



FCC

RF Test Report

Applicant : Hill-Rom Services (S) Pte. Ltd
Product Type : LTE DONGLE, USB
Trade Name : Hill-Rom
Model Number : 198657
Test Specification : FCC 47 CFR PART 27
ANSI/TIA-603-D 2010
Receive Date : Feb. 08, 2017
Test Period : Feb. 10~ Feb. 13, 2016
Issue Date : Apr. 12, 2017

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	Apr. 12, 2017	Initial Issue	Snow Wang



Verification of Compliance

Issued Date: Apr. 12, 2017

Applicant : Hill-Rom Services (S) Pte. Ltd

Product Type : LTE DONGLE, USB

Trade Name : Hill-Rom

Model Number : 198657

FCC ID : 2AJKO198657

EUT Rated Voltage : DC 5V

Test Voltage : 120 Vac / 60 Hz

Applicable Standard : FCC 47 CFR PART 27
ANSI/TIA-603-D 2010

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

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

: Fly Lu

(Manager)

(Fly Lu)

Reviewed By

: Eric Ou Yang

(Testing Engineer)

(Eric Ou Yang)

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1 General Information

1.1. EUT Description

Applicant	Hill-Rom Services (S) Pte. Ltd 1 Yishun Ave 7, Singapore. 768923		
Manufacturer	Daviscomms (M) Sdn. Bhd Plot 18, Lorong Perusahaan Maju 1. Kawasan Perusahaan Perai 4. 13600 Perai, Malaysia		
Product Type	LTE DONGLE, USB		
Trade Name	Hill-Rom		
Model Number	198657		
FCC ID	2AJKO198657		
IMEI No.	356278070077781		
Operate Band	Frequency Range (MHz)	Modulation	Channel Bandwidth
LTE Band 4	UL: 1710.7 ~ 1754.3	QPSK, 16QAM	1.4M, 3M, 5MHz, 10MHz, 15MHz, 20MHz
	DL: 2110.7 ~ 2154.3	QPSK, 16QAM	
LTE Band 13	UL: 777 ~ 787	QPSK, 16QAM	5MHz, 10MHz
	DL: 746 ~ 756	QPSK, 16QAM	
Type of Antenna	PCB Antenna		
	LTE Band 4	3.37 dBi	
	LTE Band 13	1.56 dBi	

Frequency Band	Modulation	Max. RF Output Power (W)	E.R.P. /E.I.R.P. (W)	
LTE Band 4 (Channel Bandwidth 1.4MHz)	QPSK	0.206	0.208	(E.I.R.P.)
	16QAM	0.159	0.149	(E.I.R.P.)
LTE Band 4 (Channel Bandwidth 3MHz)	QPSK	0.205	0.207	(E.I.R.P.)
	16QAM	0.155	0.143	(E.I.R.P.)
LTE Band 4 (Channel Bandwidth 5MHz)	QPSK	0.201	0.207	(E.I.R.P.)
	16QAM	0.151	0.136	(E.I.R.P.)
LTE Band 4 (Channel Bandwidth 10MHz)	QPSK	0.210	0.208	(E.I.R.P.)
	16QAM	0.168	0.132	(E.I.R.P.)
LTE Band 4 (Channel Bandwidth 15MHz)	QPSK	0.208	0.210	(E.I.R.P.)
	16QAM	0.157	0.134	(E.I.R.P.)
LTE Band 4 (Channel Bandwidth 20MHz)	QPSK	0.207	0.207	(E.I.R.P.)
	16QAM	0.160	0.132	(E.I.R.P.)
LTE Band 13 (Channel Bandwidth 5MHz)	QPSK	0.171	0.209	(E.R.P.)
	16QAM	0.129	0.131	(E.R.P.)
LTE Band 13 (Channel Bandwidth 10MHz)	QPSK	0.163	0.200	(E.R.P.)
	16QAM	0.120	0.138	(E.R.P.)

Frequency Band	Emission Designator	
	QPSK	16QAM
LTE Band 4 (Channel Bandwidth 1.4MHz)	1M21G7D	1M22W7D
LTE Band 4 (Channel Bandwidth 3MHz)	2M98G7D	2M94W7D
LTE Band 4 (Channel Bandwidth 5MHz)	4M89G7D	4M91W7D
LTE Band 4 (Channel Bandwidth 10MHz)	9M71G7D	9M72W7D
LTE Band 4 (Channel Bandwidth 15MHz)	14M44G7D	14M58W7D
LTE Band 4 (Channel Bandwidth 20MHz)	19M41G7D	19M21W7D
LTE Band 13 (Channel Bandwidth 5MHz)	4M88G7D	4M90W7D
LTE Band 13 (Channel Bandwidth 10MHz)	8M89G7D	8M87W7D

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	23205	779.5	---	---
Middle CH	23230	782.0	23230	782.0
High CH	23255	784.5	---	---

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	☐ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 2) Link ☐ LTE(RB Size 1, RB Offset 5) Link ☐ LTE(RB Size 3, RB Offset 0) Link ☒ LTE(RB Size 3, RB Offset 1) Link ☐ LTE(RB Size 3, RB Offset 3) Link ☐ LTE(RB Size 6, RB Offset 0) Link	QPSK
	3 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☒ LTE(RB Size 1, RB Offset 8) Link ☐ LTE(RB Size 1, RB Offset 14) Link ☐ LTE(RB Size 8, RB Offset 0) Link ☐ LTE(RB Size 8, RB Offset 4) Link ☐ LTE(RB Size 8, RB Offset 7) Link ☐ LTE(RB Size 15, RB Offset 0) Link	QPSK
	5 MHz	☒ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 12) Link ☐ LTE(RB Size 1, RB Offset 24) Link ☐ LTE(RB Size 12, RB Offset 0) Link ☐ LTE(RB Size 12, RB Offset 6) Link ☐ LTE(RB Size 12, RB Offset 13) Link ☐ LTE(RB Size 25, RB Offset 0) Link	QPSK
	10 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 24) Link ☒ LTE(RB Size 1, RB Offset 49) Link ☐ LTE(RB Size 25, RB Offset 0) Link ☐ LTE(RB Size 25, RB Offset 12) Link ☐ LTE(RB Size 25, RB Offset 25) Link ☐ LTE(RB Size 50, RB Offset 0) Link	QPSK
	15 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 38) Link ☒ LTE(RB Size 1, RB Offset 74) Link ☐ LTE(RB Size 36, RB Offset 0) Link ☐ LTE(RB Size 36, RB Offset 18) Link ☐ LTE(RB Size 36, RB Offset 39) Link ☐ LTE(RB Size 75, RB Offset 0) Link	QPSK
	20 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☒ LTE(RB Size 1, RB Offset 49) Link ☐ LTE(RB Size 1, RB Offset 99) Link ☐ LTE(RB Size 50, RB Offset 0) Link ☐ LTE(RB Size 50, RB Offset 25) Link ☐ LTE(RB Size 50, RB Offset 50) Link ☐ LTE(RB Size 100, RB Offset 0) Link	QPSK

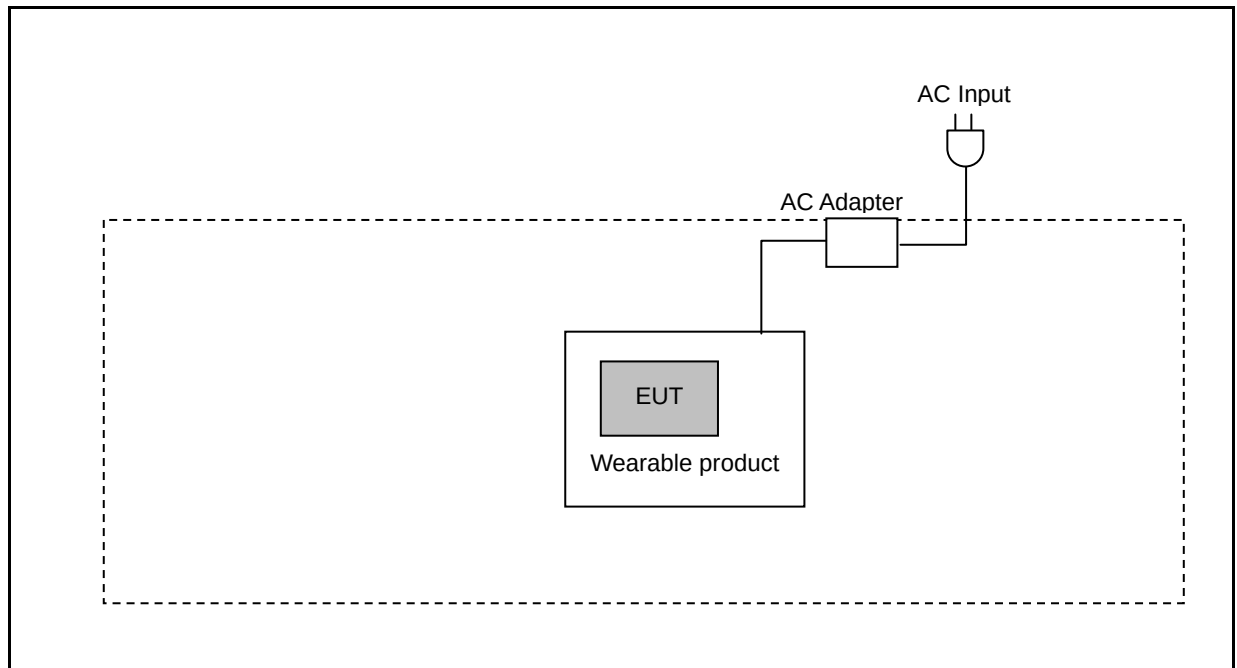


Band	Channel Bandwidth	Test Modes	
LTE Band 13	5 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 12) Link ☒ LTE(RB Size 1, RB Offset 24) Link ☐ LTE(RB Size 12, RB Offset 0) Link ☐ LTE(RB Size 12, RB Offset 6) Link ☐ LTE(RB Size 12, RB Offset 13) Link ☐ LTE(RB Size 25, RB Offset 0) Link	QPSK
	10 MHz	☐ LTE(RB Size 1, RB Offset 0) Link ☐ LTE(RB Size 1, RB Offset 25) Link ☒ LTE(RB Size 1, RB Offset 49) Link ☐ LTE(RB Size 25, RB Offset 0) Link ☐ LTE(RB Size 25, RB Offset 12) Link ☐ LTE(RB Size 25, RB Offset 25) Link ☐ 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

■ Limit

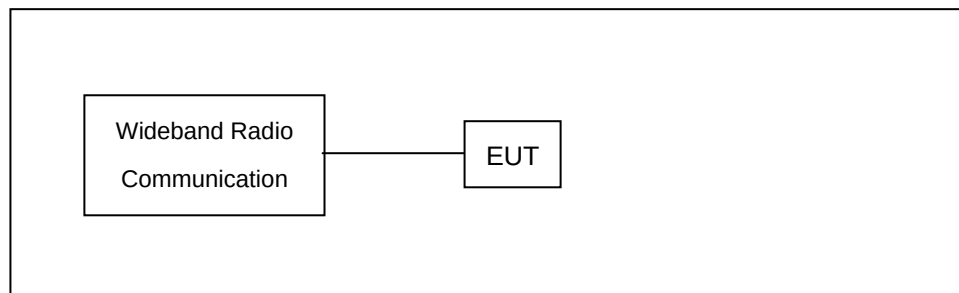
N/A

■ Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Wideband Radio Communication Tester	R & S	CMW500	103168	11/04/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Test Setup



■ Test Procedure

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

■ Uncertainty

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



Test Result

Date of Test	02/10/2017
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Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	1.4MHz	QPSK	19957	1710.7	1	0	22.80	0.191
					1	2	22.71	0.187
					1	5	22.72	0.187
					3	0	22.71	0.187
					3	1	22.69	0.186
					3	3	22.65	0.184
					6	0	21.57	0.144
			20175	1732.5	1	0	22.92	0.196
					1	2	22.93	0.196
					1	5	22.87	0.194
					3	0	22.91	0.195
					3	1	22.94	0.197
					3	3	22.86	0.193
					6	0	21.84	0.153
			20393	1754.3	1	0	23.07	0.203
					1	2	23.11	0.205
					1	5	23.11	0.205
					3	0	23.02	0.200
					3	1	23.14	0.206
					3	3	23.09	0.204
					6	0	22.02	0.159
		16QAM	19957	1710.7	1	0	21.69	0.148
					1	2	21.63	0.146
					1	5	21.64	0.146
					3	0	21.55	0.143
					3	1	21.60	0.145
					3	3	21.59	0.144
					6	0	20.72	0.118
			20175	1732.5	1	0	21.67	0.147
					1	2	21.58	0.144
					1	5	21.60	0.145
					3	0	21.79	0.151
					3	1	21.78	0.151
					3	3	21.76	0.150
					6	0	20.71	0.118
			20393	1754.3	1	0	21.95	0.157
					1	2	21.82	0.152
					1	5	21.90	0.155
					3	0	22.00	0.158
					3	1	22.02	0.159
					3	3	21.98	0.158
					6	0	20.87	0.122

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	3MHz	QPSK	19965	1711.5	1	0	22.65	0.184
					1	8	22.58	0.181
					1	14	22.57	0.181
					8	0	21.44	0.139
					8	4	21.44	0.139
					8	7	21.42	0.139
					15	0	21.47	0.140
			20175	1732.5	1	0	22.89	0.195
					1	8	22.89	0.195
					1	14	22.90	0.195
					8	0	21.82	0.152
					8	4	21.82	0.152
					8	7	21.83	0.152
					15	0	21.78	0.151
			20385	1753.5	1	0	23.08	0.203
					1	8	23.11	0.205
					1	14	23.10	0.204
					8	0	22.09	0.162
					8	4	22.08	0.161
					8	7	22.04	0.160
					15	0	22.07	0.161
		16QAM	19965	1711.5	1	0	21.31	0.135
					1	8	21.27	0.134
					1	14	21.26	0.134
					8	0	20.29	0.107
					8	4	20.30	0.107
					8	7	20.35	0.108
					15	0	20.33	0.108
			20175	1732.5	1	0	21.75	0.150
					1	8	21.63	0.146
					1	14	21.56	0.143
					8	0	20.69	0.117
					8	4	20.65	0.116
					8	7	20.63	0.116
					15	0	20.68	0.117
			20385	1753.5	1	0	21.88	0.154
					1	8	21.89	0.155
					1	14	21.88	0.154
					8	0	20.91	0.123
					8	4	20.92	0.124
					8	7	20.92	0.124
					15	0	20.98	0.125

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	5MHz	QPSK	19975	1712.5	1	0	22.77	0.189
					1	12	22.74	0.188
					1	24	22.71	0.187
					12	0	21.65	0.146
					12	6	21.59	0.144
					12	13	21.59	0.144
					25	0	21.62	0.145
			20175	1732.5	1	0	23.02	0.200
					1	12	22.96	0.198
					1	24	22.96	0.198
					12	0	21.80	0.151
					12	6	21.80	0.151
					12	13	21.82	0.152
					25	0	21.86	0.153
			20375	1752.5	1	0	23.04	0.201
					1	12	23.01	0.200
					1	24	22.96	0.198
					12	0	21.85	0.153
					12	6	21.86	0.153
					12	13	21.87	0.154
					25	0	21.86	0.153
		16QAM	19975	1712.5	1	0	21.53	0.142
					1	12	21.37	0.137
					1	24	21.43	0.139
					12	0	20.49	0.112
					12	6	20.48	0.112
					12	13	20.50	0.112
					25	0	20.54	0.113
			20175	1732.5	1	0	21.70	0.148
					1	12	21.74	0.149
					1	24	21.63	0.146
					12	0	20.73	0.118
					12	6	20.71	0.118
					12	13	20.70	0.117
					25	0	20.73	0.118
			20375	1752.5	1	0	21.78	0.151
					1	12	21.65	0.146
					1	24	21.65	0.146
					12	0	20.72	0.118
					12	6	20.75	0.119
					12	11	20.73	0.118
					25	0	20.79	0.120

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	10MHz	QPSK	20000	1715.0	1	0	22.91	0.195
					1	24	22.83	0.192
					1	49	22.81	0.191
					25	0	21.75	0.150
					25	12	21.72	0.149
					25	25	21.75	0.150
			20175	1732.5	50	0	21.66	0.147
					1	0	23.00	0.200
					1	24	22.98	0.199
					1	49	22.91	0.195
					25	0	21.83	0.152
					25	12	21.81	0.152
					25	25	21.79	0.151
					50	0	21.83	0.152
			20350	1750.0	1	0	23.18	0.208
					1	24	23.18	0.208
					1	49	23.22	0.210
					25	0	22.18	0.165
					25	12	22.18	0.165
					25	25	22.20	0.166
					50	0	22.22	0.167
		16QAM	20000	1715.0	1	0	21.61	0.145
					1	24	21.54	0.143
					1	49	21.55	0.143
					25	0	20.66	0.116
					25	12	20.60	0.115
					25	25	20.61	0.115
			20175	1732.5	50	0	20.58	0.114
					1	0	21.92	0.156
					1	24	21.76	0.150
					1	49	21.67	0.147
					25	0	20.72	0.118
					25	12	20.66	0.116
					25	25	20.68	0.117
					50	0	20.76	0.119
			20350	1750.0	1	0	22.25	0.168
					1	24	22.11	0.163
					1	49	22.02	0.159
					25	0	21.05	0.127
					25	12	21.04	0.127
					25	25	21.08	0.128
					50	0	21.13	0.130

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	15MHz	QPSK	20025	1717.5	1	0	22.80	0.191
					1	38	22.70	0.186
					1	74	22.71	0.187
					36	0	21.71	0.148
					36	18	21.66	0.147
					36	39	21.57	0.144
					75	0	21.56	0.143
			20175	1732.5	1	0	22.86	0.193
					1	38	22.93	0.196
					1	74	22.99	0.199
					36	0	21.76	0.150
					36	18	21.75	0.150
					36	39	21.80	0.151
					75	0	21.79	0.151
			20325	1747.5	1	0	23.16	0.207
					1	38	23.16	0.207
					1	74	23.19	0.208
					36	0	22.11	0.163
					36	18	22.14	0.164
					36	39	22.15	0.164
					75	0	22.11	0.163
		16QAM	20025	1717.5	1	0	21.59	0.144
					1	38	21.56	0.143
					1	74	21.48	0.141
					36	0	20.53	0.113
					36	18	20.50	0.112
					36	39	20.47	0.111
					75	0	20.47	0.111
			20175	1732.5	1	0	21.63	0.146
					1	38	21.67	0.147
					1	74	21.68	0.147
					36	0	20.68	0.117
					36	18	20.71	0.118
					36	39	20.74	0.119
					75	0	20.72	0.118
			20325	1747.5	1	0	21.86	0.153
					1	38	21.95	0.157
					1	74	21.95	0.157
					36	0	21.00	0.126
					36	18	21.03	0.127
					36	39	20.99	0.126
					75	0	20.99	0.126

