TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2AGTFR455LTE

Product: MOBILE PHONE

Model No.: R455

Additional Model No.: N/A

Trade Mark: RINNO

Report No.: TCT171019E018-2

Issued Date: Oct. 23, 2017

Issued for:

Distribuidora Sinn, S.A. de C.V.
Lago Zurich No.219 Piso 12 Colonia Ampliacion Granada, Del.Miguel Hidalgo, Mexico City 11529

Issued By:

Shenzhen Tongce Testing Lab.
1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China
TEL: +86-755-27673339
FAX: +86-755-27673332

TABLE OF CONTENTS

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. Test Certification

Product:	MOBILE PHONE
Model No.:	R455
Additional Model No.:	N/A
Trade Mark:	**RINNO**
Applicant:	Distribuidora Sinn, S.A. de C.V.
Address:	Lago Zurich No.219 Piso 12 Colonia Ampliacion Granada, Del.Miguel Hidalgo, Mexico City 11529
Manufacturer:	Z-TECH COMMUNICATION(SZ)CO.,LTD
Address:	7/F BLK D BAO'AN ZHI'GU YIN'TIAN RD. NO.4 XI'XIANG ST' BAO'AN Shenzhen China
Date of Test:	July 04, 2017 – July 06, 2017
Applicable Standards:	FCC CFR Title 47 Part 2: 2017 FCC CFR Title 47 Part24 Subpart E: 2017 FCC CFR Title 47 Part27: 2017

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:	Brews Xu	***Date:***	***July 06, 2017***
	Brews Xu		
Reviewed By:	Joe Zhou	***Date:***	***Oct. 23, 2017***
	Joe Zhou		
Approved By:	Tomsin	***Date:***	***Oct. 23, 2017***
	Tomsin		

SHENZHEN TONGCE TESTING LAB TCT

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

2. Test Result Summary

Requirement	CFR 47 Section	Result
Conducted Output Power	§2.1046; §24.232(c); §27.50(d)(4);	PASS
Effective (Isotropic) Radiated Power	§2.1046; §27.50(d)(4);	PASS
Occupied Bandwidth	§2.1049; §24.238(b); §27.53(a);	PASS
Band Edge	§2.1051; §27.53(h); §24.238(a);	PASS
Conducted Spurious Emission	§2.1051; §27.53(h); §24.238(a);	PASS
Field Strength of Spurious Radiation	§2.1053; §27.53(h); §24.238(a);	PASS
Frequency Stability for Temperature & Voltage	§2.1055;§27.54; §24.235;	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

3. EUT Description

Product:	MOBILE PHONE
Model No.:	R455
Additional Model No.:	N/A
Trade Mark:	**RINNO**
Tx Frequency:	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 7: 2502.50MHz ~ 2567.50MHz
Rx Frequency:	LTE Band 2: 1930.7 MHz ~ 1989.3 MHz LTE Band 4: 2110.7 MHz ~ 2154.3 MHz LTE Band 7: 2622.5 MHz ~ 2687.5 MHz
Bandwidth:	LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz /15MHz / 20MHz LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz /15MHz / 20MHz LTE Band 7: 5MHz /10MHz /15MHz / 20MHz
Maximum Output Power to Antenna:	LTE Band 2: 23.00dBm LTE Band 4: 22.99dBm LTE Band 7: 23.00dBm
99% Occupied Bandwidth:	LTE Band 2: 17M9G7D LTE Band 4: 17M9G7D LTE Band 7: 17M9G7D
Type of Modulation:	QPSK / 16QAM
Antenna Type:	PIFA antenna
Antenna Gain:	Band 2: 1.3dBi Band 4: 0.8dBi Band 7: -4.1dBi
Power Supply:	DC 3.7V 1700mAh 6.29Watt Ion de Litio
Adapter:	Adapter Information: Model: R455-A Entrada: AC 110-240V 50/60Hz 150mA Salida: DC 5V 800mA

