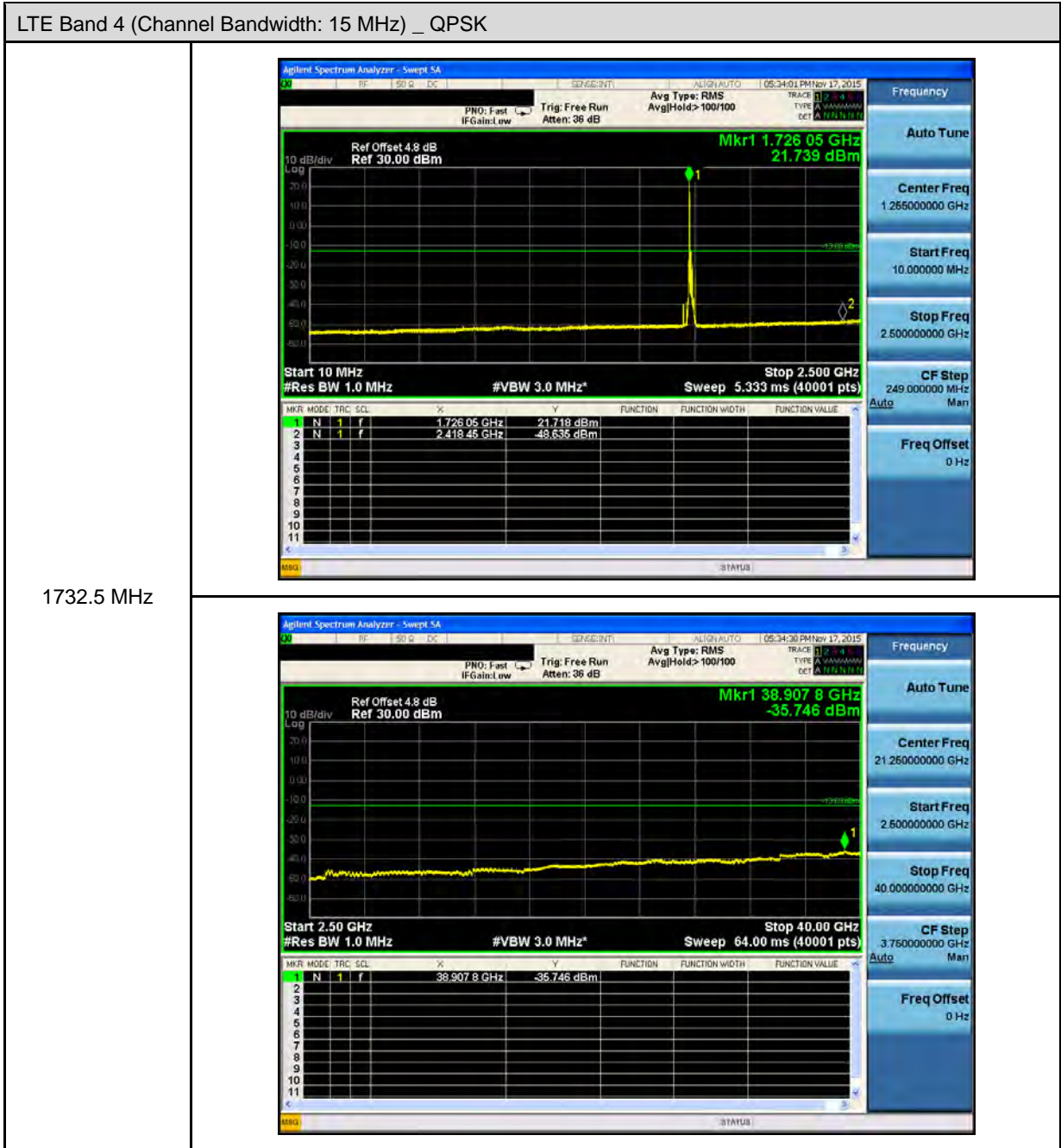


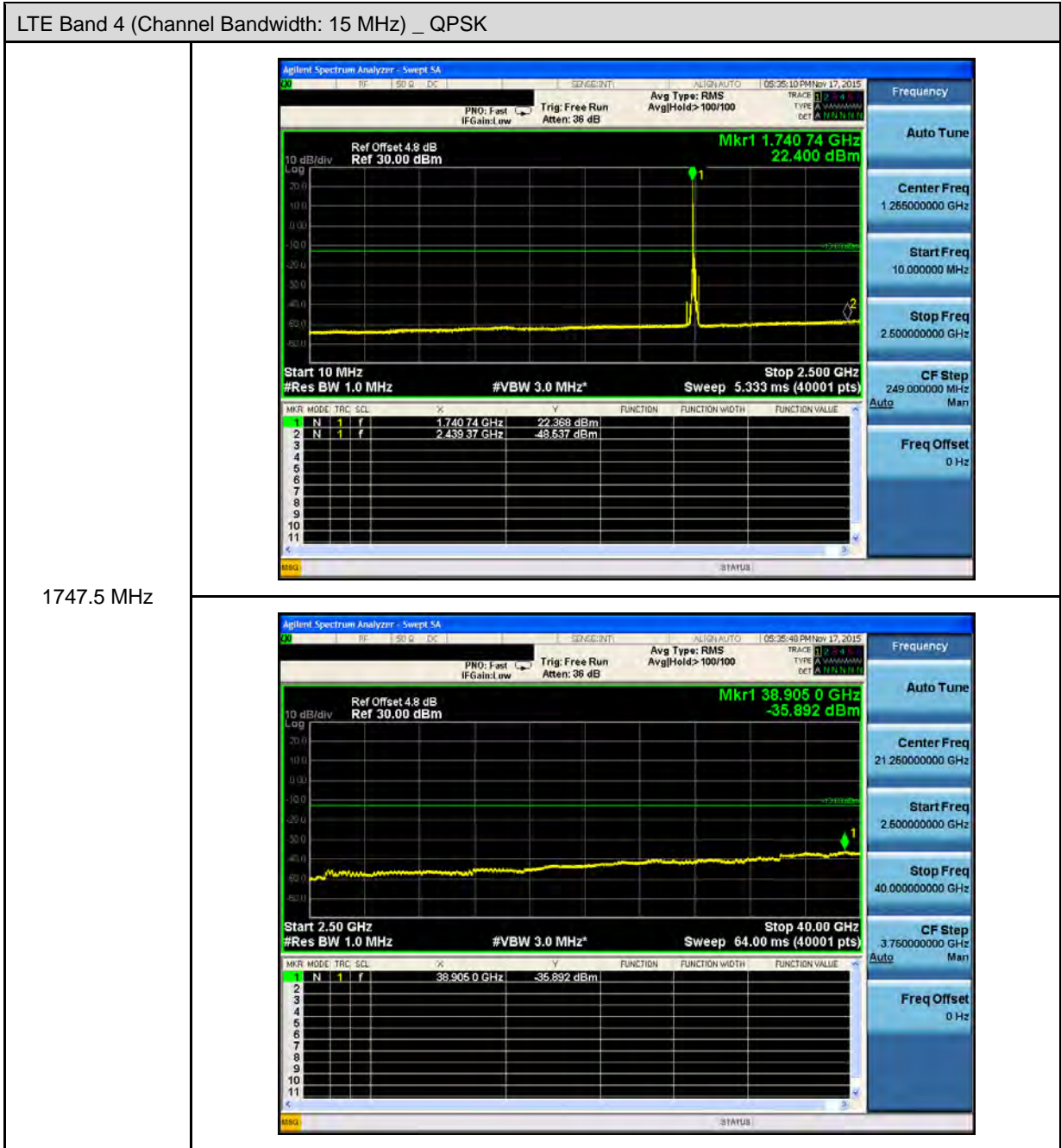


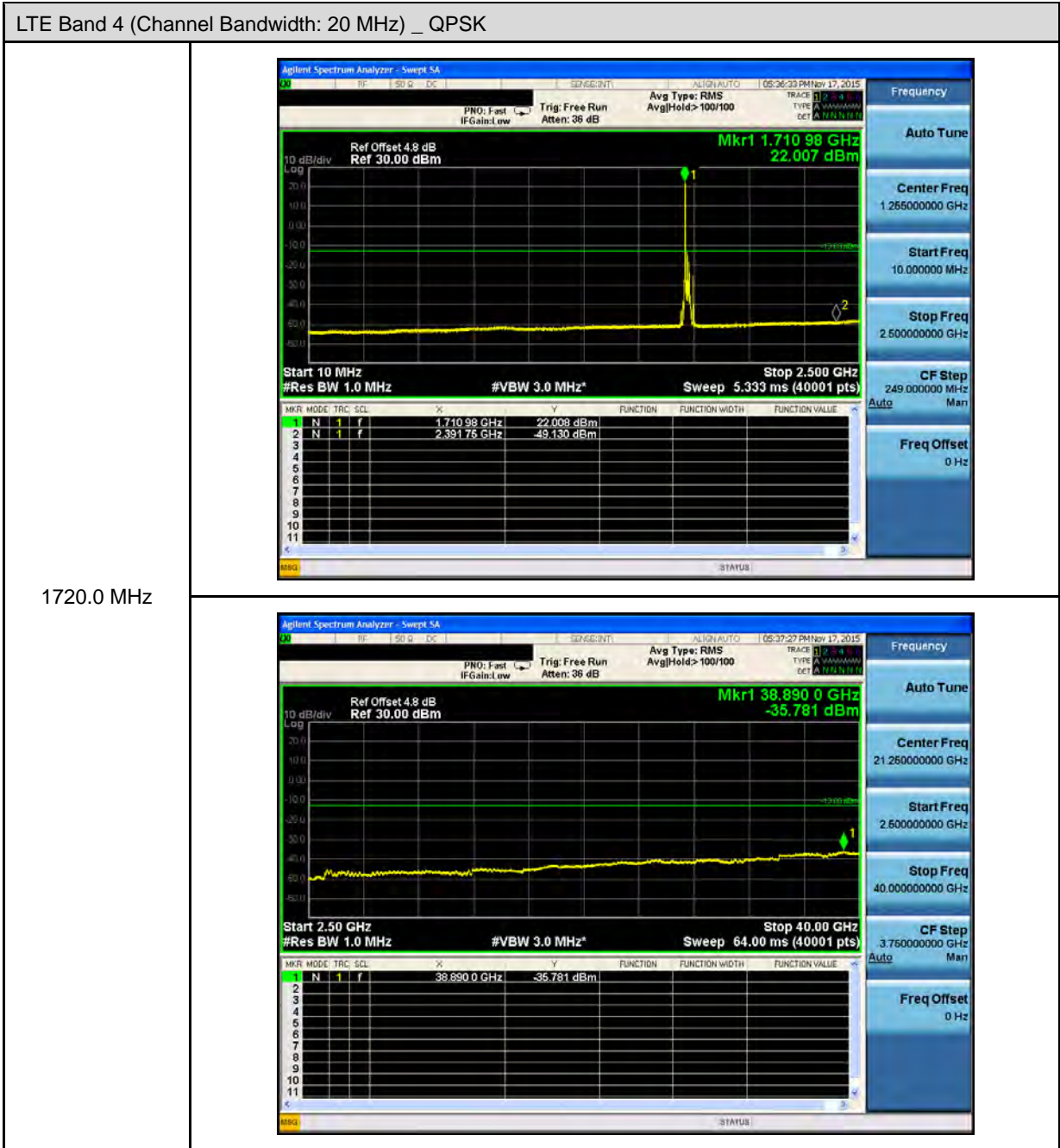


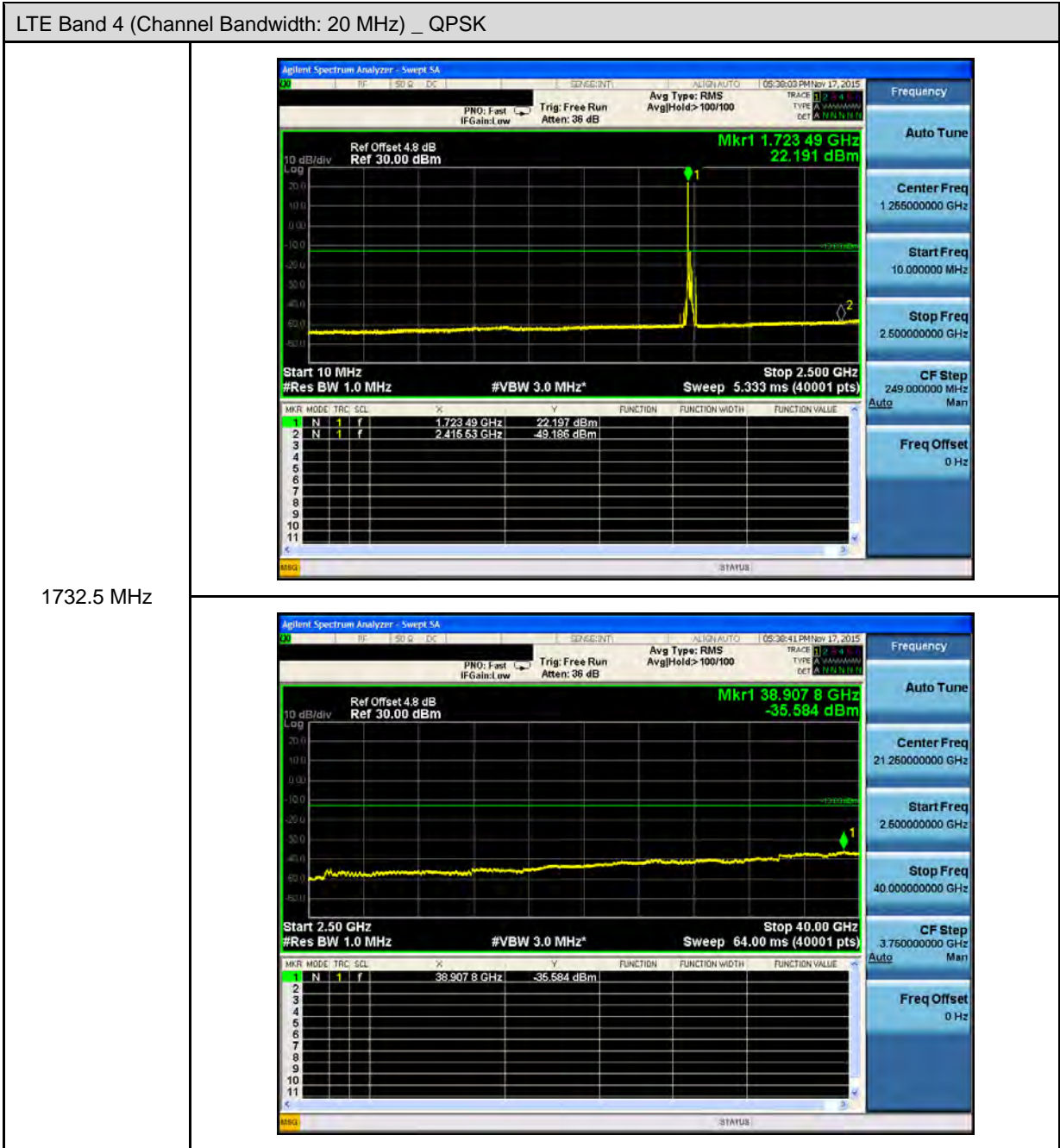


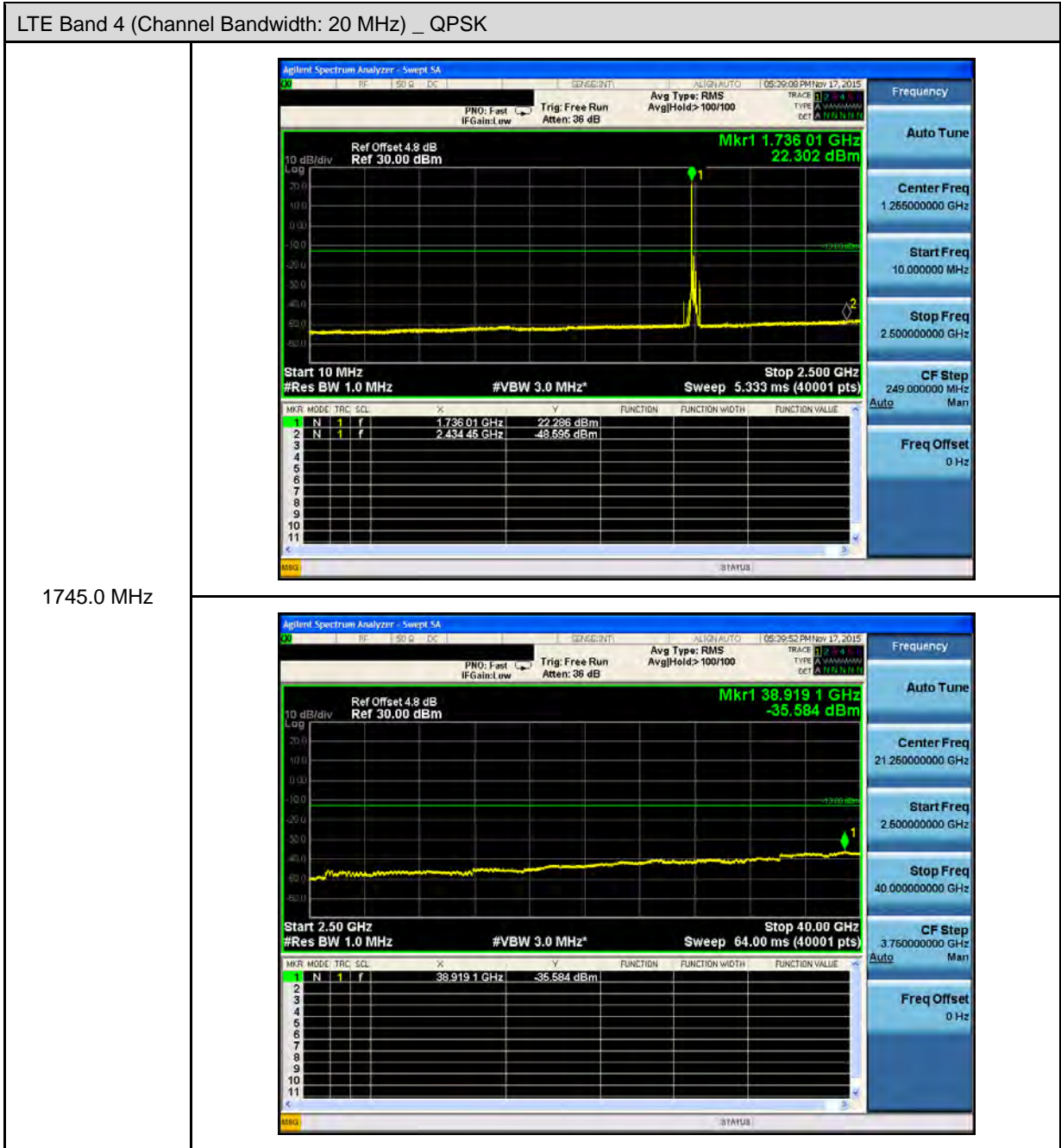


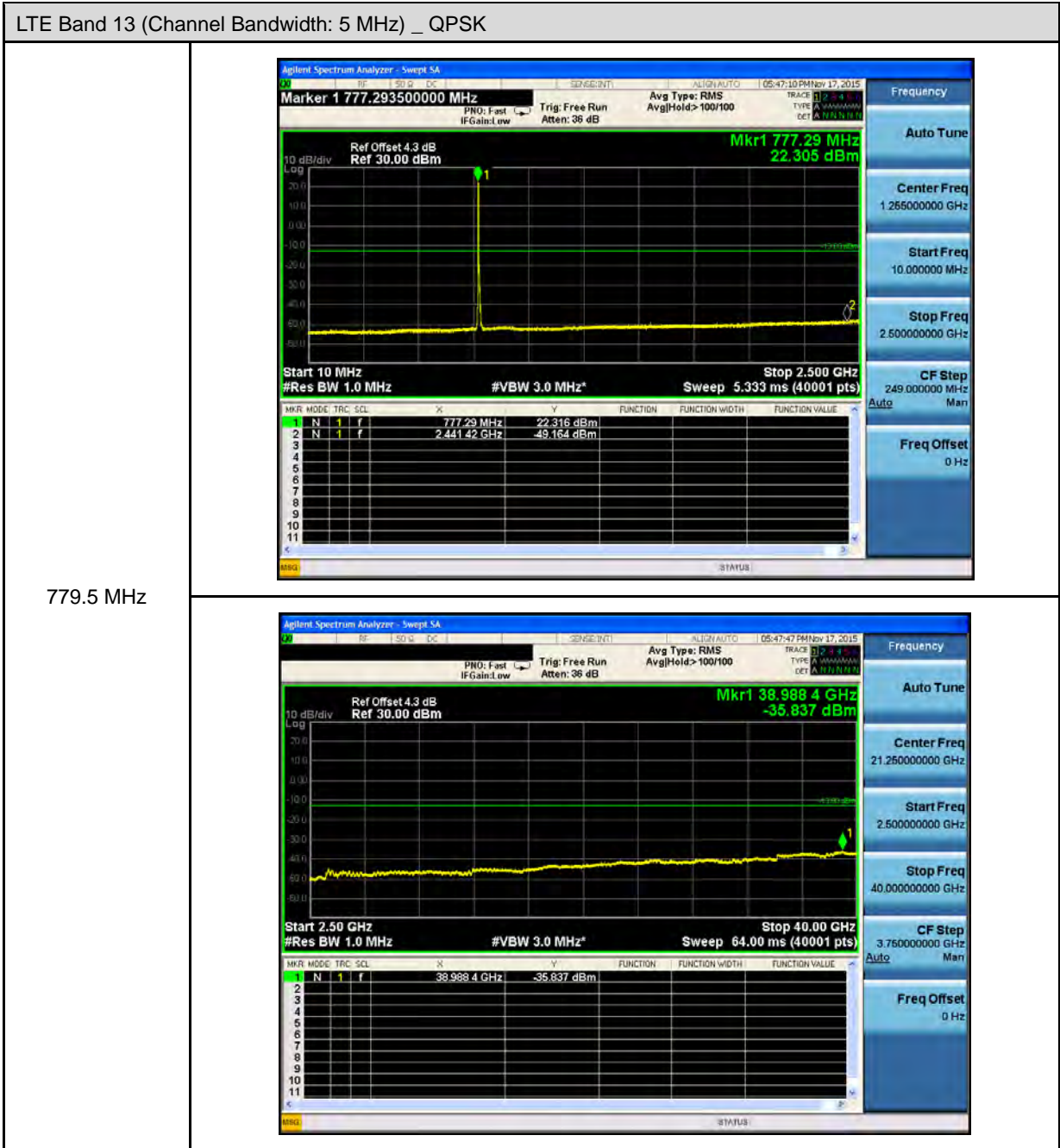


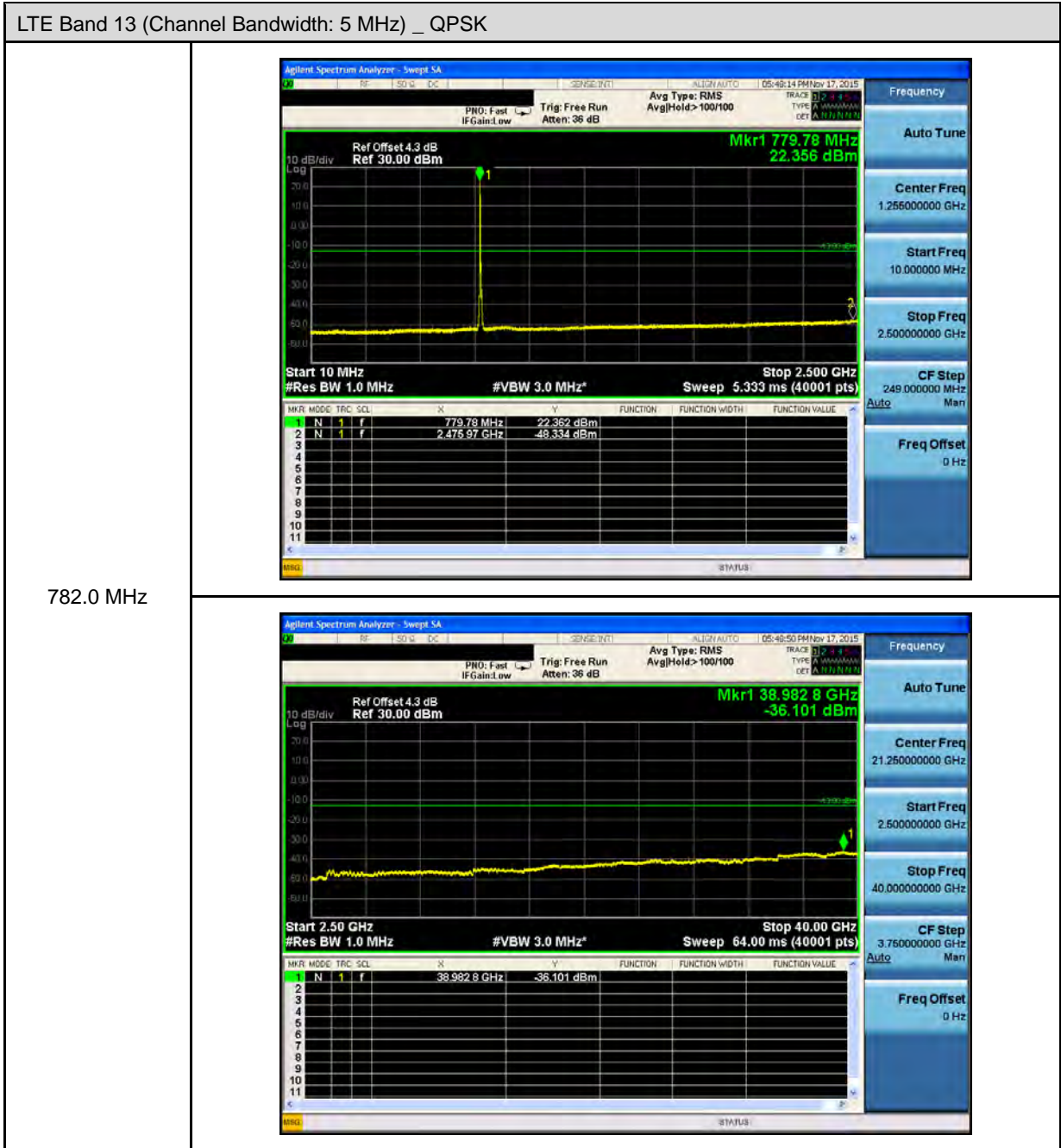


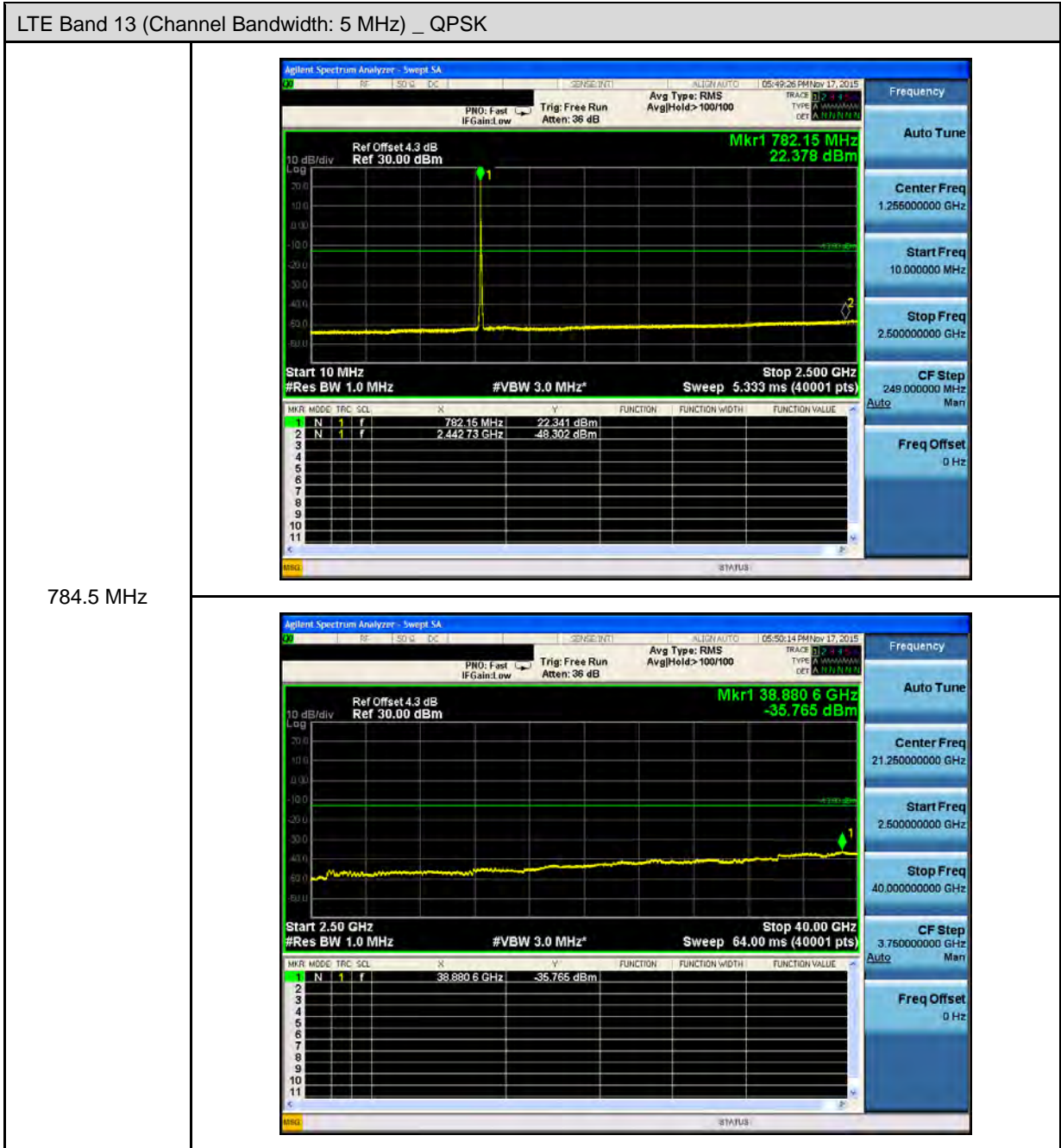


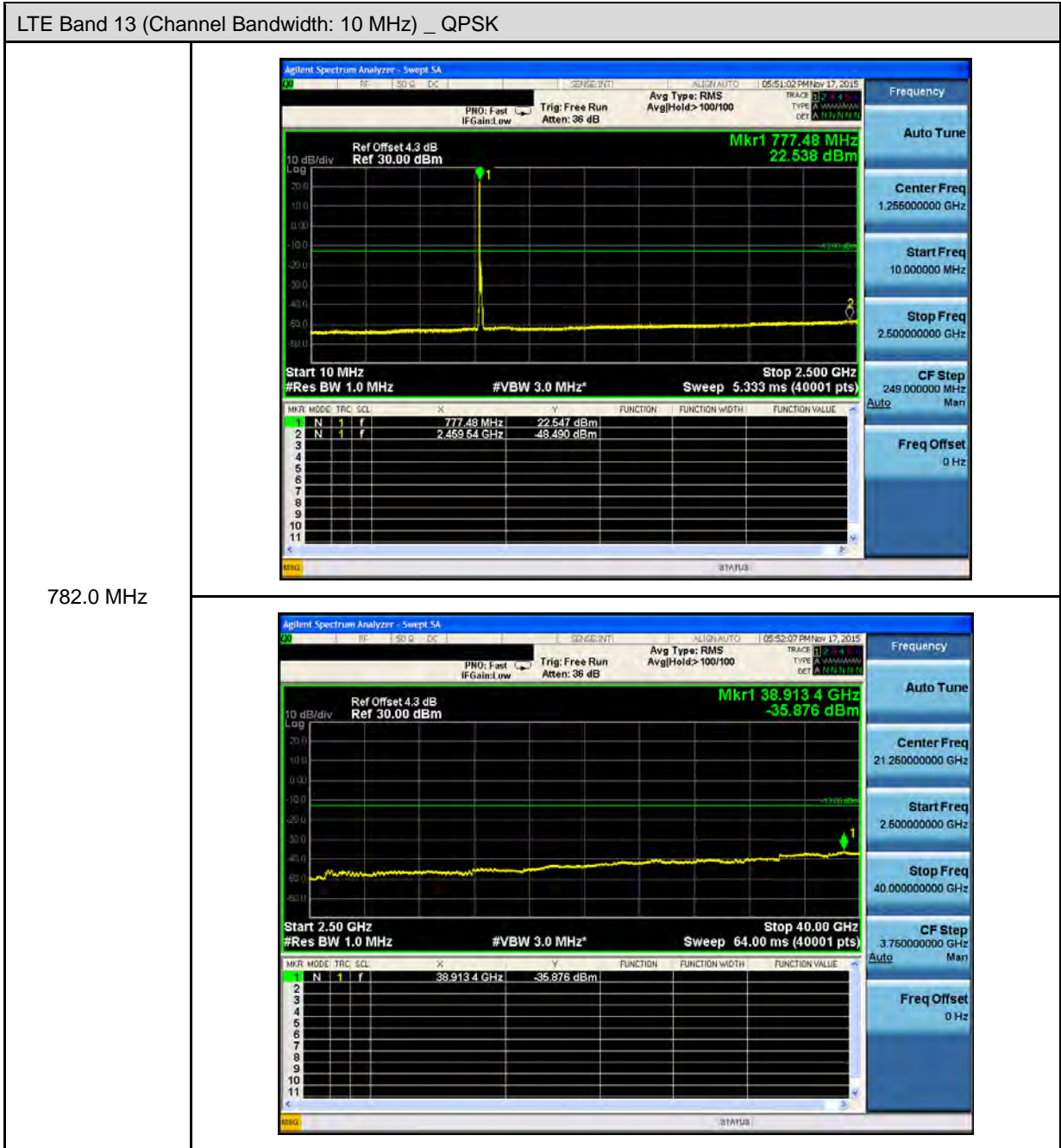












Model Number	HL7618