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	20MHz	QPSK	20050	1720.0	1	0	22.78	0.190
					1	49	22.67	0.185
					1	99	22.66	0.185
					50	0	21.65	0.146
					50	25	21.56	0.143
					50	50	21.54	0.143
			20175	1732.5	100	0	21.52	0.142
					1	0	22.82	0.191
					1	49	22.92	0.196
					1	99	22.97	0.198
					50	0	21.73	0.149
					50	25	21.81	0.152
					50	50	21.82	0.152
					100	0	21.73	0.149
			20300	1745.0	1	0	23.11	0.205
					1	49	23.17	0.207
					1	99	23.16	0.207
					50	0	22.03	0.160
					50	25	22.06	0.161
					50	50	22.07	0.161
					100	0	22.06	0.161
		16QAM	20050	1720.0	1	0	21.51	0.142
					1	49	21.40	0.138
					1	99	21.46	0.140
					50	0	20.49	0.112
					50	25	20.45	0.111
					50	50	20.45	0.111
			20175	1732.5	100	0	20.41	0.110
					1	0	21.58	0.144
					1	49	21.71	0.148
					1	99	21.65	0.146
					50	0	20.66	0.116
					50	25	20.71	0.118
					50	50	20.77	0.119
					100	0	20.63	0.116
			20300	1745.0	1	0	21.87	0.154
					1	49	22.01	0.159
					1	99	22.03	0.160
					50	0	20.98	0.125
					50	25	20.99	0.126
					50	50	20.95	0.124
					100	0	20.95	0.124

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band13	5MHz	QPSK	23205	779.5	1	0	22.11	0.163
					1	12	22.08	0.161
					1	24	22.09	0.162
					12	0	20.84	0.121
					12	6	20.79	0.120
					12	13	20.81	0.121
					25	0	20.78	0.120
			23230	782.0	1	0	22.06	0.161
					1	12	22.07	0.161
					1	24	22.12	0.163
					12	0	20.97	0.125
					12	6	20.94	0.124
					12	13	20.96	0.125
					25	0	21.00	0.126
			23255	784.5	1	0	22.28	0.169
					1	12	22.27	0.169
					1	24	22.33	0.171
					12	0	21.16	0.131
					12	6	21.14	0.130
					12	13	21.18	0.131
					25	0	21.22	0.132
		16QAM	23205	779.5	1	0	20.89	0.123
					1	12	20.93	0.124
					1	24	20.85	0.122
					12	0	19.94	0.099
					12	6	19.97	0.099
					12	13	19.96	0.099
					25	0	19.93	0.098
			23230	782.0	1	0	20.94	0.124
					1	12	20.86	0.122
					1	24	20.84	0.121
					12	0	19.78	0.095
					12	6	19.75	0.094
					12	13	19.70	0.093
					25	0	19.87	0.097
			23255	784.5	1	0	21.09	0.129
					1	12	21.09	0.129
					1	24	21.11	0.129
					12	0	19.90	0.098
					12	6	19.91	0.098
					12	13	19.96	0.099
					25	0	19.90	0.098

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band13	10MHz	QPSK	23230	782.0	1	0	22.08	0.161
					1	24	22.11	0.163
					1	49	22.12	0.163
					25	0	20.99	0.126
					25	12	20.96	0.125
					25	25	20.95	0.124
					50	0	20.98	0.125
		16QAM	23230	782.0	1	0	20.76	0.119
					1	24	20.78	0.120
					1	49	20.66	0.116
					25	0	19.75	0.094
					25	12	19.73	0.094
					25	25	19.70	0.093
					50	0	19.80	0.095



3 Effective Radiated Power / Equivalent Isotropic Radiated Power Test

■ Limit

For FCC Part 27.50(d)(4): The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 1 Watts.

For FCC Part 27.50(b)(10): Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

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.

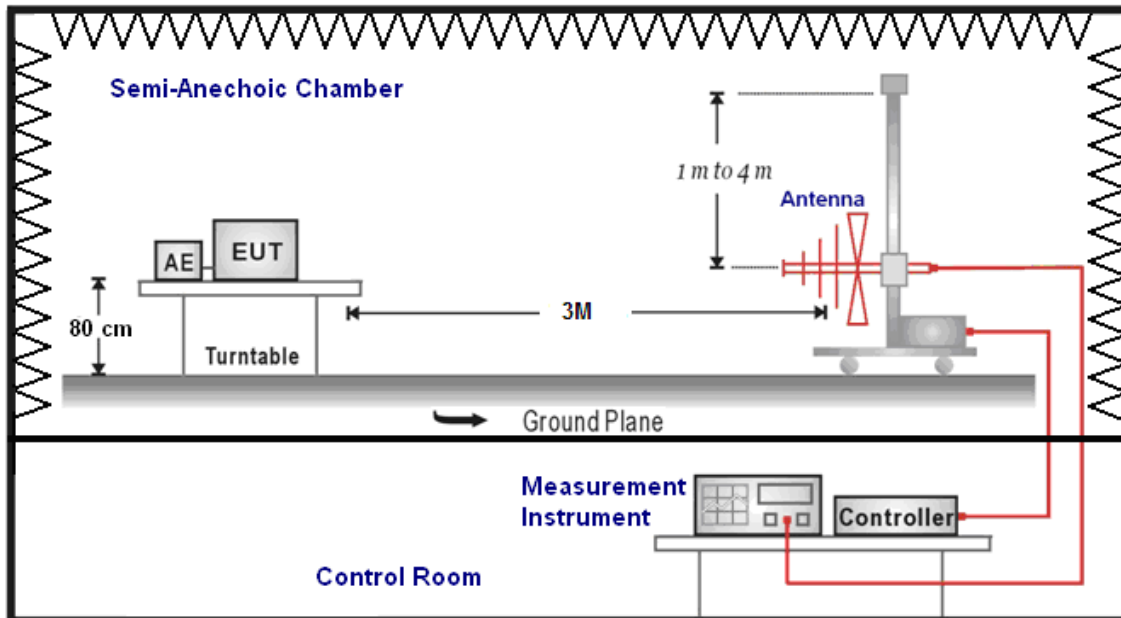
■ Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	03/22/2016	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	03/22/2016	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/11/2016	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/12/2017	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	416	10/13/2016	1 year
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	419	11/03/2016	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/06/2016	1 year
Horn Antenna (18~40GHz)	ETS	3116	00086467	09/05/2016	1 year
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/18/2016	1 year
Microwave Cable	EMCI	EMC102-KM-KM-1 4000	151001	02/23/2016	1 year
Microwave Cable	EMCI	EMC-104-SM-SM-1 4000	140202	02/23/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-6 00	140301	02/23/2016	1 year
Signal Generator	Agilent	E8257D	MY44320425	02/25/2016	1 year
Test Site	ATL	TE01	888001	08/29/2016	1 year

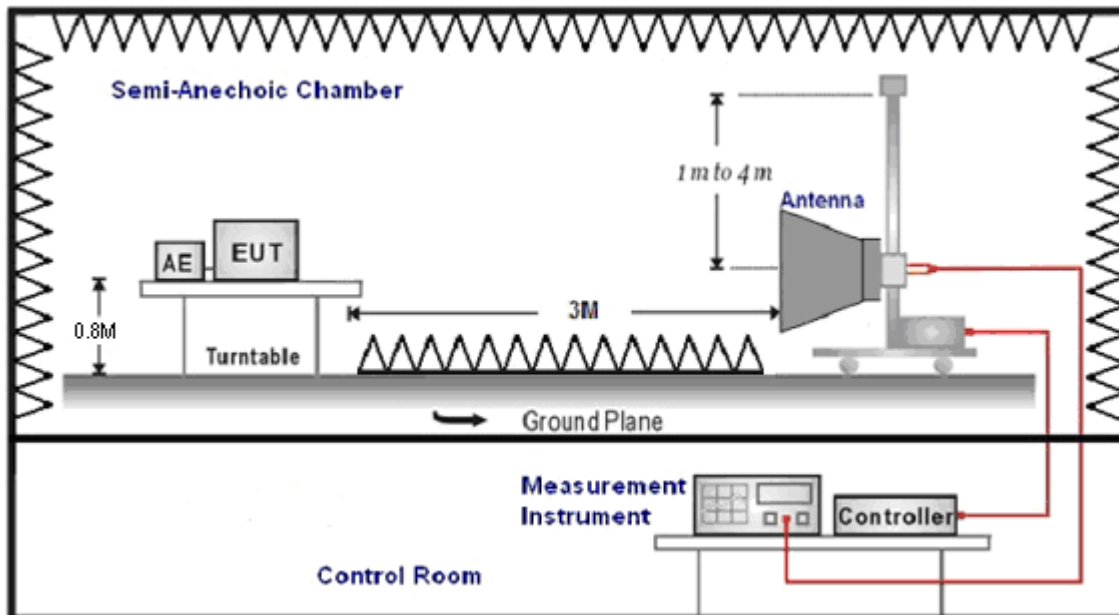
Note: N.C.R. = No Calibration Request.

■ Test Setup

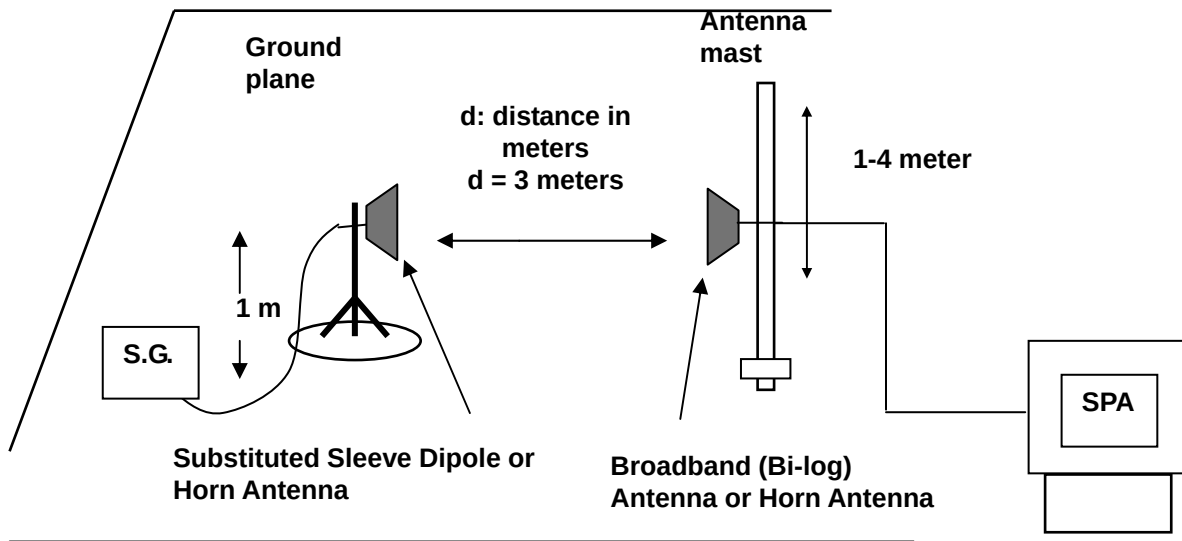
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- 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.
- 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.
- The substitution antenna (Note:1 & 2) 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.
- $E.I.R.P. = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- $E.R.P. = E.I.R.P - 2.15 \text{ dB}$

Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna

2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

■ Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is $\pm 3.072 \text{ dB}$.



Test Result

Date of Test	02/11/2017
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LTE Band 4								
Channel Bandwidth	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.I.R.P.		Limit (W)
						(dBm)	(W)	
1.4 M	QPSK	1710.7	H	11.71	9.00	20.71	0.118	< 1
			V	14.00	9.00	23.00	0.200	< 1
		1732.5	H	11.56	9.09	20.65	0.116	< 1
			V	13.87	9.09	22.96	0.198	< 1
		1754.3	H	11.55	9.18	20.73	0.118	< 1
			V	14.00	9.18	23.18	0.208	< 1
	16QAM	1732.5	H	9.70	9.09	18.79	0.076	< 1
			V	12.63	9.09	21.72	0.149	< 1
3 MHz	QPSK	1711.5	H	11.43	9.00	20.43	0.110	< 1
			V	14.03	9.00	23.03	0.201	< 1
		1732.5	H	11.42	9.09	20.51	0.112	< 1
			V	13.87	9.08	22.95	0.197	< 1
		1753.5	H	11.41	9.16	20.57	0.114	< 1
			V	14.00	9.16	23.16	0.207	< 1
	16QAM	1732.5	H	9.94	9.09	19.03	0.080	< 1
			V	12.46	9.09	21.55	0.143	< 1
5 MHz	QPSK	1712.5	H	11.62	9.00	20.62	0.115	< 1
			V	13.94	9.00	22.94	0.197	< 1
		1732.5	H	11.32	9.08	20.40	0.110	< 1
			V	14.02	9.08	23.10	0.204	< 1
		1752.5	H	11.47	9.16	20.63	0.116	< 1
			V	13.99	9.16	23.15	0.207	< 1
	16QAM	1732.5	H	9.84	9.08	18.92	0.078	< 1
			V	12.26	9.08	21.34	0.136	< 1

LTE Band 4								
Channel Bandwidth	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.I.R.P.		Limit (W)
						(dBm)	(W)	
10 M	QPSK	1715.0	H	11.50	9.00	20.50	0.112	< 1
			V	13.35	9.00	22.35	0.172	< 1
		1732.5	H	11.49	9.07	20.56	0.114	< 1
			V	14.04	9.07	23.11	0.205	< 1
		1750.0	H	11.30	9.15	20.45	0.111	< 1
			V	14.04	9.14	23.18	0.208	< 1
	16QAM	1732.5	H	10.06	9.07	19.13	0.082	< 1
			V	12.14	9.07	21.21	0.132	< 1
15 MHz	QPSK	1717.5	H	11.62	9.00	20.62	0.115	< 1
			V	14.14	9.00	23.14	0.206	< 1
		1732.5	H	11.43	9.06	20.49	0.112	< 1
			V	14.17	9.06	23.23	0.210	< 1
		1747.5	H	11.33	9.11	20.44	0.111	< 1
			V	13.98	9.11	23.09	0.204	< 1
	16QAM	1732.5	H	10.07	9.06	19.13	0.082	< 1
			V	12.20	9.06	21.26	0.134	< 1
20 MHz	QPSK	1720.0	H	11.81	9.00	20.81	0.121	< 1
			V	14.01	9.00	23.01	0.200	< 1
		1732.5	H	11.70	9.06	20.76	0.119	< 1
			V	14.10	9.06	23.16	0.207	< 1
		1745.0	H	11.65	9.10	20.75	0.119	< 1
			V	14.07	9.10	23.17	0.207	< 1
	16QAM	1732.5	H	10.06	9.05	19.11	0.081	< 1
			V	12.14	9.05	21.19	0.132	< 1



LTE Band 13								
Channel Bandwidth	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.R.P.		Limit (W)
						(dBm)	(W)	
5 M	QPSK	779.5	H	9.95	10.64	20.59	0.115	< 3
			V	12.50	10.64	23.14	0.206	< 3
		782.0	H	9.73	10.68	20.41	0.110	< 3
			V	12.22	10.69	22.91	0.195	< 3
		784.5	H	10.00	10.71	20.71	0.118	< 3
			V	12.48	10.72	23.20	0.209	< 3
	16QAM	782.0	H	8.41	10.68	19.09	0.081	< 3
			V	10.48	10.68	21.16	0.131	< 3
10 MHz	QPSK	782.0	H	9.65	10.66	20.31	0.107	< 3
			V	12.34	10.66	23.00	0.200	< 3
	16QAM	782.0	H	8.16	10.67	18.83	0.076	< 3
			V	10.75	10.65	21.40	0.138	< 3

4 Frequency Stability Test

■ Limit

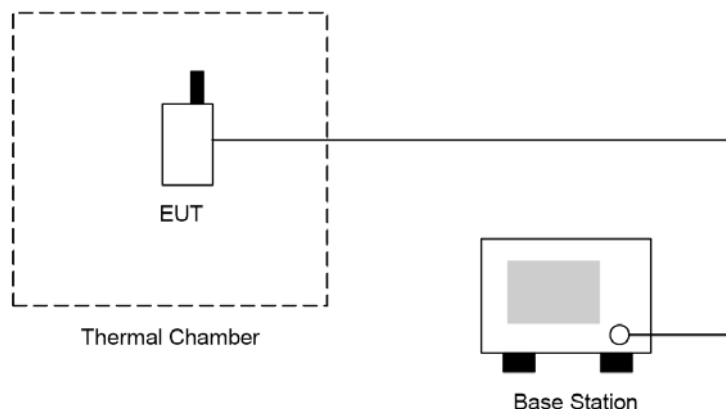
According to the FCC rule shall be tested the frequency stability. The rule is defined that” The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation. The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply 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.

■ Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Wideband Radio Communication Test	R & S	CMW500	103168	11/04/2016	1 year
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/18/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Setup



■ Test Procedure

The measurement is made according to FCC rules:

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.

■ Uncertainty

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

■ Test Result

Date of Test	02/11/2017
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LTE Band 4 _ QPSK						
Voltage						
Channel Bandwidth	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
20 MHz	1732.5	4.25	20	-4.16	-0.0022	± 2.5
		5.00	20	1.11	0.0006	± 2.5
		5.75	20	1.76	0.0009	± 2.5
Temperature						
Channel Bandwidth	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
20 MHz	1732.5	5.00	0	-3.72	-0.0044	± 2.5
		5.00	10	-1.02	-0.0012	± 2.5
		5.00	20	13.8	0.0165	± 2.5
		5.00	30	1.16	0.0014	± 2.5
		5.00	40	-5.02	-0.0060	± 2.5
		5.00	45	3.43	0.0041	± 2.5

LTE Band 13 _ QPSK						
Voltage						
Channel Bandwidth	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
10 MHz	782.0	4.25	20	-2.86	-0.002	± 2.5
		5.00	20	-2.03	-0.001	± 2.5
		5.75	20	-2.37	-0.001	± 2.5
Temperature						
Channel Bandwidth	Frequency (MHz)	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
10 MHz	782.0	5.00	0	-16.2	-0.009	± 2.5
		5.00	10	-9.7	-0.005	± 2.5
		5.00	20	-9.61	-0.005	± 2.5
		5.00	30	5.85	0.003	± 2.5
		5.00	40	8.33	0.004	± 2.5
		5.00	45	-6.17	-0.003	± 2.5

Note: The manufacturer declared that the EUT could work properly between temperatures 0°C ~ 45°C.

5 Emission Bandwidth & Occupied Bandwidth Test

■ 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.