Emission Designator

LTE Band 2	Maximum EIRP(W)		Emission Designator (99%OBW)
BW(MHz)	QPSK	16QAM	
1.4	0.1950	0.1888	1M10G7D
3	0.1888	0.1950	2M69G7D
5	0.1928	0.1982	4M54G7D
10	0.1954	0.1986	8M96G7D
15	0.1995	0.1977	13M54G7D
20	0.1778	0.1982	17M92G7D
LTE Band 4	Maximum EIRP(W)		Emission Designator (99%OBW)
BW(MHz)	QPSK	16QAM	
1.4	0.1845	0.1968	1M10G7D
3	0.1832	0.1991	2M69G7D
5	0.1950	0.1986	4M52G7D
10	0.1932	0.1972	8M95G7D
15	0.1941	0.1879	13M54G7D
20	0.1991	0.1950	17M93G7D
LTE Band 7	Maximum EIRP(W)		Emission Designator (99%OBW)
BW(MHz)	QPSK	16QAM	
5	0.1977	0.1968	4M53G7D
10	0.1986	0.1991	8M96G7D
15	0.1977	0.1995	13M53G7D
20	0.1982	0.1941	17M91G7D

4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

Description Operation Frequency

LTE Band 2(1.4MHz)		LTE Band 2(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18607	1850.7	18615	1851.5
18608	1850.8	18616	1851.6
….	….	….	….
18899	1879.9	18899	1879.9
18900	1880.0	18900	1880.0
18901	1880.1	18901	1880.1
…	…	…	…
19192	1909.2	19184	1908.4
19193	1909.3	19185	1908.5
LTE Band 2(5MHz)		LTE Band 2(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18625	1852.5	18650	1855.0
18626	1852.6	18651	1855.1
….	….	….	….
18899	1879.9	18899	1879.9
18900	1880.0	18900	1880.0
18901	1880.1	18901	1880.1
…	…	…	…
19174	1907.4	19149	1904.9
19175	1907.5	19150	1905.0
LTE Band 2(15MHz)		LTE Band 2(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18675	1857.5	18700	1860.0
18676	1857.6	18701	1860.1
….	….	….	….
18899	1879.9	18899	1879.9
18900	1880.0	18900	1880.0
18901	1880.1	18901	1880.1
…	…	…	…
19124	1902.4	19099	1899.9
19125	1902.5	19100	1900.0

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

LTE Band 4(1.4MHz)		LTE Band 4(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19957	1710.70	19965	1711.50
19958	1710.80	19966	1711.60
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20392	1754.20	20384	1753.40
20393	1754.30	20385	1753.50
LTE Band 4(5MHz)		LTE Band 4(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19975	1712.50	20000	1715.00
19976	1712.60	20001	1715.10
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20374	1752.40	20349	1749.90
20375	1752.50	20350	1750.00
LTE Band 4(15MHz)		LTE Band 4(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20025	1717.50	20050	1720.00
20026	1717.60	20051	1720.10
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20324	1747.40	20299	1744.90
20325	1747.50	20300	1745.00

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

LTE Band 7(5MHz)		LTE Band 7(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20775	2502.5	20800	2505.0
20776	2502.6	20801	2505.1
….	….	….	….
21099	2534.9	21099	2534.9
21100	2535.0	21100	2535.0
21101	2535.1	21101	2535.1
…	…	…	…
21424	2567.4	21399	2564.9
21425	2567.5	21400	2565.0
LTE Band 7(15MHz)		LTE Band 7(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20825	2507.5	20850	2510.0
20826	2507.6	20851	2510.1
….	….	….	….
21099	2534.9	21099	2534.9
21100	2535.0	21100	2535.0
21101	2535.1	21101	2535.1
…	…	…	…
21374	2562.4	21349	2559.9
21375	2562.5	21350	2560.0

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

4.2. Test Mode

All modes and data rates and positions were investigated.
Test modes are chosen to be reported as the worst case configuration below:

Test Mode		
Band	**Radiated TCs**	**Conducted TCs**
LTE Band 2	QPSK Link (1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz)	16QAM Link (1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz)
LTE Band 4	QPSK Link (1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz)	16QAM Link (1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz)
LTE Band 7	QPSK Link (5MHz / 10MHz / 15MHz / 20MHz)	16QAM Link (5MHz / 10MHz / 15MHz / 20MHz)