Test Item	Radiation Spurious Emission
Date of Test	11/16/2015

Band	Bandwidth	CH	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over (dB)
LTE Band 4	1.4MHz	19957	2469.62	-48.41	6.99	-41.42	-13	-28.42
			38897.5	-35.74	6.99	-28.75	-13	-15.75
		20175	2359.54	-48.54	6.99	-41.55	-13	-28.55
			38901.3	-36.32	6.99	-29.33	-13	-16.33
		20393	2451.94	-48.58	6.99	-41.59	-13	-28.59
			38958.4	-36.08	6.99	-29.09	-13	-16.09
	3MHz	19965	2475.22	-48.56	6.99	-41.57	-13	-28.57
			38920.9	-35.84	6.99	-28.85	-13	-15.85
		20175	2839.13	-48.77	6.99	-41.78	-13	-28.78
			38885.3	-35.08	6.99	-28.09	-13	-15.09
		20385	2454.93	-48.69	6.99	-41.70	-13	-28.70
			38920	-35.95	6.99	-28.96	-13	-15.96
	5MHz	19975	2405.07	-48.50	6.99	-41.51	-13	-28.51
			38894.7	-36.14	6.99	-29.15	-13	-16.15
		20175	2456.43	-48.55	6.99	-41.56	-13	-28.56
			38913.4	-36.22	6.99	-29.23	-13	-16.23
		20375	2428.72	-49.21	6.99	-42.22	-13	-29.22