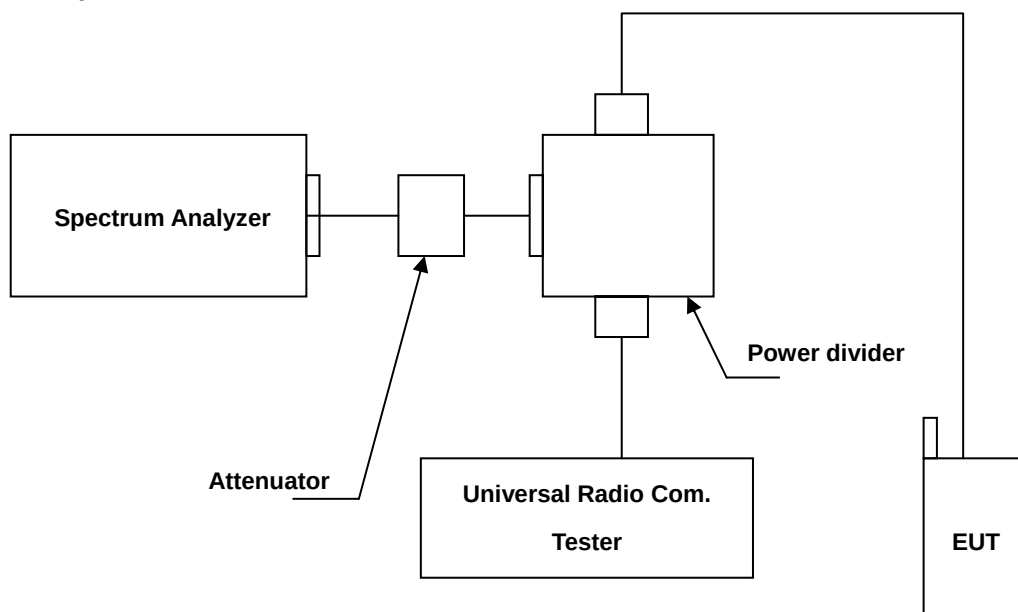
The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

■ Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	11/04/2016	1 year
Attenuator	RADIAL	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.

■ Setup



■ Test Procedure

The measurement is made according to FCC rules:

- 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.

■ Uncertainty

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



Test Result

Date of Test	02/11/2017
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LTE Band 4				
Modulation	Channel Bandwidth	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
1.4 MHz	QPSK	1710.7	1.0766	1.200
		1732.5	1.0772	1.207
		1754.3	1.0768	1.206
	16QAM	1710.7	1.0765	1.213
		1732.5	1.0768	1.217
		1754.3	1.0754	1.213
3 MHz	QPSK	1711.5	2.6831	2.975
		1732.5	2.6797	2.960
		1753.5	2.6860	2.967
	16QAM	1711.5	2.6809	2.936
		1732.5	2.6766	2.936
		1753.5	2.6822	2.927
5 MHz	QPSK	1712.5	4.4739	4.872
		1732.5	4.4747	4.891
		1752.5	4.4698	4.885
	16QAM	1712.5	4.4677	4.896
		1732.5	4.4669	4.898
		1752.5	4.4676	4.913
10 MHz	QPSK	1715.0	8.9248	9.655
		1732.5	8.8975	9.607
		1750.0	8.9372	9.709
	16QAM	1715.0	8.9230	9.711
		1732.5	8.9110	9.722
		1750.0	8.9292	9.676
15 MHz	QPSK	1717.5	13.4004	14.437
		1732.5	13.3891	14.332
		1747.5	13.4171	14.424
	16QAM	1717.5	13.3874	14.459
		1732.5	13.3728	14.495
		1747.5	13.3818	14.582
20 MHz	QPSK	1720.0	17.8597	19.409
		1732.5	17.7913	19.128
		1745.0	17.8223	19.244
	16QAM	1720.0	17.8691	19.211
		1732.5	17.8014	19.159
		1745.0	17.8561	19.167

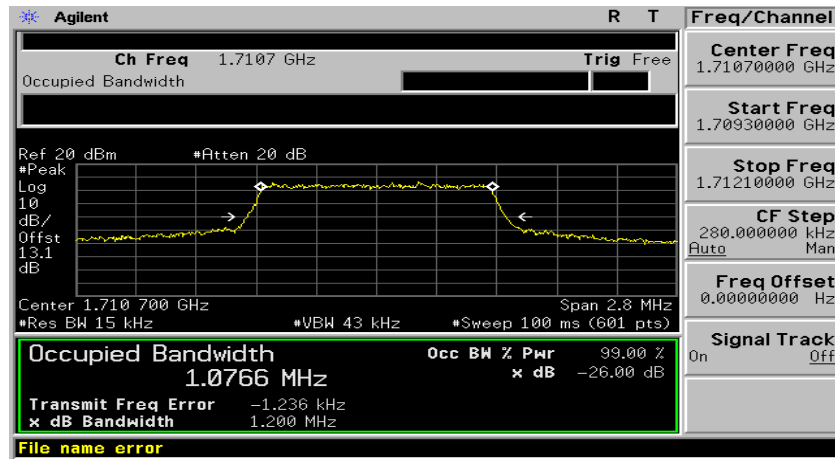


LTE Band 13				
Modulation	Channel Bandwidth	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
5 MHz	QPSK	779.5	4.4742	4.860
		782.0	4.4632	4.856
		784.5	4.4721	4.880
	16QAM	779.5	4.4717	4.900
		782.0	4.4607	4.894
		784.5	4.4640	4.902
10 MHz	QPSK	782.0	8.8862	9.603
	16QAM	782.0	8.8705	9.566

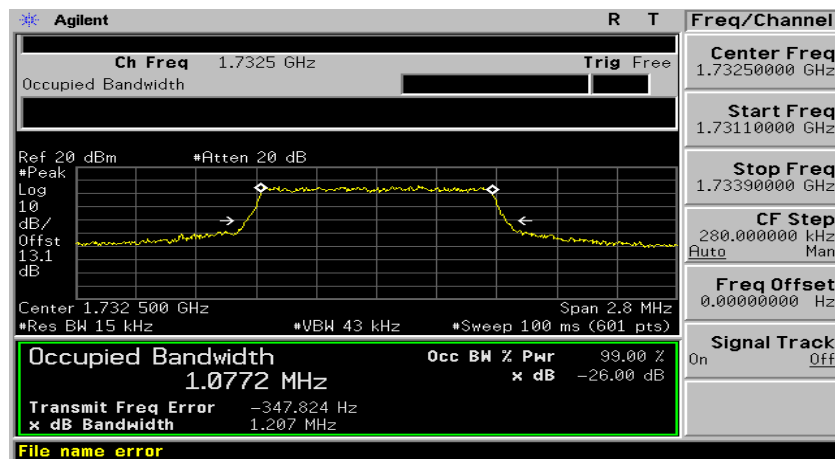


■ Test Graphs

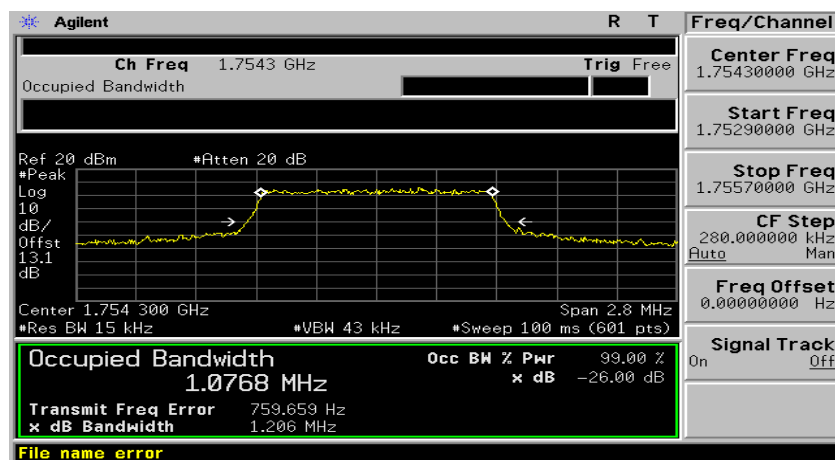
(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_6RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_6RB#0

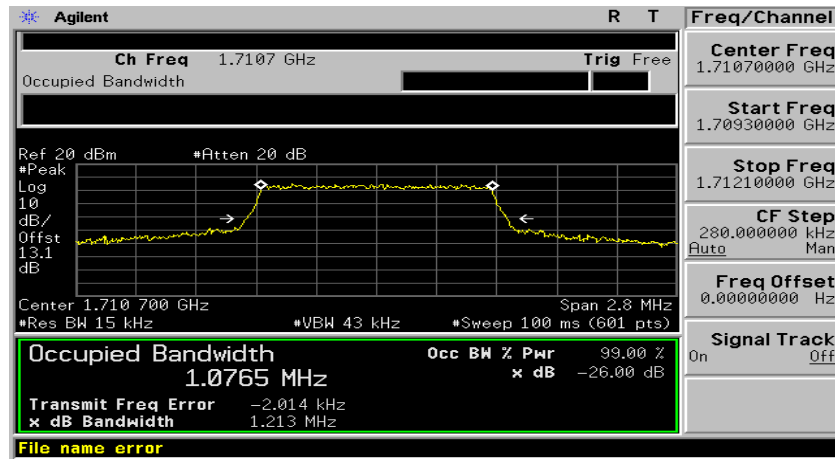


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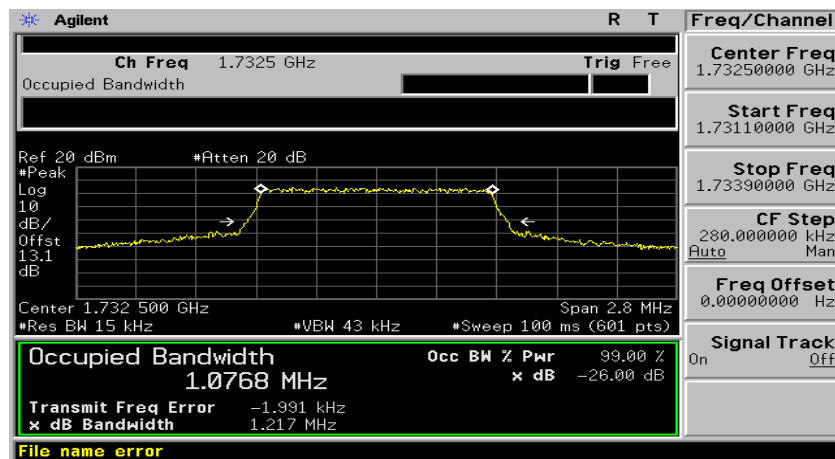




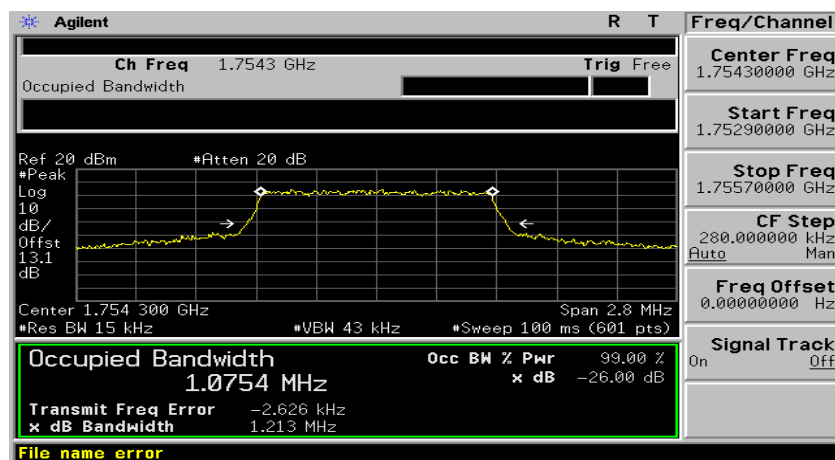
(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_6RB#0

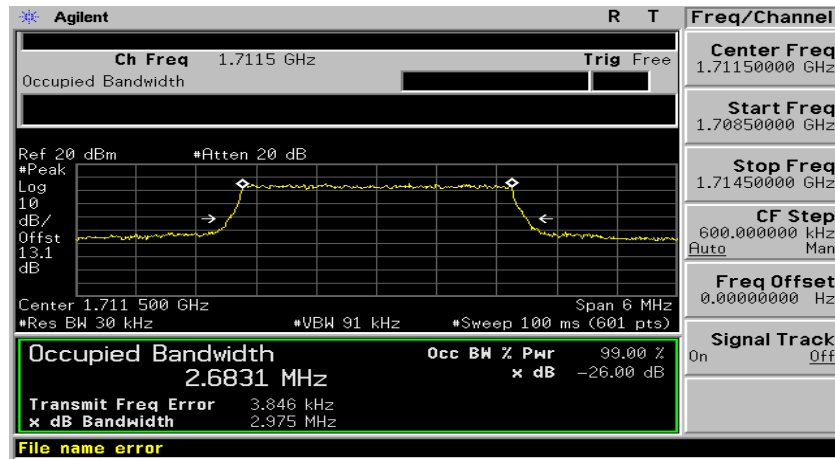


(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_6RB#0

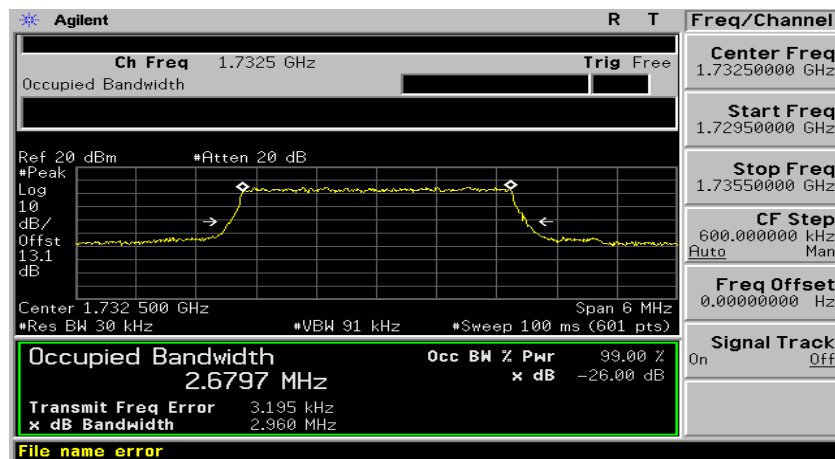




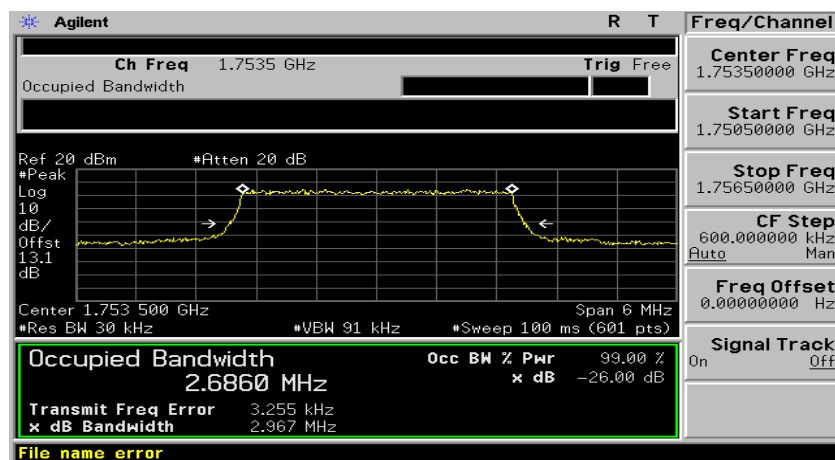
(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_15RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_15RB#0

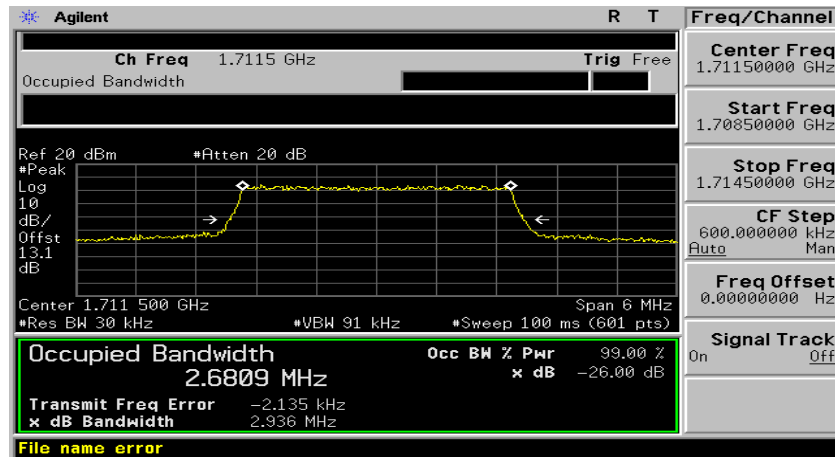


(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0

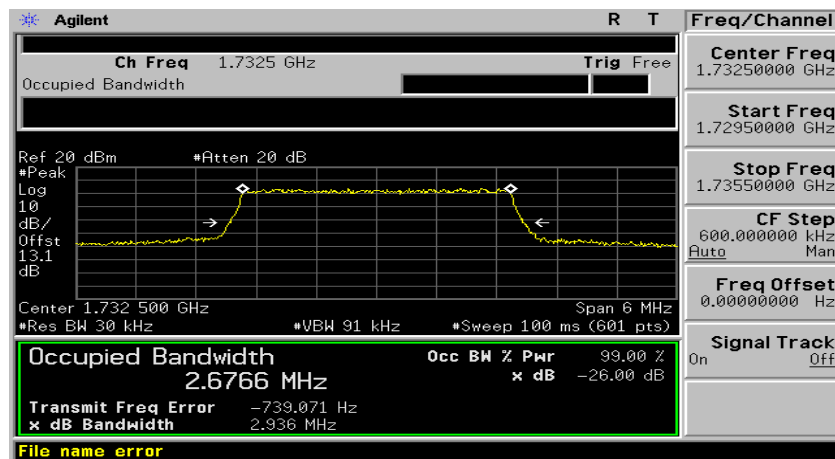




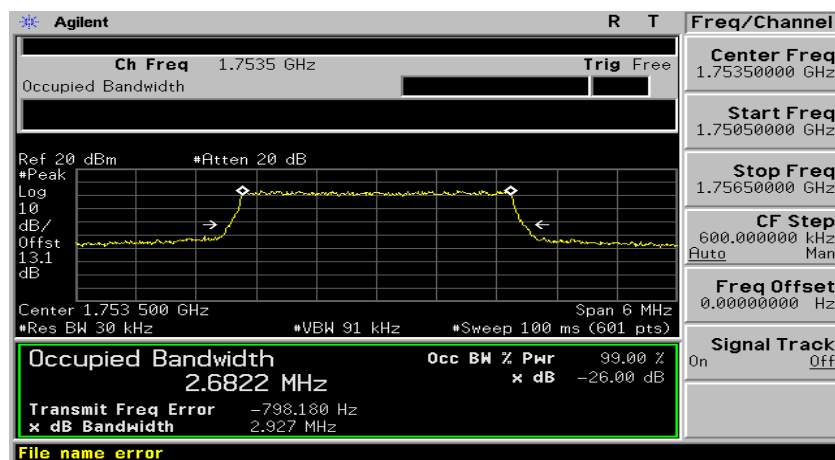
(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_15RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_15RB#0