Antenna port conducted and radiated test items were performed according to KDB 971168 D02 Power Meas. License Digital Systems v02r02 with maximum output power.
Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	7			v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	7			v	v	v	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	2	v	v	v	v	v	v	v	v			v	v	v	v
	4	v	v	v	v	v	v	v	v			v	v	v	v
	7			v	v	v	v	v	v	v	v	v	v	v	v

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Conducted Band Edge	2	v	v	v	v	v	v	v	v	v		v	v		v
	4	v	v	v	v	v	v	v	v	v		v	v		v
	7			v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	2	v	v	v	v	v	v	v	v	v			v	v	v
	4	v	v	v	v	v	v	v	v	v			v	v	v
	7			v	v	v	v	v	v	v			v	v	v
Frequency Stability	2				v			v	v			v		v	
	4				v			v	v			v		v	
	7				v			v	v			v		v	
E.R.P./ E.I.R.P.	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	7			v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	2	v						v	v	v			v	v	v
	4	v						v	v	v			v	v	v
	7			v				v	v	v			v	v	v
Note	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported.														

4.3. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

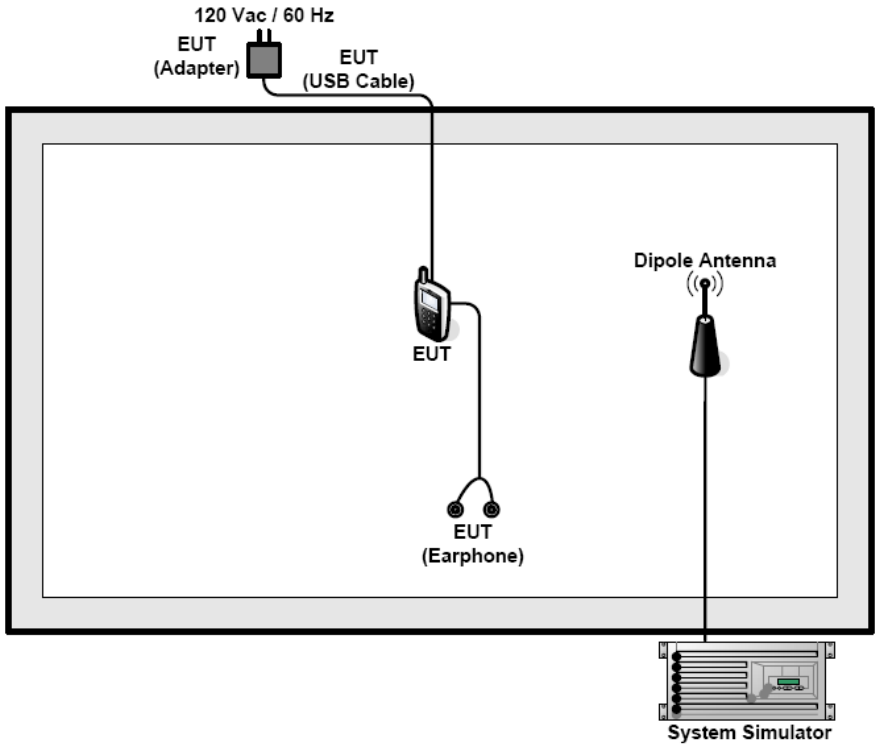
Equipment	Model No.	Serial No.	FCC ID	Trade Name

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4. Configuration of Tested System



4.5. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level. The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

  Shenzhen Tongce Testing Lab.