			38923.8	-35.84	6.99	-28.85	-13	-15.85
	10MHz	20000	2426.67	-48.19	6.99	-41.20	-13	-28.20
			38920	-35.78	6.99	-28.79	-13	-15.79
		20175	2427.48	-48.68	6.99	-41.69	-13	-28.69
			38876.9	-35.89	6.99	-28.90	-13	-15.90
		20350	2428.54	-48.62	6.99	-41.63	-13	-28.63
			38920	-35.87	6.99	-28.88	-13	-15.88
	15MHz	20025	2442.36	-49.04	6.99	-42.05	-13	-29.05
			38889.1	-36.18	6.99	-29.19	-13	-16.19
		20175	2418.45	-48.64	6.99	-41.65	-13	-28.65
			38907.8	-35.75	6.99	-28.76	-13	-15.76
		20325	2439.37	-48.54	6.99	-41.55	-13	-28.55
			38905	-35.89	6.99	-28.90	-13	-15.90
	20MHz	20050	2391.75	-49.13	6.99	-42.14	-13	-29.14
			38890	-35.78	6.99	-28.79	-13	-15.79
		20175	2415.53	-49.19	6.99	-42.20	-13	-29.20
			38907.8	-35.58	6.99	-28.59	-13	-15.59
		20300	2434.45	-48.60	6.99	-41.61	-13	-28.61
			38919.1	-35.58	6.99	-28.59	-13	-15.59

Band	Bandwidth	CH	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over (dB)
LTE Band 13	5MHz	23205	2441.41	-49.16	11.87	-37.29	-13	-24.29
			38988.4	-35.84	11.87	-23.97	-13	-10.97
		23230	2475.97	-48.33	11.87	-36.46	-13	-23.46
			38982.8	-36.10	11.87	-24.23	-13	-11.23
		23255	2442.73	-48.30	11.87	-36.43	-13	-23.43
			38880.6	-35.77	11.87	-23.90	-13	-10.90
	10MHz	23230	2459.54	-48.49	11.87	-36.62	-13	-23.62
			38913.4	-35.88	11.87	-24.01	-13	-11.01