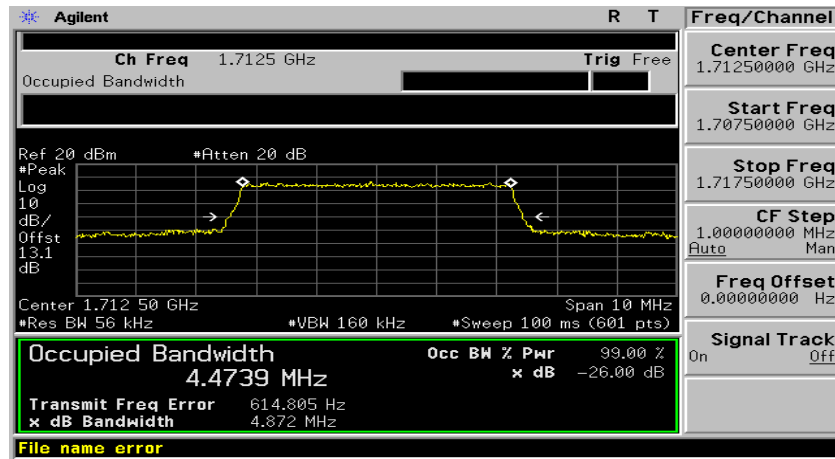


(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_15RB#0

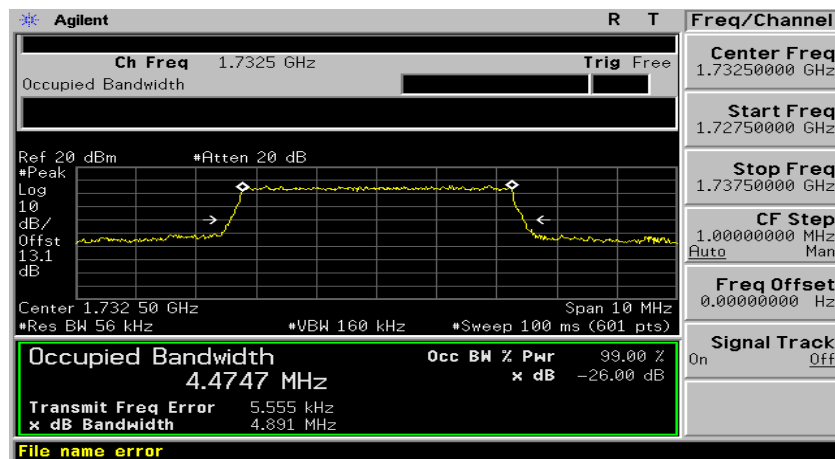




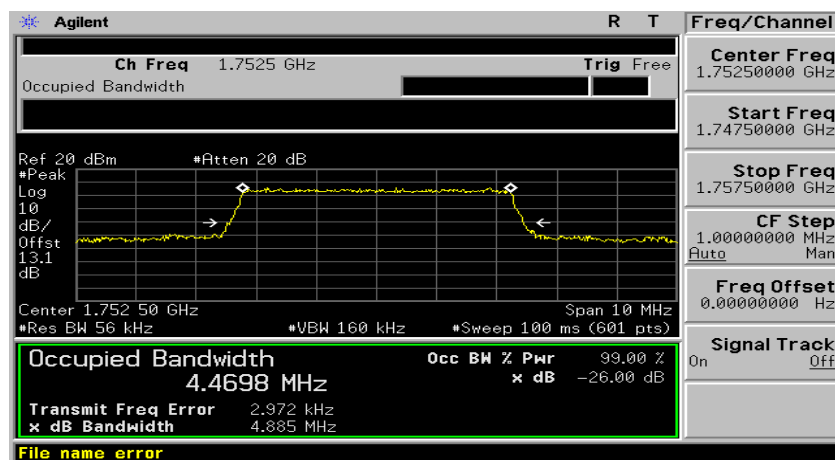
(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0

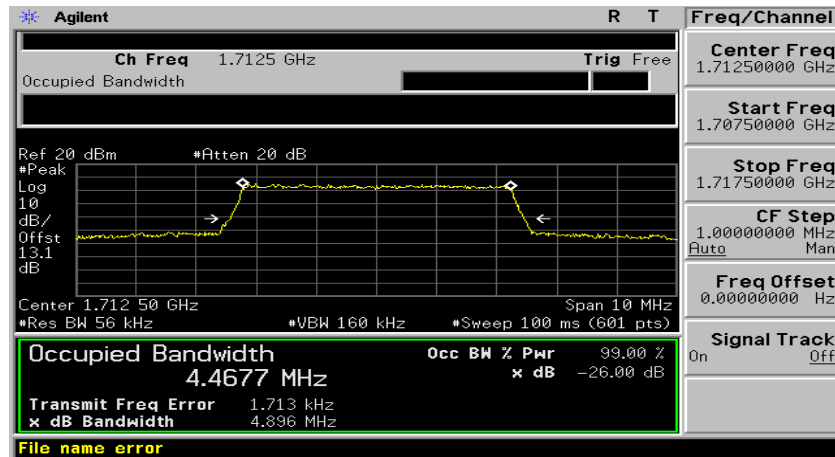


(LTE band 4_Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0

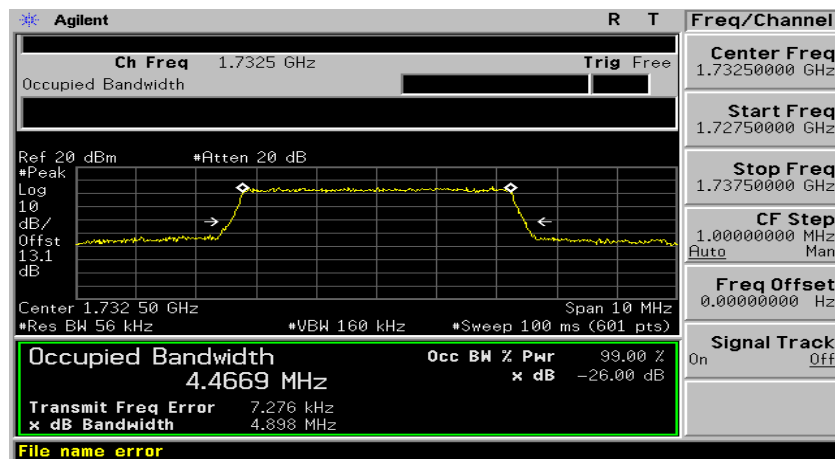




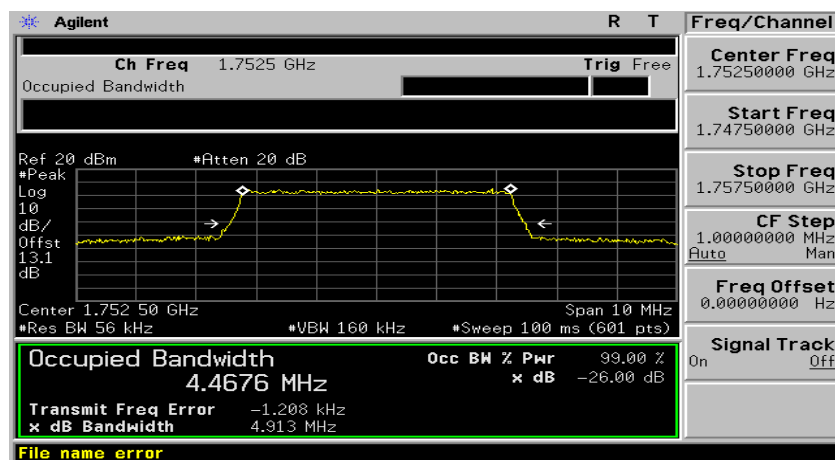
(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0

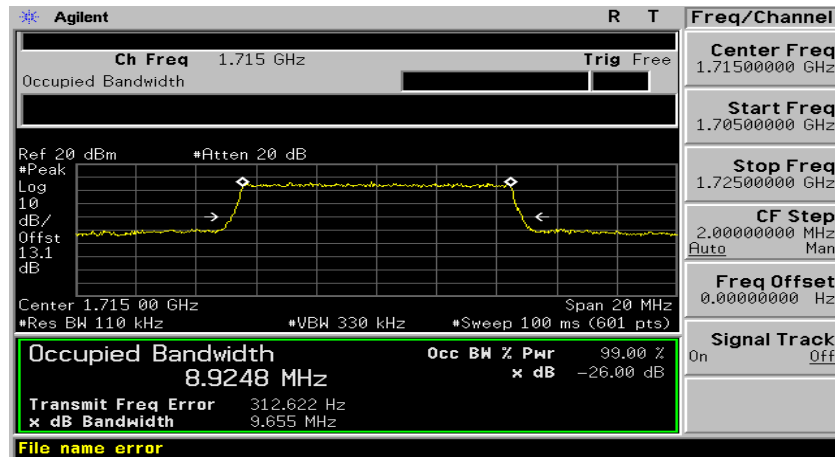


(LTE band 4_Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

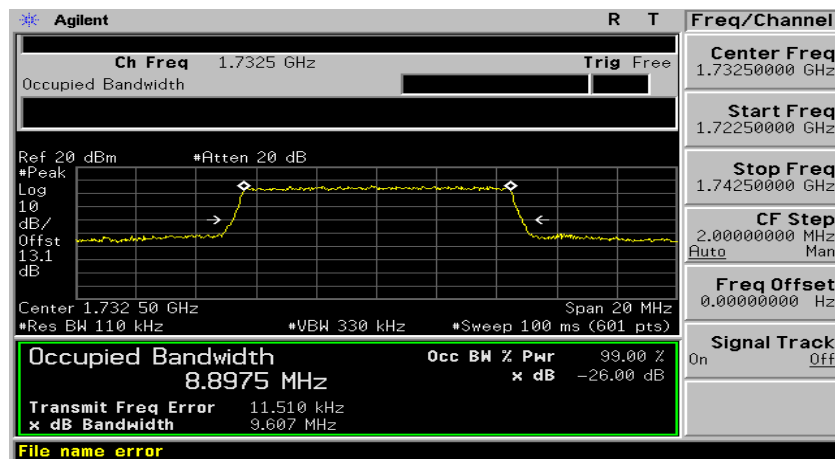




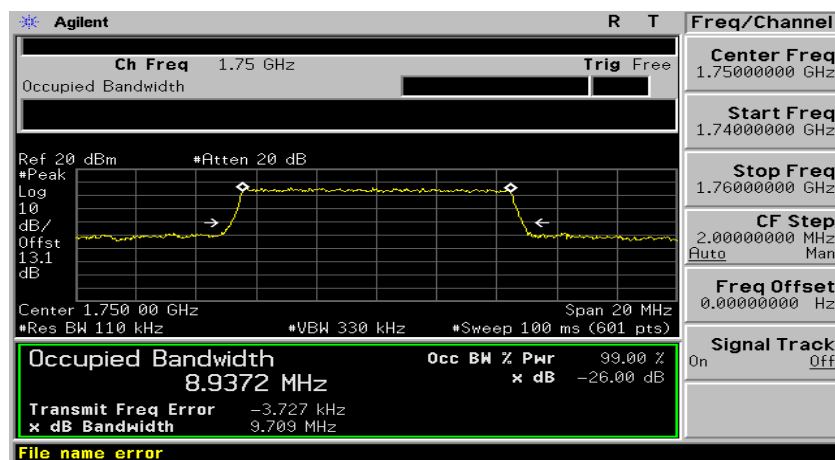
LTE band 4_Channel Bandwidth: 10 MHz_LCH_QPSK_50RB#0



LTE band 4_Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0

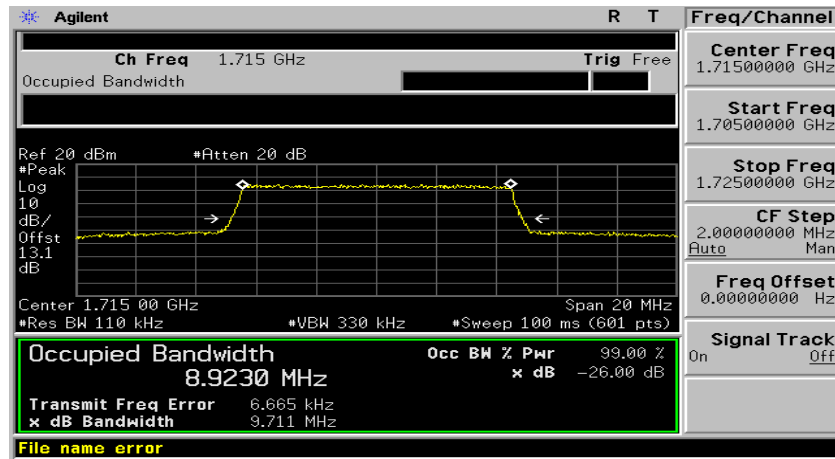


LTE band 4_Channel Bandwidth: 10 MHz_HCH_QPSK_50RB#0

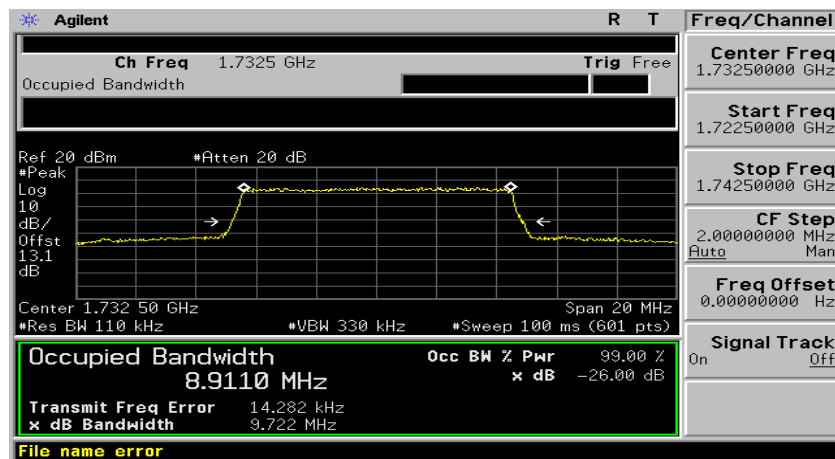




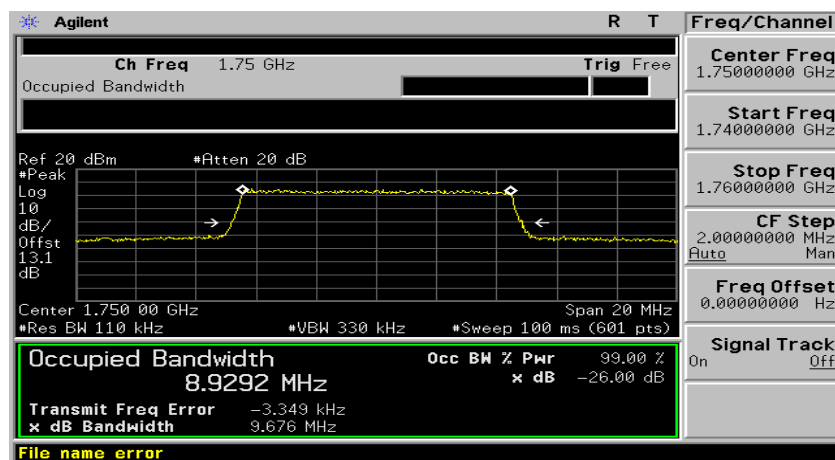
LTE band 4_Channel Bandwidth: 10 MHz_LCH_16QAM_50RB#0



LTE band 4_Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0

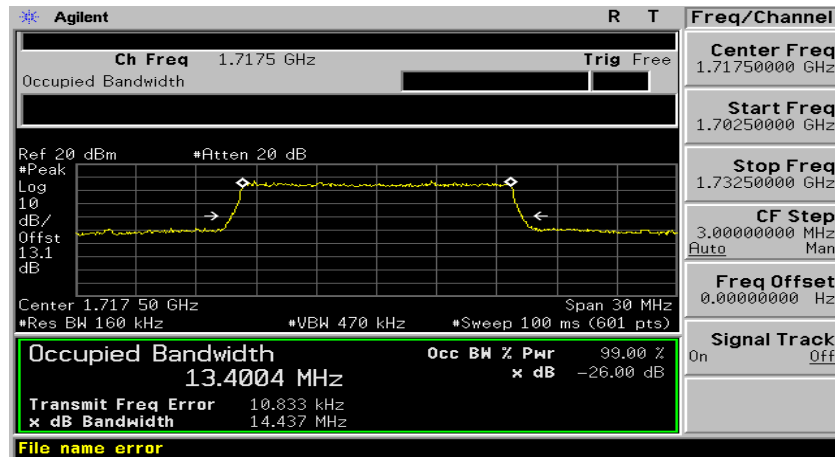


LTE band 4_Channel Bandwidth: 10 MHz_HCH_16QAM_50RB#0

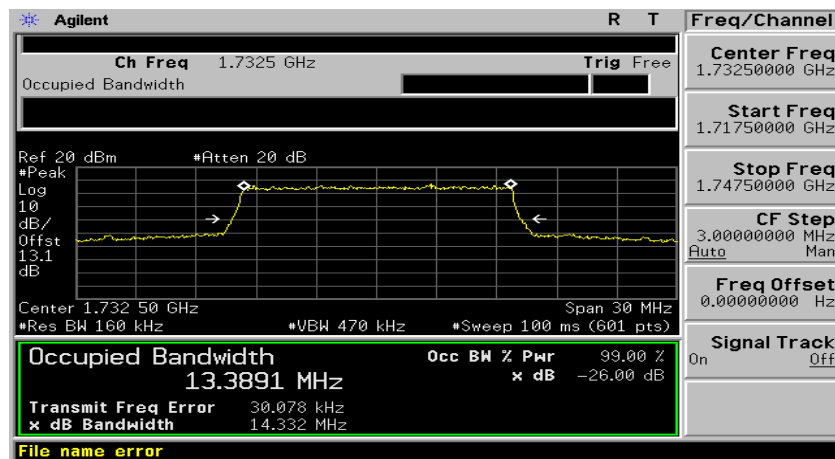




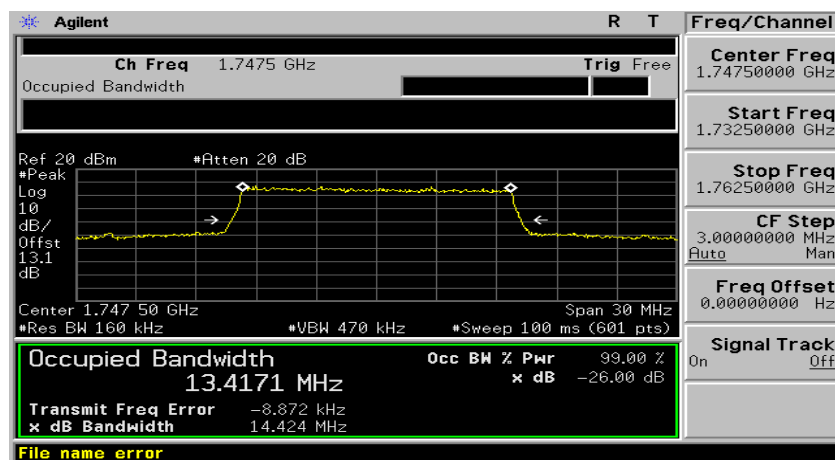
(LTE band 4_Channel Bandwidth:15 MHz)_LCH_QPSK_75RB#0