  The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

5.3. Measurement Uncertainty

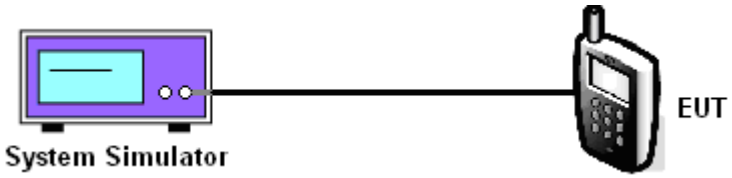
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

6. Test Results and Measurement Data

6.1. Conducted Output Power Measurement

6.1.1. Test Specification

Test Requirement:	FCC part 27.50(d), FCC part 24.232(c)
Test Method:	FCC part 2.1046
Limits:	LTE Band 2: 2W LTE Band 4: 1W LTE Band 7: 2W
Test Setup:	
Test Procedure:	1. The transmitter output port was connected to the system simulator. 2. Set EUT at maximum power through system simulator. 3. Select lowest, middle, highest channels for each band and different modulation. 4. Measure and record the power level from the system simulator.
Test Result:	PASS

6.1.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jun. 12, 2018
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-02	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.1.3. Test data

Band 2						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18607 1850.7MHz	Channel 18900 1880.0MHz	Channel 19193 1909.3MHz
1.4MHz	QPSK	1	0	22.02	22.15	22.37
		1	2	22.35	21.90	22.61
		1	5	22.16	22.08	22.24
		3	0	22.12	22.44	22.54
		3	1	22.56	21.97	22.19
		3	2	22.72	22.47	22.57
		6	0	22.22	21.96	22.31
	16QAM	1	0	22.15	22.08	21.79
		1	2	21.98	22.19	21.68
		1	5	21.91	21.96	22.08
		3	0	22.16	22.24	22.07
		3	1	21.74	21.49	22.24
		3	2	21.65	22.21	21.73
		6	0	22.16	21.80	21.89
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18615 1851.5MHz	Channel 18900 1880.0MHz	Channel 19185 1908.5MHz
3MHz	QPSK	1	0	22.63	22.21	22.27
		1	8	22.00	22.43	22.28
		1	14	22.69	22.41	22.66
		8	0	22.13	22.31	22.25
		8	4	22.47	21.87	22.71
		8	7	22.18	22.22	22.42
		15	0	22.08	22.62	22.06
	16QAM	1	0	22.04	22.06	21.53
		1	8	22.23	21.55	21.87
		1	15	21.61	21.82	21.71
		8	0	22.27	22.12	22.11
		8	4	22.02	22.13	21.59
		8	7	22.20	22.03	22.31
		15	0	21.61	22.07	22.18

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18625 1852.5MHz	Channel 18900 1880.0MHz	Channel 19175 1907.5MHz
5MHz	QPSK	1	0	22.42	22.53	22.58
		1	13	22.16	21.92	22.34
		1	24	22.52	22.66	22.40
		12	0	22.05	22.39	22.46
		12	6	22.32	22.45	22.09
		12	13	22.59	21.95	21.95
		25	0	22.07	21.94	22.36
	16QAM	1	0	21.61	21.54	21.93
		1	13	21.62	21.99	22.14
		1	24	21.66	21.69	21.57
		12	0	21.69	22.26	22.06
		12	6	22.10	21.52	22.04
		12	13	21.71	21.44	22.00
		25	0	21.68	21.79	21.53

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18650 1855.0MHz	Channel 18900 1880.0MHz	Channel 19150 1905.0MHz
10MHz	QPSK	1	0	21.93	22.61	22.15
		1	25	22.05	22.45	22.20
		1	49	22.60	22.16	22.54
		25	0	22.39	22.10	22.53
		25	13	22.08	22.58	22.50
		25	25	21.98	22.37	22.28
		50	0	22.59	22.26	22.10
	16QAM	1	0	21.90	21.73	21.93
		1	25	21.83	21.79	21.78
		1	49	22.20	21.74	21.71
		25	0	21.54	22.20	21.88
		25	13	21.50	21.68	22.00
		25	25	21.67	21.88	21.95
		50	0	21.73	21.58	21.67