9 Radiated Emission Test

9.1. Limit

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

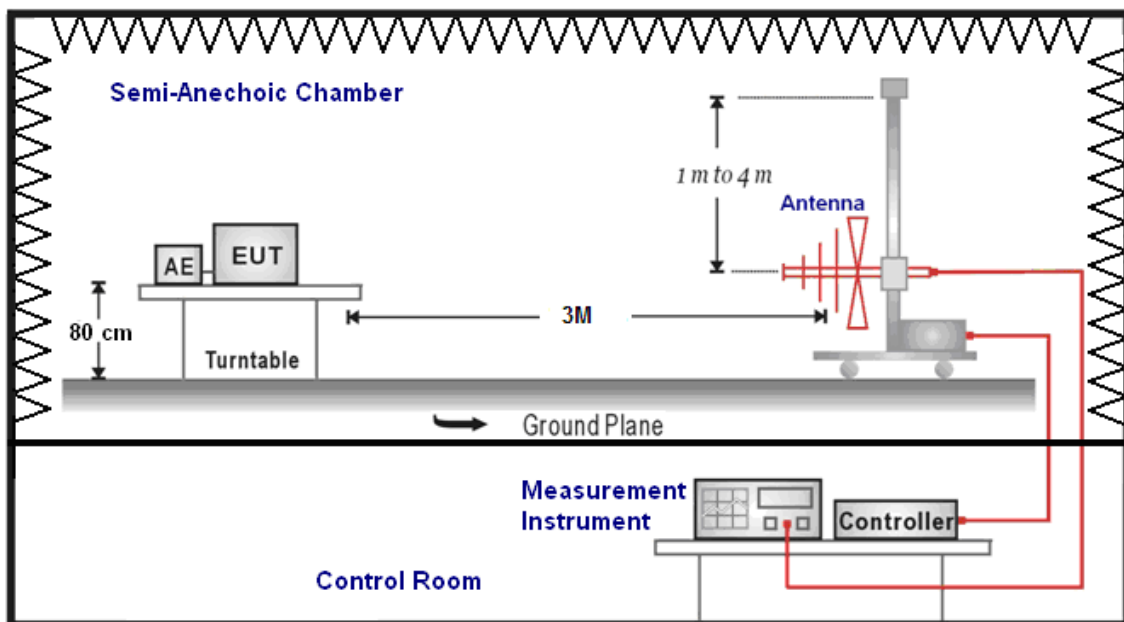
9.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
RF Pre-selector	Agilent	N9039A	MY46520256	01/06/2015	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/06/2015	1 year
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2015	1 year
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2015	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	08/11/2015	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/12/2015	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/06/2015	1 year
Test Site	ATL	TE01	888001	08/27/2015	1 year

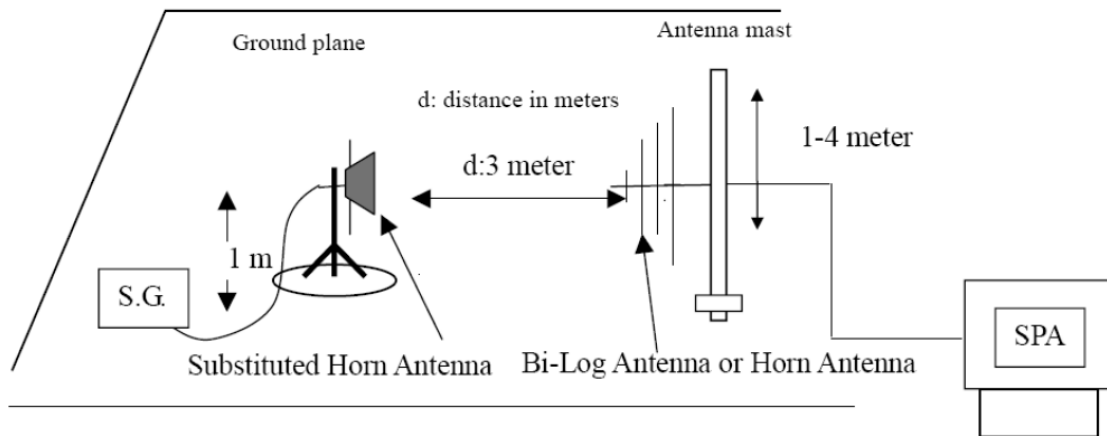
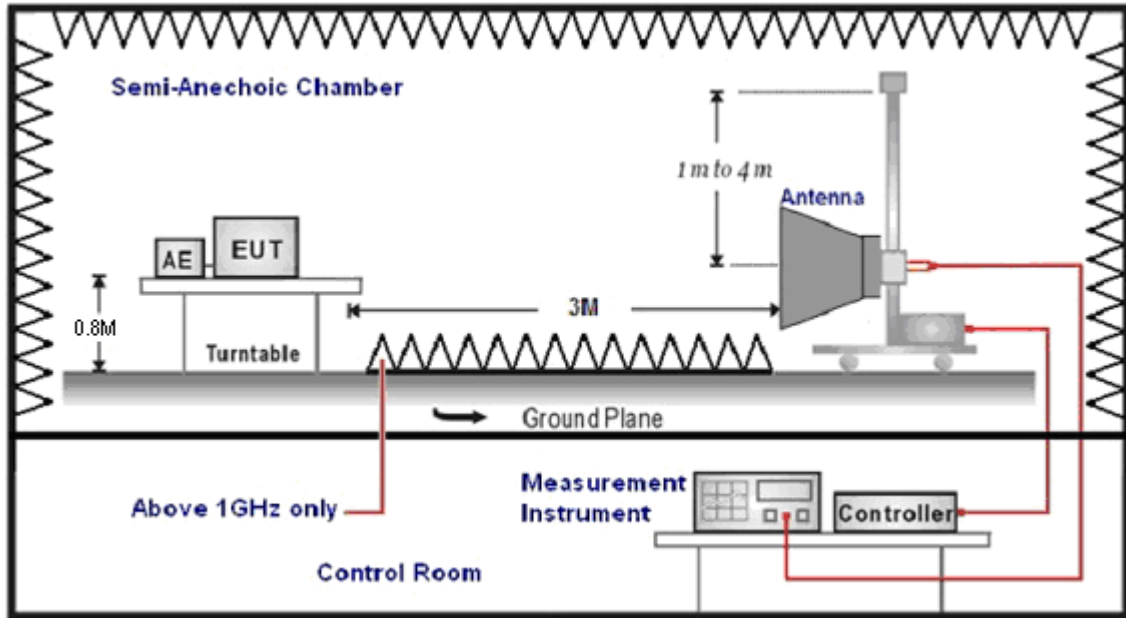
Note: N.C.R. = No Calibration Request.