(LTE band 4_Channel Bandwidth:15 MHz)_MCH_QPSK_75RB#0

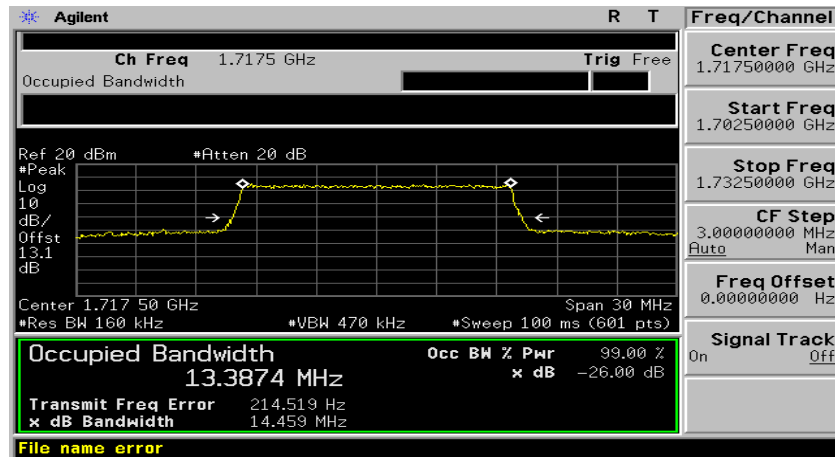


(LTE band 4_Channel Bandwidth:15 MHz)_HCH_QPSK_75RB#0

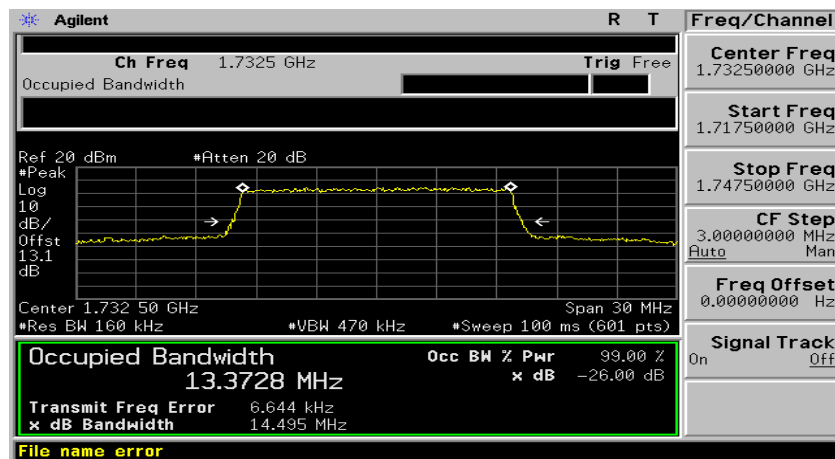




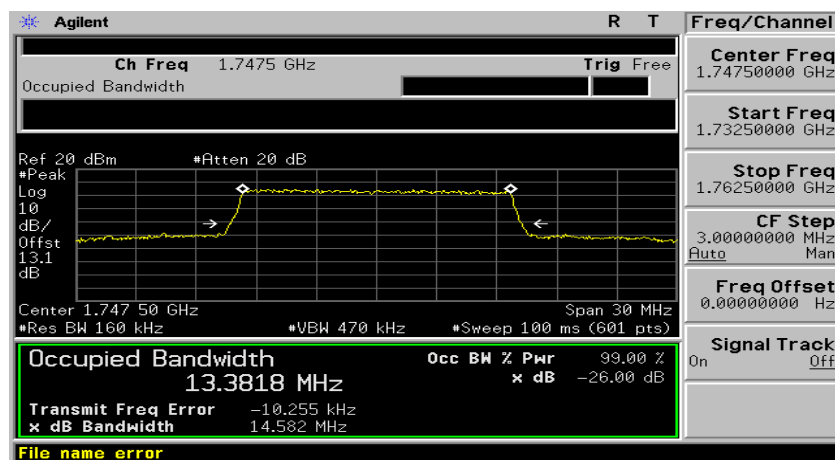
(LTE band 4_Channel Bandwidth:15 MHz)_LCH_16QAM_75RB#0



(LTE band 4_Channel Bandwidth:15 MHz)_MCH_16QAM_75RB#0

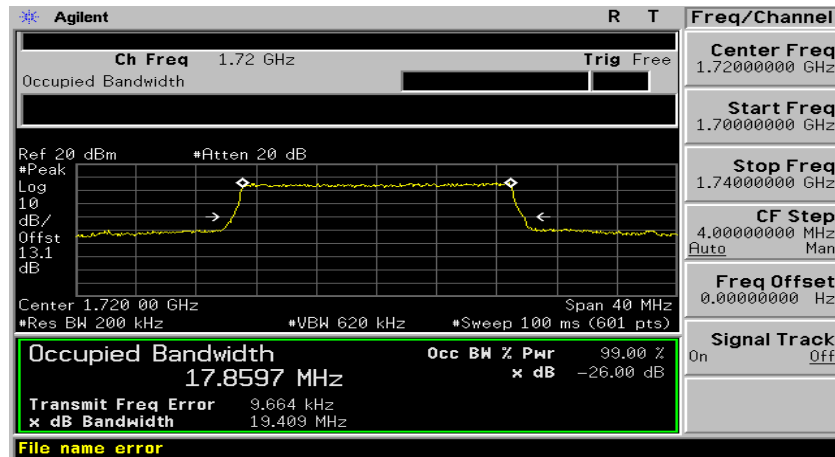


(LTE band 4_Channel Bandwidth:15 MHz)_HCH_16QAM_75RB#0

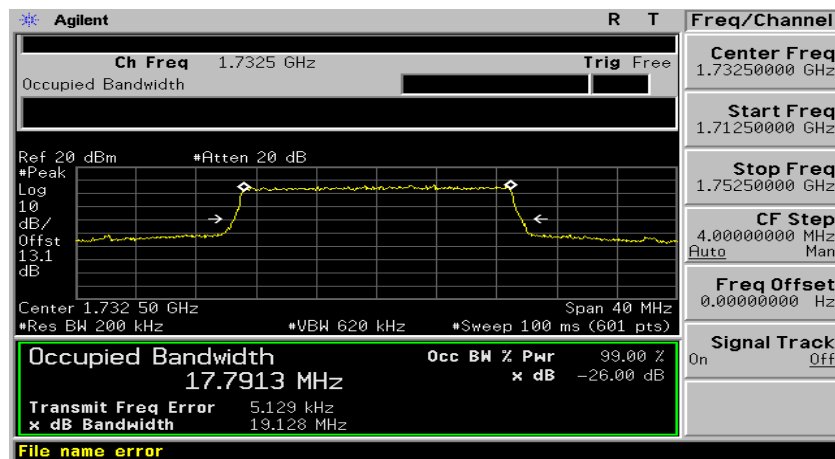




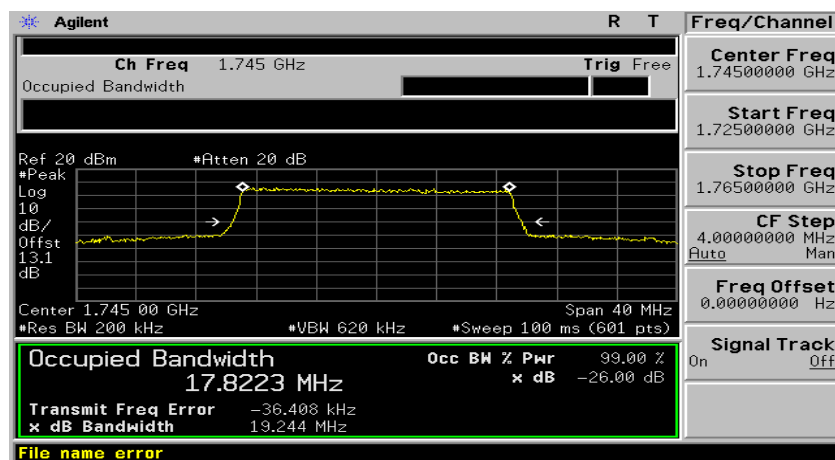
(LTE band 4_Channel Bandwidth:20 MHz)_LCH_QPSK_100RB#0



(LTE band 4_Channel Bandwidth:20 MHz)_MCH_QPSK_100RB#0

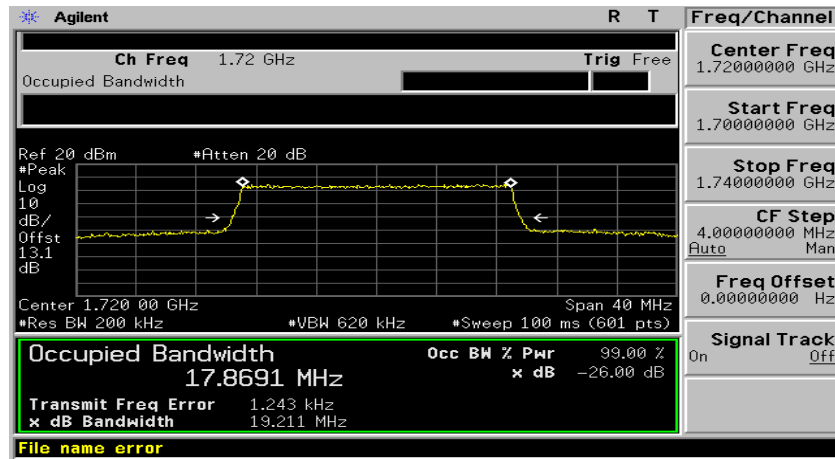


(LTE band 4_Channel Bandwidth:20 MHz)_HCH_QPSK_100RB#0

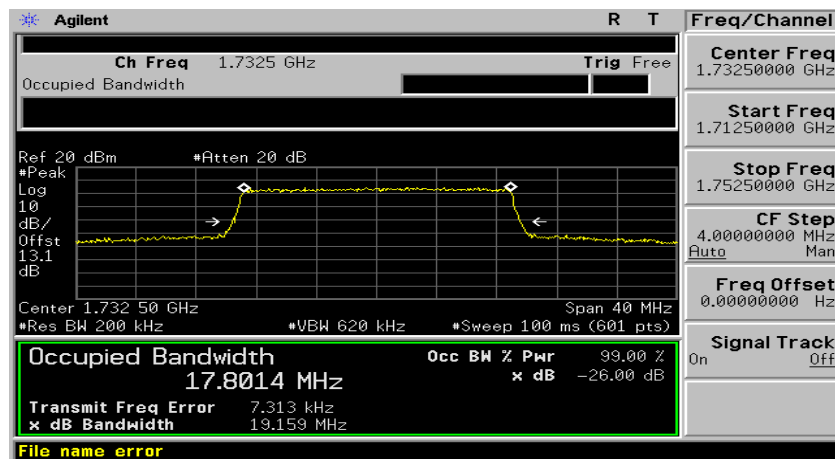




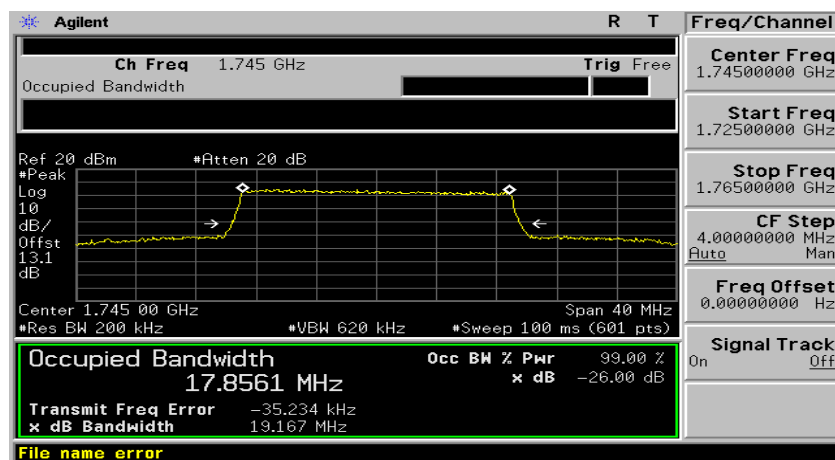
(LTE band 4_Channel Bandwidth:20 MHz)_LCH_16QAM_100RB#0



(LTE band 4_Channel Bandwidth:20 MHz)_MCH_16QAM_100RB#0

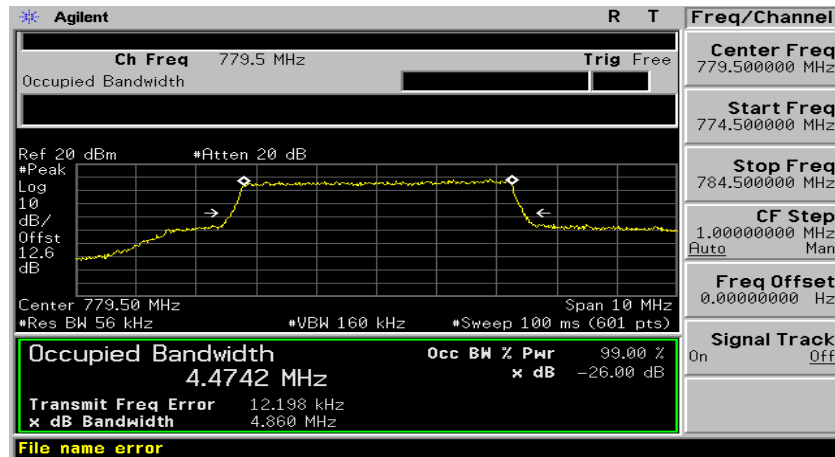


(LTE band 4_Channel Bandwidth:20 MHz)_HCH_16QAM_100RB#0

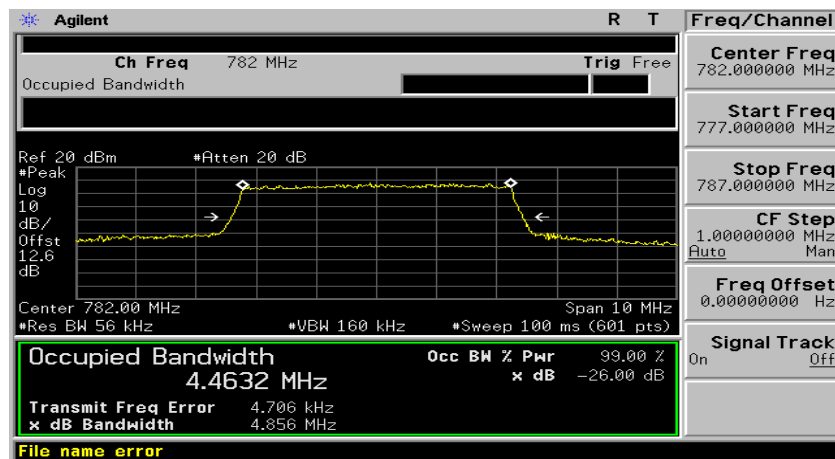




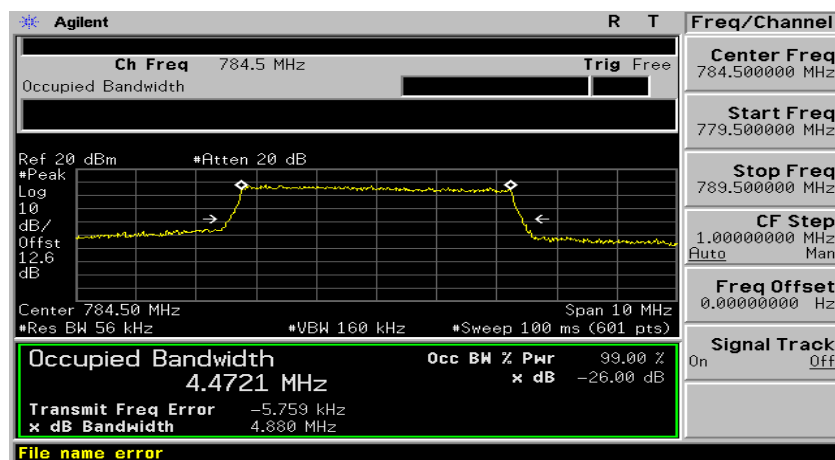
(LTE band 13_Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0



(LTE band 13_Channel Bandwidth: 5 MHz)_MCH_QPSK_25RB#0

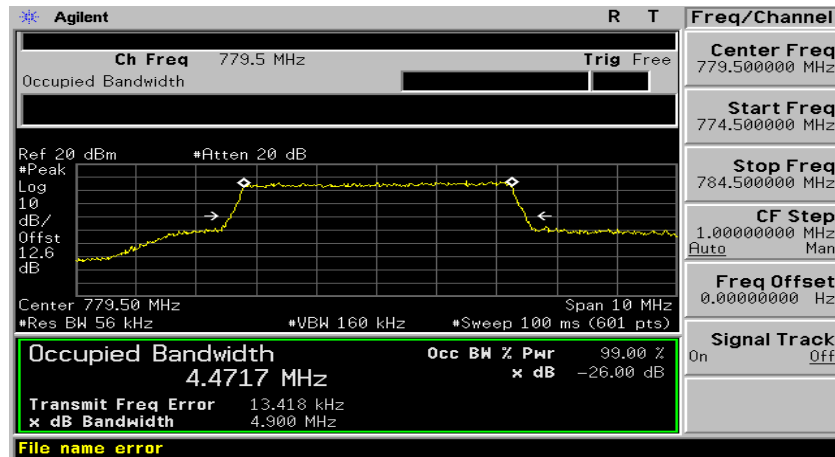


(LTE band 13_Channel Bandwidth: 5 MHz)_HCH_QPSK_25RB#0

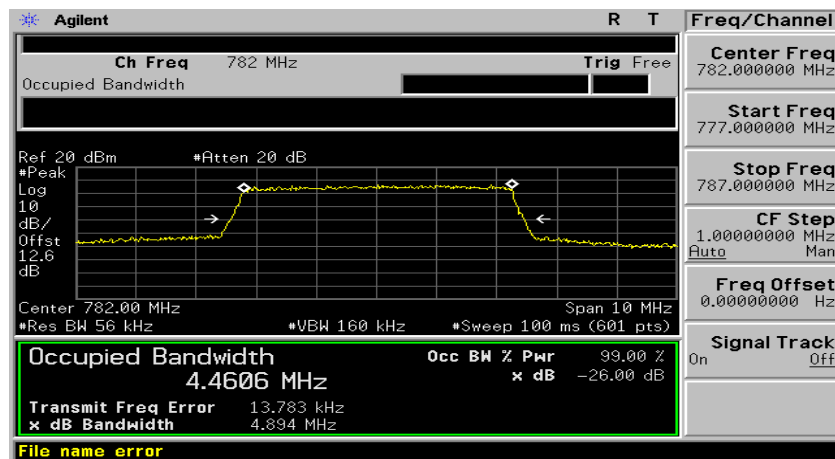




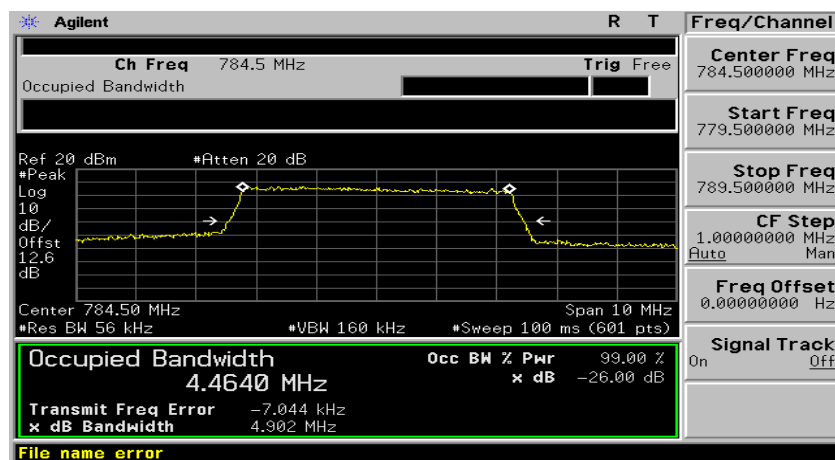
(LTE band 13_Channel Bandwidth: 5 MHz)_LCH_16QAM_25RB#0



(LTE band 13_Channel Bandwidth: 5 MHz)_MCH_16QAM_25RB#0

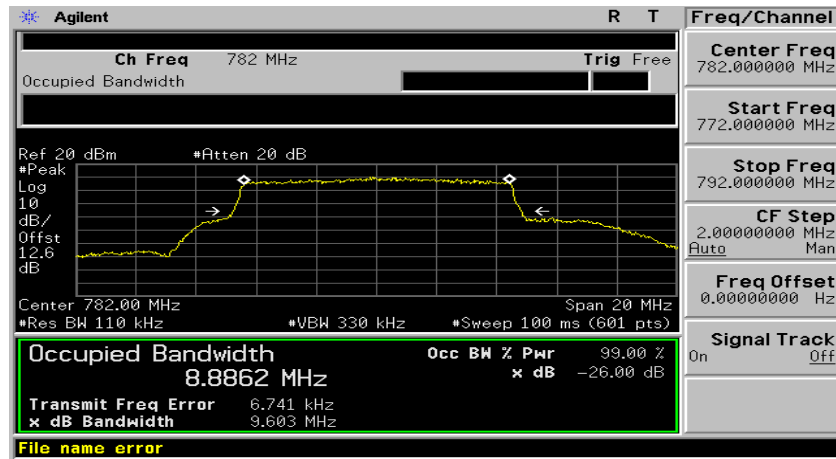


(LTE band 13_Channel Bandwidth: 5 MHz)_HCH_16QAM_25RB#0

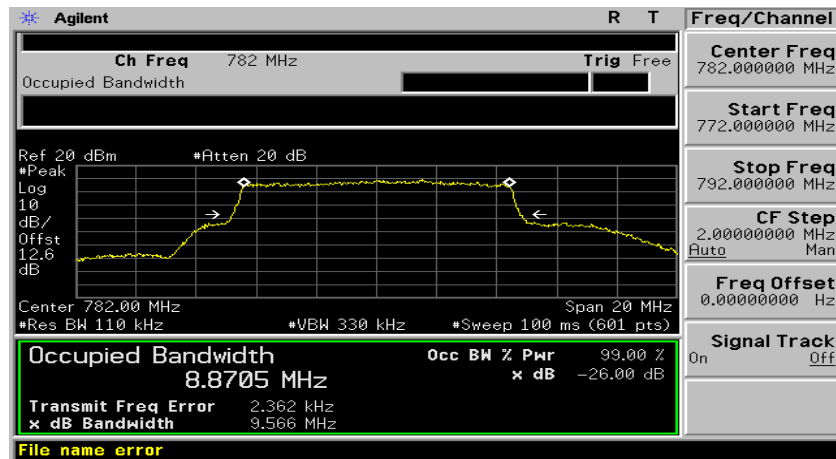




LTE band 13_Channel Bandwidth: 10 MHz_MCH_QPSK_50RB#0



LTE band 13_Channel Bandwidth: 10 MHz_MCH_16QAM_50RB#0



6 Peak to Average Ratio Test

■ Limit

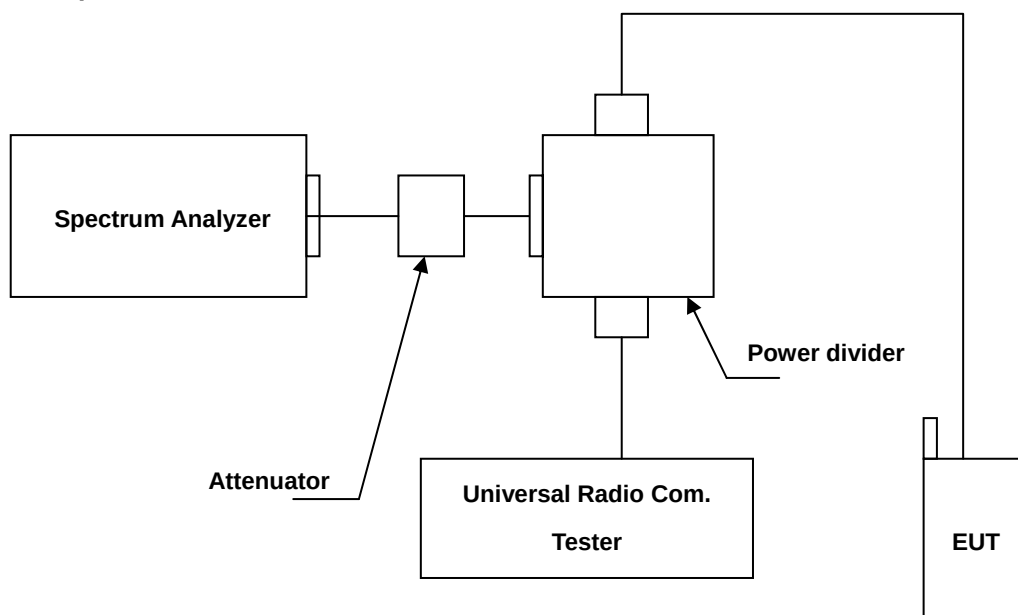
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

■ Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Wideband Radio Communication Test	R & S	CMW500	103168	11/04/2016	1 year
Attenuator	RADIAL	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.

■ Setup





■ **Test Procedure**

The measurement is made according to FCC rules:

- a. Set resolution/measurement bandwidth 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%.

■ **Uncertainty**

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



Test Result

Date of Test	02/10/2017
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LTE Band 4						
Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.2	<13	PASS
		1	3	5.26	<13	PASS
		1	5	5.27	<13	PASS
		3	0	5.06	<13	PASS
		3	2	5.04	<13	PASS
		3	3	5.07	<13	PASS
		6	0	5.88	<13	PASS
	MCH	1	0	5.9	<13	PASS
		1	3	5.91	<13	PASS
		1	5	5.99	<13	PASS
		3	0	5.61	<13	PASS
		3	2	5.64	<13	PASS
		3	3	5.58	<13	PASS
		6	0	5.87	<13	PASS
	HCH	1	0	5.92	<13	PASS
		1	3	5.91	<13	PASS
		1	5	5.95	<13	PASS
		3	0	5.61	<13	PASS
		3	2	5.53	<13	PASS
		3	3	5.54	<13	PASS
		6	0	5.78	<13	PASS



LTE Band 4						
Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
16QAM	LCH	1	0	5.91	<13	PASS
		1	3	6.02	<13	PASS
		1	5	5.91	<13	PASS
		3	0	5.93	<13	PASS
		3	2	5.93	<13	PASS
		3	3	5.96	<13	PASS
		6	0	5.94	<13	PASS
	MCH	1	0	5.81	<13	PASS
		1	3	6.02	<13	PASS
		1	5	5.89	<13	PASS
		3	0	5.86	<13	PASS
		3	2	5.84	<13	PASS
		3	3	5.88	<13	PASS
		6	0	5.92	<13	PASS
	HCH	1	0	5.72	<13	PASS
		1	3	5.81	<13	PASS
		1	5	5.88	<13	PASS
		3	0	5.75	<13	PASS
		3	2	5.81	<13	PASS
		3	3	5.79	<13	PASS
		6	0	5.8	<13	PASS

LTE Band 4						
Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.32	<13	PASS
		1	7	5.26	<13	PASS
		1	14	5.29	<13	PASS
		8	0	5.78	<13	PASS
		8	4	5.89	<13	PASS
		8	7	5.9	<13	PASS
		15	0	5.88	<13	PASS
	MCH	1	0	5.85	<13	PASS
		1	7	5.91	<13	PASS
		1	14	5.91	<13	PASS
		8	0	5.87	<13	PASS
		8	4	5.86	<13	PASS
		8	7	5.86	<13	PASS
		15	0	5.89	<13	PASS
	HCH	1	0	5.88	<13	PASS
		1	7	5.87	<13	PASS
		1	14	5.93	<13	PASS
		8	0	5.75	<13	PASS
		8	4	5.75	<13	PASS
		8	7	5.79	<13	PASS
		15	0	5.84	<13	PASS
16QAM	LCH	1	0	5.94	<13	PASS
		1	7	5.83	<13	PASS
		1	14	5.78	<13	PASS
		8	0	5.93	<13	PASS
		8	4	5.89	<13	PASS
		8	7	5.92	<13	PASS
		15	0	6	<13	PASS
	MCH	1	0	5.98	<13	PASS
		1	7	5.95	<13	PASS
		1	14	5.88	<13	PASS
		8	0	5.92	<13	PASS
		8	4	5.84	<13	PASS
		8	7	5.89	<13	PASS
		15	0	5.97	<13	PASS
	HCH	1	0	5.69	<13	PASS
		1	7	5.98	<13	PASS
		1	14	5.82	<13	PASS
		8	0	5.92	<13	PASS
		8	4	5.86	<13	PASS
		8	7	5.88	<13	PASS
		15	0	5.88	<13	PASS

LTE Band 4						
Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.52	<13	PASS
		1	12	5.45	<13	PASS
		1	24	5.5	<13	PASS
		12	0	5.75	<13	PASS
		12	6	5.77	<13	PASS
		12	13	5.82	<13	PASS
		25	0	5.77	<13	PASS
	MCH	1	0	5.92	<13	PASS
		1	12	5.89	<13	PASS
		1	24	5.86	<13	PASS
		12	0	5.97	<13	PASS
		12	6	5.91	<13	PASS
		12	13	5.92	<13	PASS
		25	0	5.87	<13	PASS
	HCH	1	0	5.84	<13	PASS
		1	12	5.79	<13	PASS
		1	24	5.85	<13	PASS
		12	0	5.74	<13	PASS
		12	6	5.76	<13	PASS
		12	13	5.81	<13	PASS
		25	0	5.73	<13	PASS
16QAM	LCH	1	0	5.75	<13	PASS
		1	12	5.8	<13	PASS
		1	24	5.69	<13	PASS
		12	0	5.85	<13	PASS
		12	6	5.81	<13	PASS
		12	13	5.9	<13	PASS
		25	0	5.89	<13	PASS
	MCH	1	0	5.76	<13	PASS
		1	12	5.78	<13	PASS
		1	24	5.66	<13	PASS
		12	0	6.03	<13	PASS
		12	6	5.99	<13	PASS
		12	13	5.96	<13	PASS
		25	0	6.14	<13	PASS
	HCH	1	0	5.7	<13	PASS
		1	12	5.77	<13	PASS
		1	24	5.95	<13	PASS
		12	0	5.81	<13	PASS
		12	6	5.8	<13	PASS
		12	13	5.91	<13	PASS
		25	0	5.98	<13	PASS

LTE Band 4						
Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.2	<13	PASS
		1	24	5.29	<13	PASS
		1	49	5.57	<13	PASS
		25	0	5.75	<13	PASS
		25	12	5.69	<13	PASS
		25	25	5.89	<13	PASS
		50	0	5.76	<13	PASS
	MCH	1	0	5.98	<13	PASS
		1	24	5.98	<13	PASS
		1	49	5.9	<13	PASS
		25	0	6.13	<13	PASS
		25	12	6.07	<13	PASS
		25	25	5.99	<13	PASS
		50	0	5.92	<13	PASS
	HCH	1	0	5.5	<13	PASS
		1	24	5.54	<13	PASS
		1	49	5.84	<13	PASS
		25	0	5.63	<13	PASS
		25	12	5.68	<13	PASS
		25	25	5.77	<13	PASS
		50	0	5.6	<13	PASS
16QAM	LCH	1	0	6.17	<13	PASS
		1	24	5.81	<13	PASS
		1	49	5.96	<13	PASS
		25	0	5.93	<13	PASS
		25	12	6.01	<13	PASS
		25	25	6.07	<13	PASS
		50	0	5.9	<13	PASS
	MCH	1	0	6.32	<13	PASS
		1	24	6.2	<13	PASS
		1	49	6.3	<13	PASS
		25	0	6.35	<13	PASS
		25	12	6.29	<13	PASS
		25	25	6.23	<13	PASS
		50	0	6.14	<13	PASS
	HCH	1	0	5.75	<13	PASS
		1	24	5.58	<13	PASS
		1	49	5.83	<13	PASS
		25	0	5.7	<13	PASS
		25	12	5.71	<13	PASS
		25	25	5.83	<13	PASS
		50	0	5.73	<13	PASS

LTE Band 4						
Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5	<13	PASS
		1	37	5.18	<13	PASS
		1	74	5.45	<13	PASS
		37	0	5.64	<13	PASS
		37	18	5.75	<13	PASS
		37	38	5.85	<13	PASS
		75	0	5.68	<13	PASS
	MCH	1	0	5.34	<13	PASS
		1	37	5.53	<13	PASS
		1	74	5.28	<13	PASS
		37	0	5.99	<13	PASS
		37	18	5.91	<13	PASS
		37	38	5.82	<13	PASS
		75	0	5.73	<13	PASS
	HCH	1	0	5.19	<13	PASS
		1	37	5.17	<13	PASS
		1	74	5.38	<13	PASS
		37	0	5.54	<13	PASS
		37	18	5.58	<13	PASS
		37	38	5.72	<13	PASS
		75	0	5.54	<13	PASS
16QAM	LCH	1	0	5.83	<13	PASS
		1	37	6.12	<13	PASS
		1	74	6.39	<13	PASS
		37	0	5.94	<13	PASS
		37	18	6	<13	PASS
		37	38	6.15	<13	PASS
		75	0	6	<13	PASS
	MCH	1	0	6.17	<13	PASS
		1	37	6.13	<13	PASS
		1	74	6.17	<13	PASS
		37	0	6.35	<13	PASS
		37	18	6.19	<13	PASS
		37	38	6.16	<13	PASS
		75	0	6.11	<13	PASS
	HCH	1	0	5.94	<13	PASS
		1	37	5.53	<13	PASS
		1	74	6.05	<13	PASS
		37	0	5.81	<13	PASS
		37	18	5.75	<13	PASS
		37	38	5.97	<13	PASS
		75	0	5.79	<13	PASS

LTE Band 4						
Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.79	<13	PASS
		1	49	5.32	<13	PASS
		1	99	5.54	<13	PASS
		50	0	5.71	<13	PASS
		50	25	5.95	<13	PASS
		50	50	6.11	<13	PASS
		100	0	5.65	<13	PASS
	MCH	1	0	4.92	<13	PASS
		1	49	5.62	<13	PASS
		1	99	5.17	<13	PASS
		50	0	6.08	<13	PASS
		50	25	6.09	<13	PASS
		50	50	6	<13	PASS
		100	0	5.6	<13	PASS
	HCH	1	0	5.4	<13	PASS
		1	49	5.28	<13	PASS
		1	99	5.33	<13	PASS
		50	0	5.68	<13	PASS
		50	25	5.61	<13	PASS
		50	50	5.69	<13	PASS
		100	0	5.42	<13	PASS
16QAM	LCH	1	0	5.63	<13	PASS
		1	49	6.18	<13	PASS
		1	99	6.34	<13	PASS
		50	0	6.13	<13	PASS
		50	25	6.29	<13	PASS
		50	50	6.48	<13	PASS
		100	0	6.09	<13	PASS
	MCH	1	0	6.1	<13	PASS
		1	49	6.38	<13	PASS
		1	99	5.87	<13	PASS
		50	0	6.45	<13	PASS
		50	25	6.36	<13	PASS
		50	50	6.28	<13	PASS
		100	0	6.13	<13	PASS
	HCH	1	0	6.32	<13	PASS
		1	49	5.66	<13	PASS
		1	99	5.73	<13	PASS
		50	0	5.88	<13	PASS
		50	25	5.77	<13	PASS
		50	50	5.92	<13	PASS
		100	0	5.75	<13	PASS



LTE Band 13						
Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	6.09	<13	PASS
		1	12	6.53	<13	PASS
		1	24	6.45	<13	PASS
		12	0	6.32	<13	PASS
		12	6	6.48	<13	PASS
		12	13	6.48	<13	PASS
		25	0	6.14	<13	PASS
	MCH	1	0	5.87	<13	PASS
		1	12	5.76	<13	PASS
		1	24	6.04	<13	PASS
		12	0	6	<13	PASS
		12	6	5.83	<13	PASS
		12	13	5.95	<13	PASS
		25	0	5.84	<13	PASS
	HCH	1	0	5.66	<13	PASS
		1	12	5.84	<13	PASS
		1	24	6.24	<13	PASS
		12	0	5.74	<13	PASS
		12	6	5.86	<13	PASS
		12	13	6.17	<13	PASS
		25	0	5.95	<13	PASS
16QAM	LCH	1	0	6.55	<13	PASS
		1	12	6.44	<13	PASS
		1	24	6.58	<13	PASS
		12	0	6.57	<13	PASS
		12	6	6.53	<13	PASS
		12	13	6.59	<13	PASS
		25	0	6.47	<13	PASS
	MCH	1	0	6.19	<13	PASS
		1	12	5.97	<13	PASS
		1	24	6.02	<13	PASS
		12	0	6.39	<13	PASS
		12	6	6.39	<13	PASS
		12	13	6.44	<13	PASS
		25	0	6.47	<13	PASS
	HCH	1	0	5.97	<13	PASS
		1	12	5.81	<13	PASS
		1	24	6.14	<13	PASS
		12	0	6.37	<13	PASS
		12	6	6.5	<13	PASS
		12	13	6.62	<13	PASS
		25	0	6.51	<13	PASS