9.3. Setup

Below 1GHz



Above 1GHz



9.4. Test Procedure

- a. The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RWB and VBW is 1MHz.
- b. Radiation Emission measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P- 2.15 dB

9.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

9.6. Test Result

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	1.4 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1710.7 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6436.000	-80.04	28.28	-51.76	-13.00	-38.76	peak	H
1	6388.000	-79.94	28.00	-51.94	-13.00	-38.94	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6208.000	-79.26	26.92	-52.34	-13.00	-39.34	peak	H
1	7252.000	-77.34	30.93	-46.41	-13.00	-33.41	peak	V

Frequency: 1754.3 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6772.000	-77.72	29.44	-48.28	-13.00	-35.28	peak	H
1	6892.000	-79.28	29.76	-49.52	-13.00	-36.52	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	1.4 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6352.000	-80.64	27.79	-52.85	-13.00	-39.85	peak	H
1	7408.000	-77.95	31.47	-46.48	-13.00	-33.48	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	3 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1711.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6688.000	-78.90	29.20	-49.70	-13.00	-36.70	peak	H
1	6556.000	-78.69	28.83	-49.86	-13.00	-36.86	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6268.000	-80.03	27.27	-52.76	-13.00	-39.76	peak	H
1	7216.000	-77.25	30.81	-46.44	-13.00	-33.44	peak	V

Frequency: 1753.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7180.000	-78.42	30.69	-47.73	-13.00	-34.73	peak	H
1	5872.000	-79.24	25.17	-54.07	-13.00	-41.07	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	3 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6688.000	-78.77	29.20	-49.57	-13.00	-36.57	peak	H
1	6340.000	-80.46	27.71	-52.75	-13.00	-39.75	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1712.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6772.000	-76.88	29.44	-47.44	-13.00	-34.44	peak	H
1	7408.000	-78.63	31.47	-47.16	-13.00	-34.16	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7300.000	-77.56	31.10	-46.46	-13.00	-33.46	peak	H
1	5968.000	-79.83	25.55	-54.28	-13.00	-41.28	peak	V

Frequency: 1752.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7540.000	-77.87	31.85	-46.02	-13.00	-33.02	peak	H
1	6772.000	-78.93	29.44	-49.49	-13.00	-36.49	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6652.000	-79.35	29.09	-50.26	-13.00	-37.26	peak	H
1	5968.000	-80.62	25.55	-55.07	-13.00	-42.07	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1715.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	5668.000	-80.14	24.37	-55.77	-13.00	-42.77	peak	H
1	7132.000	-76.53	30.51	-46.02	-13.00	-33.02	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6340.000	-79.82	27.71	-52.11	-13.00	-39.11	peak	H
1	6916.000	-77.44	29.83	-47.61	-13.00	-34.61	peak	V

Frequency: 1750.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6640.000	-78.44	29.06	-49.38	-13.00	-36.38	peak	H
1	7204.000	-78.37	30.78	-47.59	-13.00	-34.59	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	5632.000	-79.89	24.23	-55.66	-13.00	-42.66	peak	H
1	7636.000	-76.43	31.97	-44.46	-13.00	-31.46	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	15 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1717.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6592.000	-80.57	28.92	-51.65	-13.00	-38.65	peak	H
1	7468.000	-79.05	31.68	-47.37	-13.00	-34.37	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6652.000	-79.10	29.09	-50.01	-13.00	-37.01	peak	H
1	6556.000	-79.07	28.83	-50.24	-13.00	-37.24	peak	V

Frequency: 1747.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	5536.000	-80.95	23.87	-57.08	-13.00	-44.08	peak	H
1	7084.000	-77.94	30.36	-47.58	-13.00	-34.58	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	15 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6736.000	-77.99	29.33	-48.66	-13.00	-35.66	peak	H
1	6388.000	-80.37	28.00	-52.37	-13.00	-39.37	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	20 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 1720.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7024.000	-77.99	30.15	-47.84	-13.00	-34.84	peak	H
1	5860.000	-80.11	25.13	-54.98	-13.00	-41.98	peak	V

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6544.000	-80.38	28.79	-51.59	-13.00	-38.59	peak	H
1	6820.000	-77.69	29.57	-48.12	-13.00	-35.12	peak	V

Frequency: 1745.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7636.000	-78.52	31.97	-46.55	-13.00	-33.55	peak	H
1	6508.000	-80.75	28.69	-52.06	-13.00	-39.06	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 4	Date:	11/16/2015
Channel Bandwidth:	20 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 1732.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7120.000	-78.06	30.49	-47.57	-13.00	-34.57	peak	H
1	6556.000	-80.69	28.83	-51.86	-13.00	-38.86	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 779.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6676.000	-78.64	29.16	-49.48	-13.00	-36.48	peak	H
1	6832.000	-77.81	29.61	-48.20	-13.00	-35.20	peak	V

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6532.000	-80.18	28.76	-51.42	-13.00	-38.42	peak	H
1	7516.000	-79.38	31.82	-47.56	-13.00	-34.56	peak	V

Frequency: 784.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6604.000	-77.41	28.95	-48.46	-13.00	-35.46	peak	H
1	6028.000	-79.19	25.84	-53.35	-13.00	-40.35	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	5644.000	-81.17	24.28	-56.89	-13.00	-43.89	peak	H
1	7636.000	-78.55	31.97	-46.58	-13.00	-33.58	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	6160.000	-80.15	26.64	-53.51	-13.00	-40.51	peak	H
1	5488.000	-80.11	23.68	-56.43	-13.00	-43.43	peak	V

Standard:	FCC Part 27	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	7096.000	-75.51	30.40	-45.11	-13.00	-32.11	peak	H
1	7552.000	-77.43	31.86	-45.57	-13.00	-32.57	peak	V

Standard:	FCC Part 27.53_1559-1610MHz	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 779.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1594.394	-68.69	11.72	-56.97	-40.00	-16.97	peak	H
1	1580.726	-68.38	11.71	-56.67	-40.00	-16.67	peak	V

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1578.686	-71.39	11.71	-59.68	-40.00	-19.68	peak	H
1	1579.502	-68.28	11.70	-56.58	-40.00	-16.58	peak	V

Frequency: 784.5 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1573.994	-69.09	11.70	-57.39	-40.00	-17.39	peak	H
1	1586.489	-69.40	11.70	-57.70	-40.00	-17.70	peak	V

Standard:	FCC Part 27.53_1559-1610MHz	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	5 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1591.436	-69.03	11.71	-57.32	-40.00	-17.32	peak	H
1	1582.103	-69.38	11.70	-57.68	-40.00	-17.68	peak	V

Standard:	FCC Part 27.53_1559-1610MHz	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	QPSK		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1580.777	-68.95	11.71	-57.24	-40.00	-17.24	peak	H
1	1597.505	-69.81	11.72	-58.09	-40.00	-18.09	peak	V

Standard:	FCC Part 27.53_1559-1610MHz	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.7V
Model Number:	HL7618	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Band:	LTE Band 13	Date:	11/16/2015
Channel Bandwidth:	10 MHz	Test By:	Eric Ou Yang
Modulation Technology:	16QAM		

Frequency: 782.0 MHz								
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	1593.629	-69.11	11.71	-57.40	-40.00	-17.40	peak	H
1	1587.050	-69.01	11.71	-57.30	-40.00	-17.30	peak	V