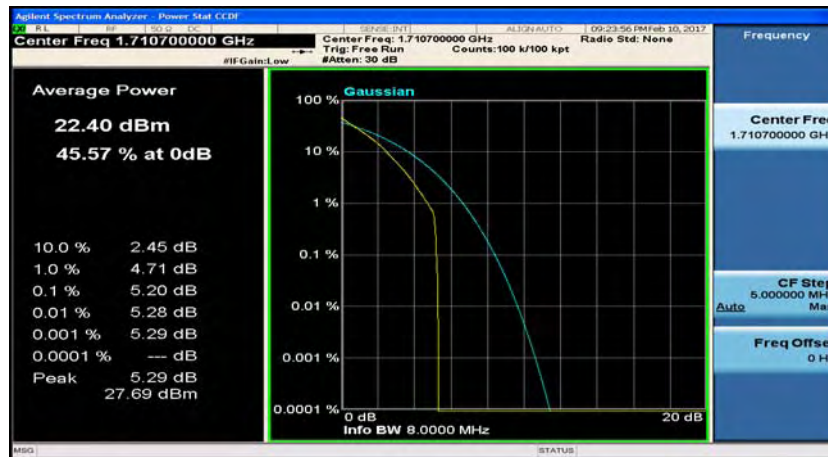


LTE Band 13						
Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	MCH	1	0	5.91	<13	PASS
		1	24	5.7	<13	PASS
		1	49	6.56	<13	PASS
		25	0	5.79	<13	PASS
		25	12	5.78	<13	PASS
		25	25	6.12	<13	PASS
		50	0	5.82	<13	PASS
16QAM	MCH	1	0	5.63	<13	PASS
		1	24	5.93	<13	PASS
		1	49	6.5	<13	PASS
		25	0	6.32	<13	PASS
		25	12	6.36	<13	PASS
		25	25	6.46	<13	PASS
		50	0	6.34	<13	PASS

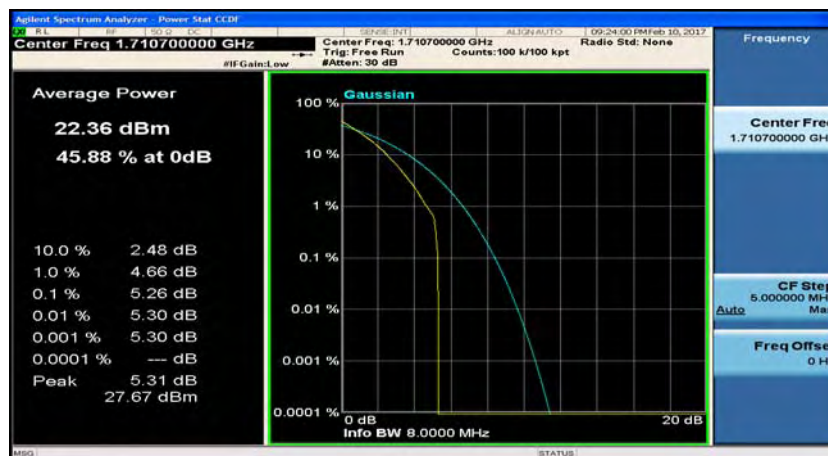


■ Test Graphs

(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#3

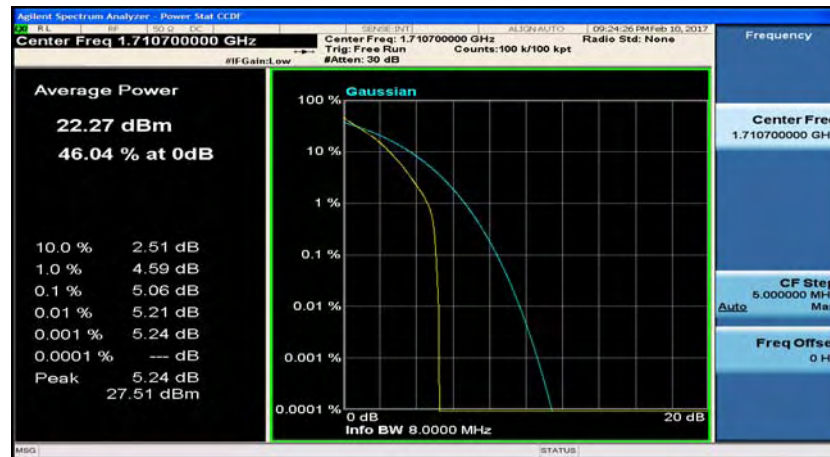


(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#5

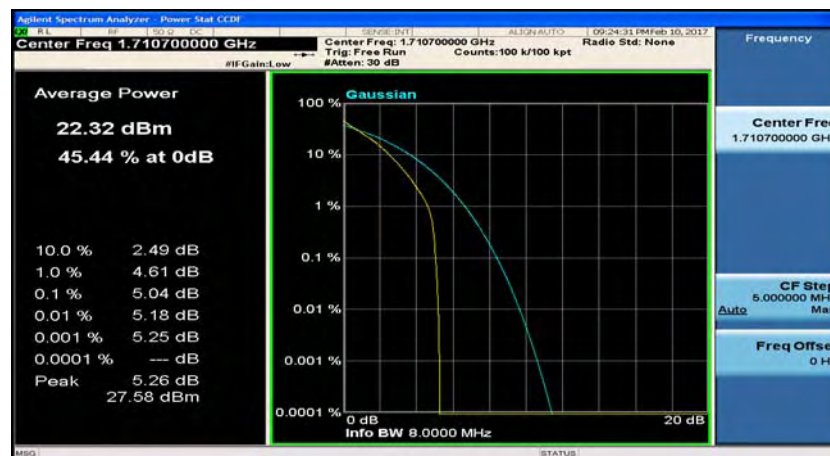




(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_3RB#2



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_3RB#3



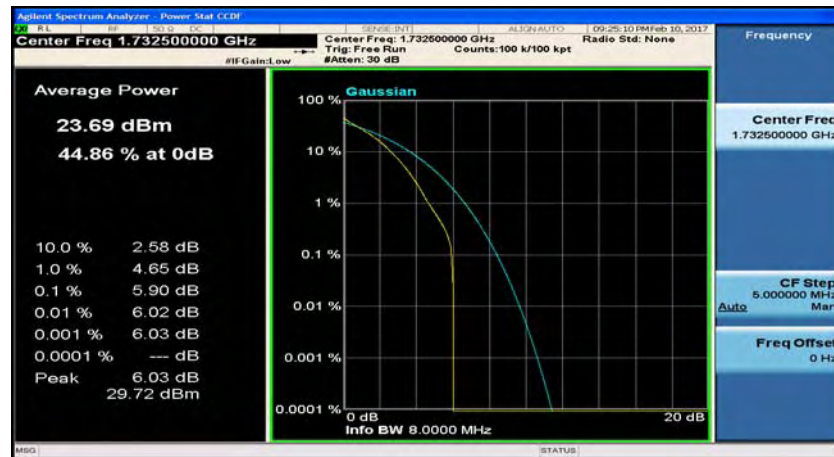


(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_QPSK_6RB#0

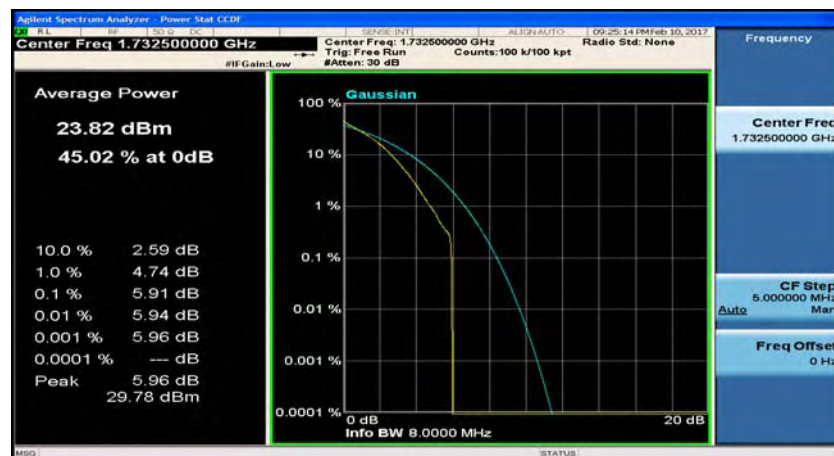




(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#3



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#5

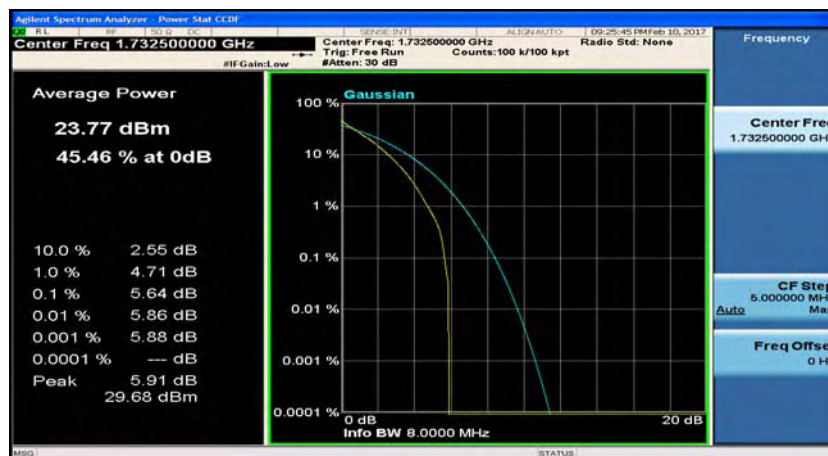




(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_3RB#2



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_3RB#3





(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_QPSK_6RB#0

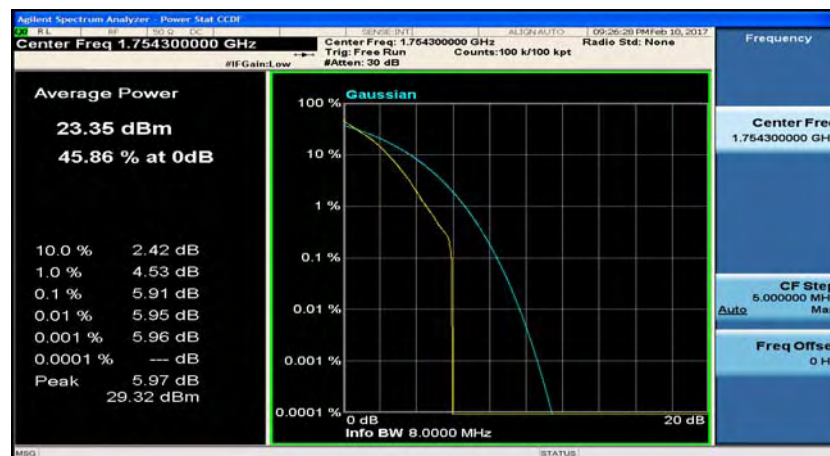




(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#3



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#5

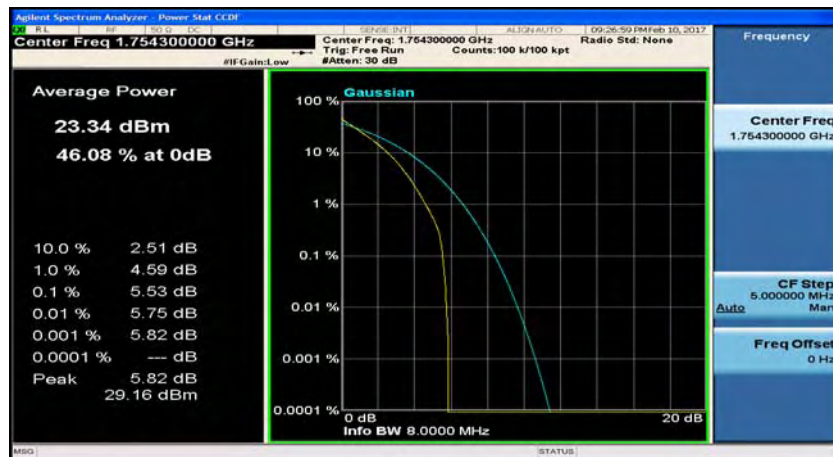




(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_3RB#2



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_3RB#3



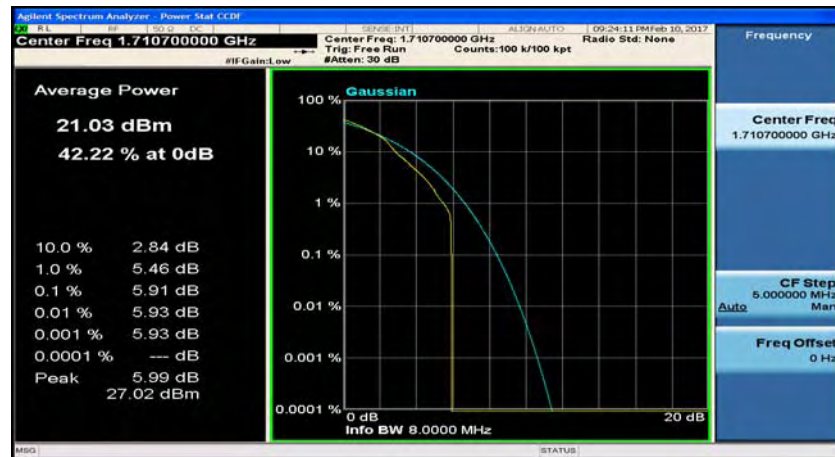


(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_QPSK_6RB#0





(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#3



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#5

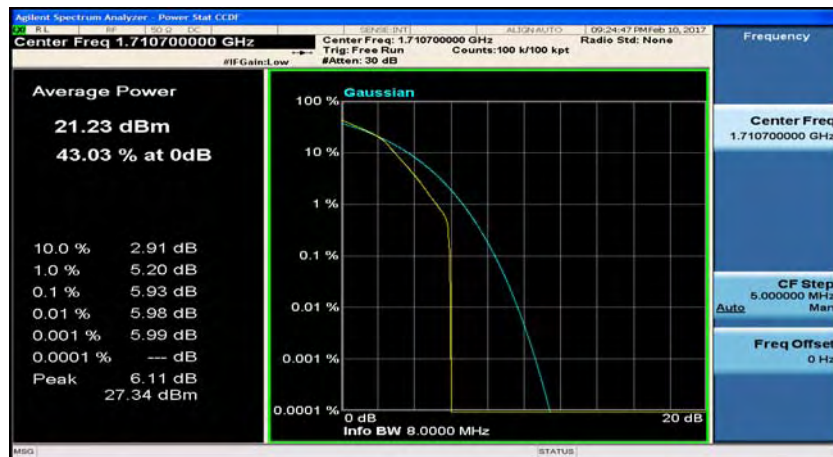




(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_3RB#2



(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_3RB#3



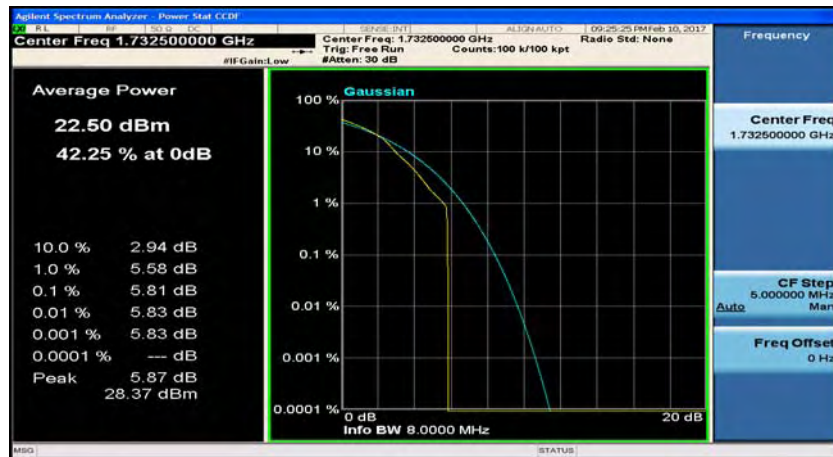


(LTE band 4_Channel Bandwidth: 1.4 MHz)_LCH_16QAM_6RB#0





(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#3



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#5

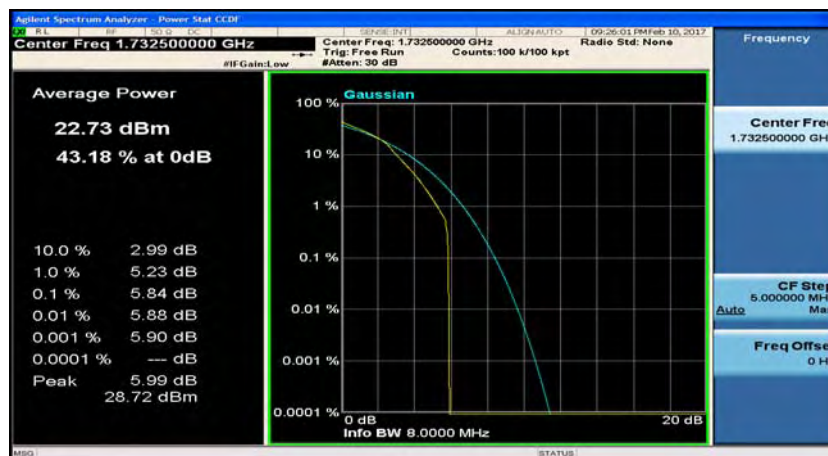




(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_3RB#2

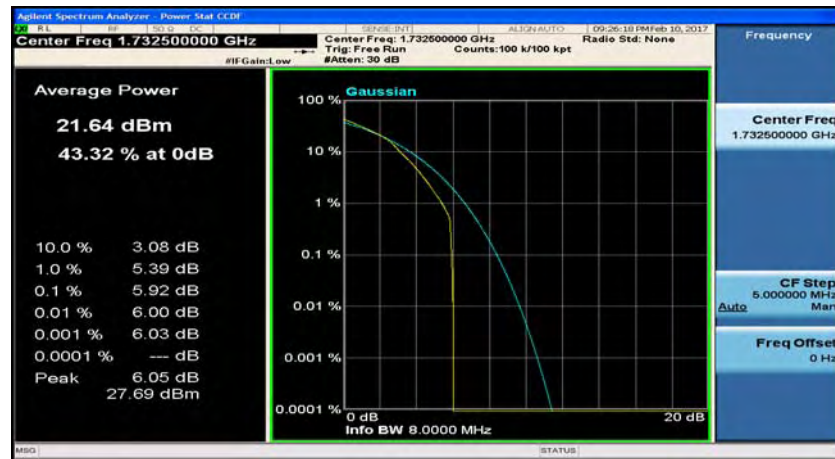


(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_3RB#3





(LTE band 4_Channel Bandwidth: 1.4 MHz)_MCH_16QAM_6RB#0

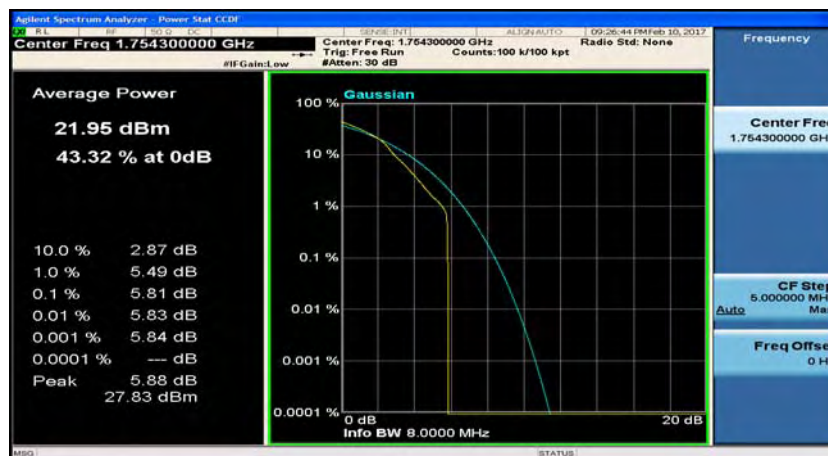




(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#3



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#5





(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_3RB#0



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_3RB#2



(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_3RB#3





(LTE band 4_Channel Bandwidth: 1.4 MHz)_HCH_16QAM_6RB#0

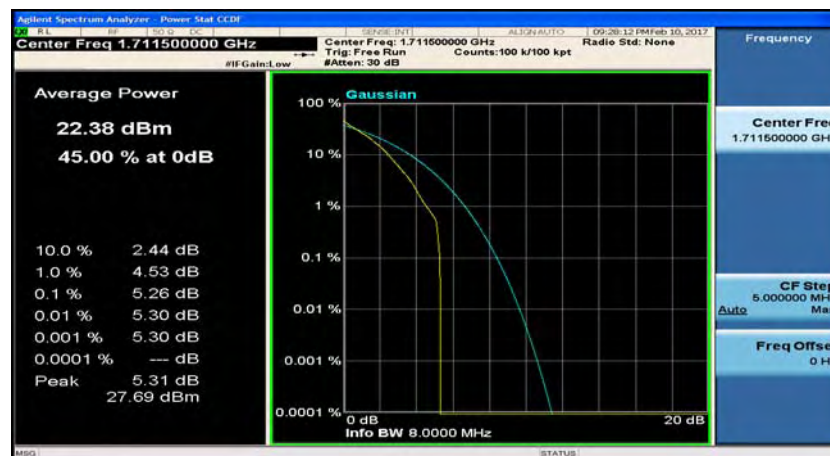




(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#7



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#14

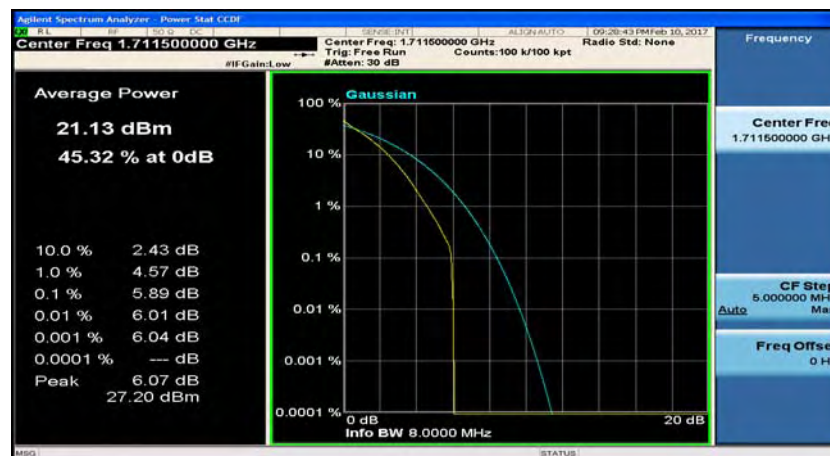




(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_8RB#4



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_8RB#7





(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_QPSK_15RB#0





(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#7



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#14

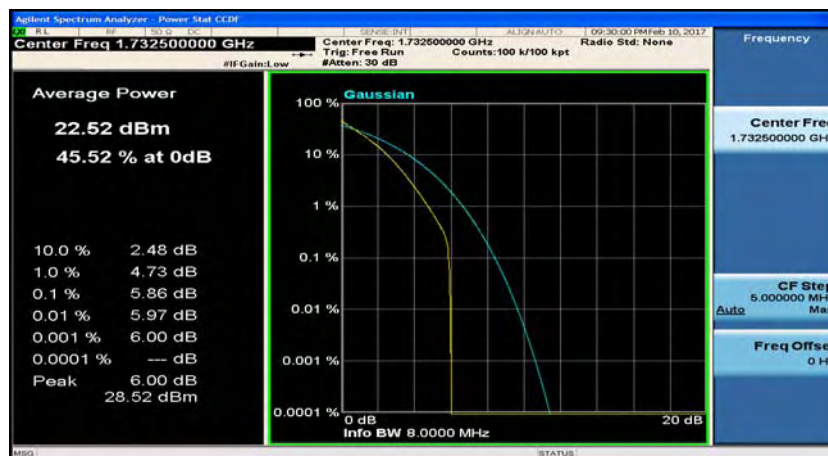




(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_8RB#4



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_8RB#7



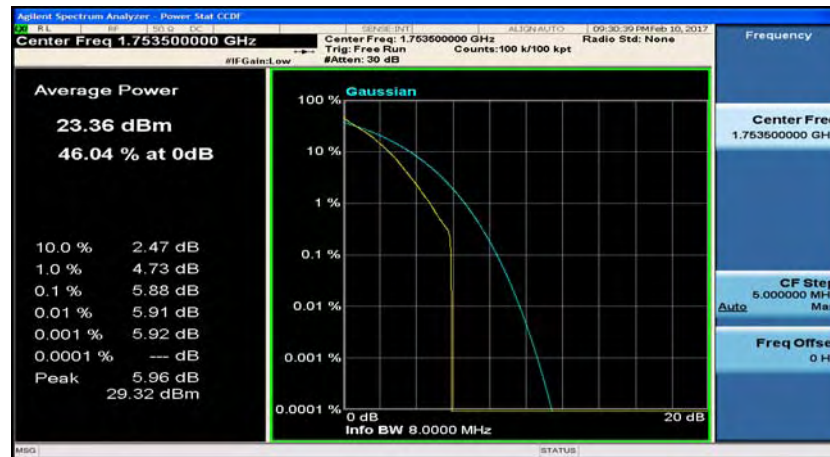


(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_QPSK_15RB#0

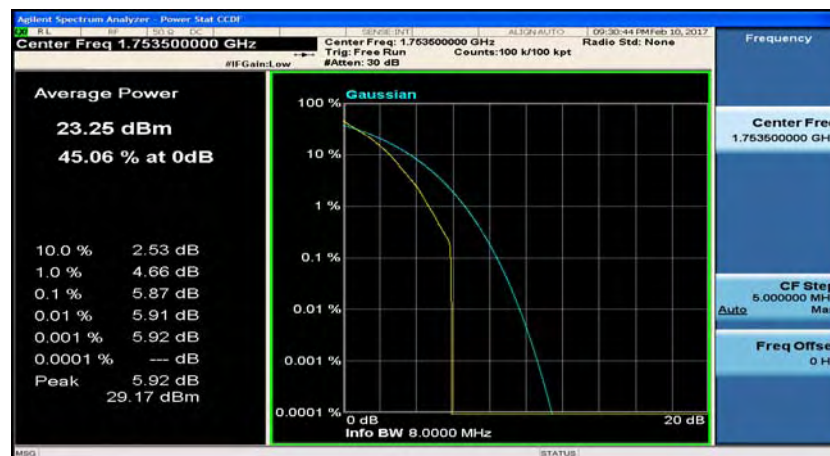




(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#7

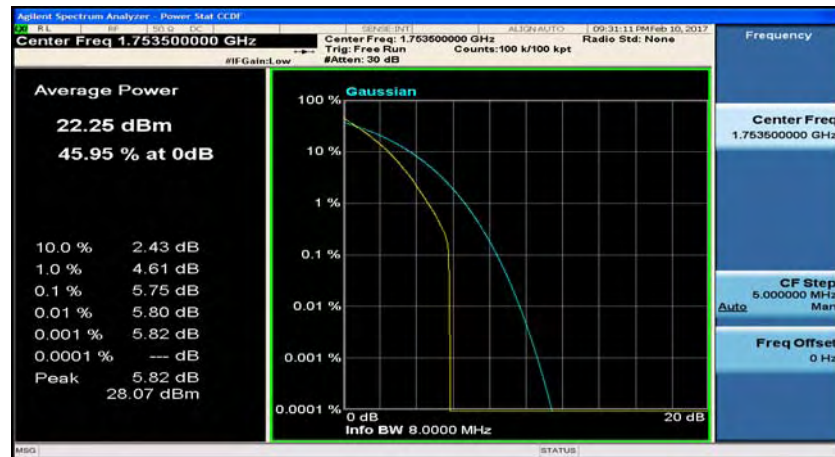


(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#14





(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_8RB#4

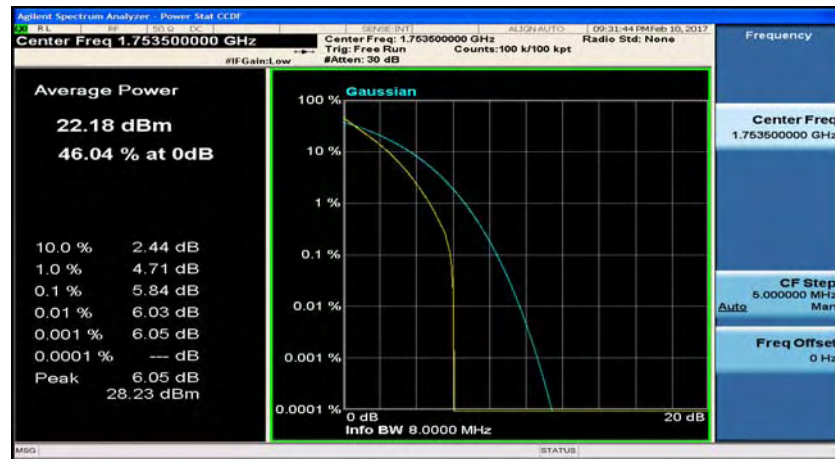


(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_8RB#7





(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_QPSK_15RB#0





(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_1RB#7



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_1RB#14





(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_8RB#4



(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_8RB#7





(LTE band 4_Channel Bandwidth: 3 MHz)_LCH_16QAM_15RB#0

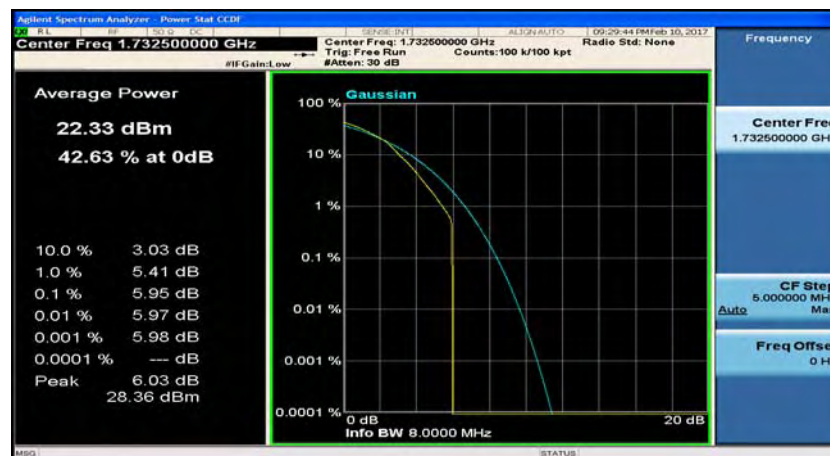




(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#7



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#14

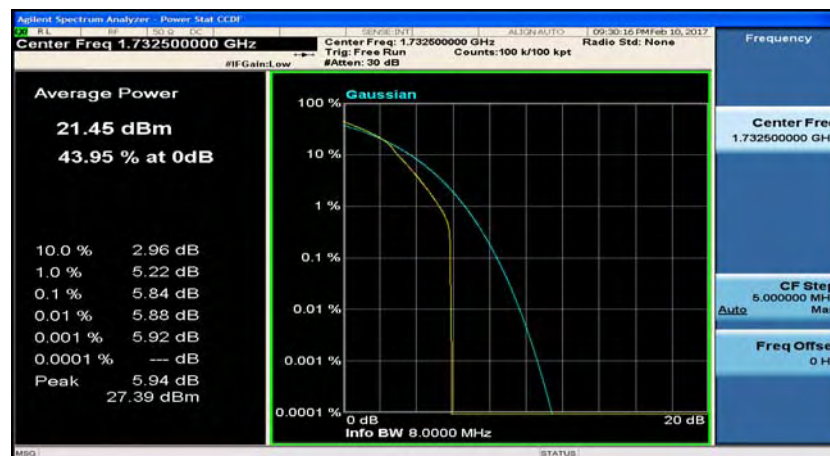




(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_8RB#4



(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_8RB#7





(LTE band 4_Channel Bandwidth: 3 MHz)_MCH_16QAM_15RB#0

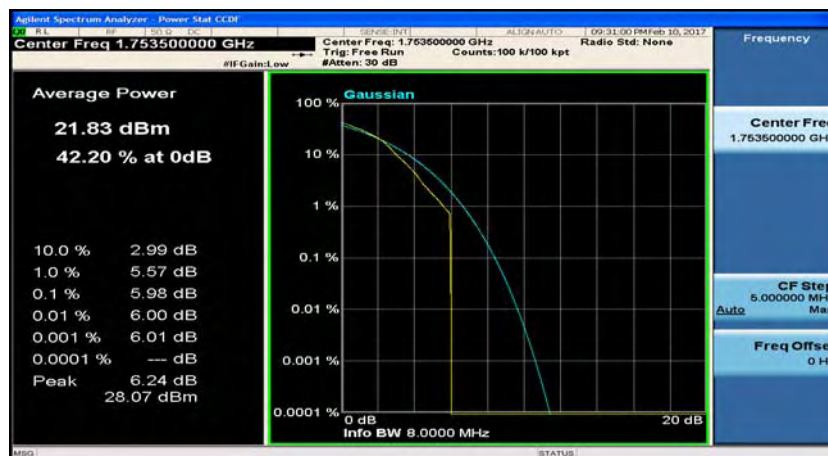




(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_1RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_1RB#7



(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_1RB#14

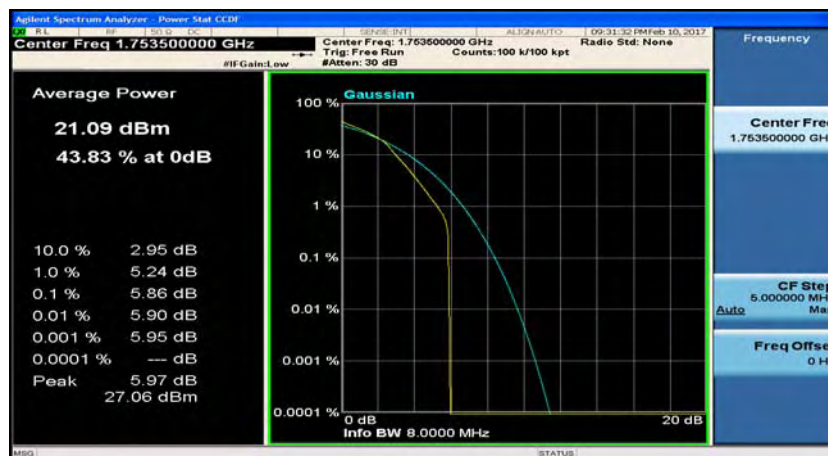




(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_8RB#0



(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_8RB#4

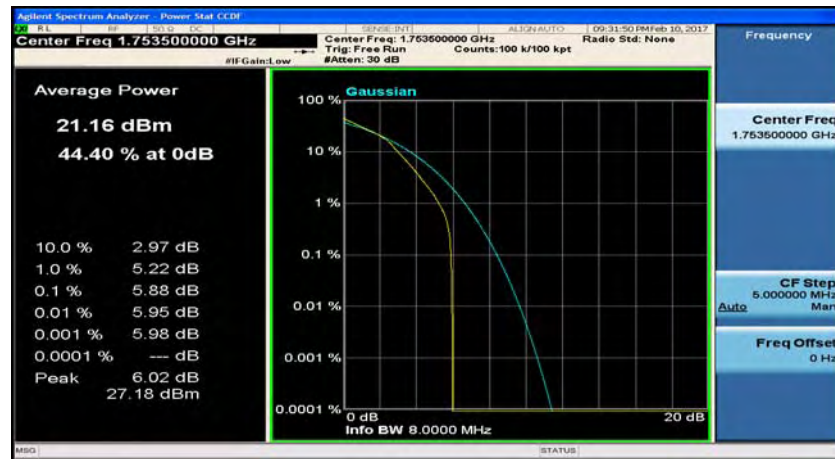


(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_8RB#7





(LTE band 4_Channel Bandwidth: 3 MHz)_HCH_16QAM_15RB#0





(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12



(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24

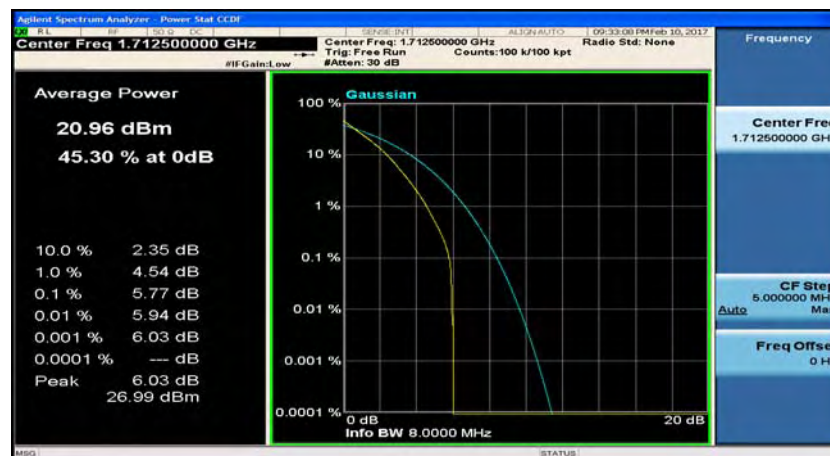




(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#6



(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_12RB#13





(LTE band 4_Channel Bandwidth: 5 MHz)_LCH_QPSK_25RB#0

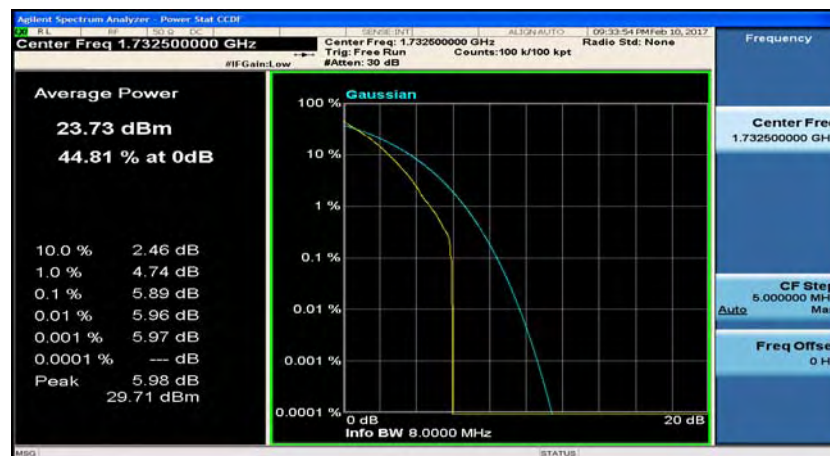




(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#12



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#24





(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_12RB#0



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_12RB#6



(LTE band 4_Channel Bandwidth: 5 MHz)_MCH_QPSK_12RB#13