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18675 1857.5MHz	Channel 18900 1880.0MHz	Channel 19125 1902.5MHz
15MHz	QPSK	1	0	22.06	22.16	22.66
		1	38	22.38	22.00	22.53
		1	74	22.52	22.27	22.24
		36	0	22.63	22.72	22.51
		36	18	22.07	22.41	22.00
		36	39	21.96	22.34	22.01
		75	0	22.40	22.05	22.56
	16QAM	1	0	21.67	22.31	21.88
		1	38	21.77	22.22	21.92
		1	74	21.88	21.74	21.55
		36	0	21.91	22.06	21.74
		36	18	22.03	21.61	21.71
		36	39	22.21	22.23	21.99
		75	0	21.99	21.99	21.48

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18700 1860.0MHz	Channel 18900 1880.0MHz	Channel 19100 1900.0MHz
20MHz	QPSK	1	0	23.06	22.86	22.13
		1	50	22.45	22.66	22.48
		1	99	22.72	22.28	22.42
		50	0	22.47	22.77	22.24
		50	25	23.07	22.72	22.69
		50	50	22.93	22.81	22.20
		100	0	23.08	22.56	22.15
	16QAM	1	0	22.14	22.38	21.95
		1	50	22.48	22.40	22.28
		1	99	22.09	22.73	22.31
		50	0	22.22	22.62	22.35
		50	25	22.61	22.62	22.03
		50	50	22.06	22.80	22.31
		100	0	22.26	22.65	22.60

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Band 4						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 19957 1710.7MHz	Channel 20175 1732.5MHz	Channel 20393 1754.3MHz
1.4MHz	QPSK	1	0	22.16	22.25	21.83
		1	2	21.87	22.20	22.21
		1	5	21.74	22.30	22.21
		3	0	21.94	22.14	21.88
		3	1	22.07	22.00	22.03
		3	2	21.72	22.24	21.91
		6	0	22.36	22.22	21.55
	16QAM	1	0	21.45	21.54	21.35
		1	2	21.58	21.83	21.82
		1	5	21.40	21.88	21.94
		3	0	21.61	21.73	21.67
		3	1	21.25	21.54	21.96
		3	2	21.45	21.42	21.91
		6	0	21.59	21.61	21.55
Bandwidth	Mode	RB Size	RB Offset	Actual output po2wer(dBm)		
				Channel 19965 1711.5MHz	Channel 20175 1732.5MHz	Channel 20385 753.5MHz
3MHz	QPSK	1	0	22.34	21.66	21.81
		1	8	21.83	22.04	22.15
		1	14	22.06	21.95	22.20
		8	0	21.74	22.41	22.06
		8	4	21.64	22.07	21.88
		8	7	22.20	21.94	21.74
		15	0	21.82	21.94	22.20
	16QAM	1	0	21.96	21.80	21.44
		1	8	21.67	21.17	21.85
		1	15	21.68	21.29	21.50
		8	0	21.35	21.69	21.99
		8	4	21.61	21.28	21.97
		8	7	21.53	21.97	21.87
		15	0	21.39	24.42	21.54

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 19975 1712.5MHz	Channel 20175 1732.5MHz	Channel 20375 1752.5MHz
5MHz	QPSK	1	0	21.59	21.95	22.00
		1	13	21.74	22.27	22.35
		1	24	22.18	21.72	21.90
		12	0	22.08	21.73	22.23
		12	6	21.96	22.35	21.92
		12	13	21.77	22.34	22.33
		25	0	22.21	22.29	21.73
	16QAM	1	0	21.28	21.27	21.32
		1	13	21.66	21.36	21.48
		1	24	21.82	21.37	21.96
		12	0	21.71	21.46	22.20
		12	6	21.92	21.61	21.93
		12	13	21.89	21.30	22.33
		25	0	21.37	21.37	21.86
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20000 1715.0MHz	Channel 20175 1732.5MHz	Channel 20350 1750.0MHz
10MHz	QPSK	1	0	22.39	22.07	22.07
		1	25	21.77	21.65	21.70
		1	49	21.96	21.60	21.66
		25	0	21.89	21.73	21.70
		25	13	22.39	22.24	22.05
		25	25	21.91	21.60	21.94
		50	0	21.83	21.84	22.25
	16QAM	1	0	21.51	21.86	21.49
		1	25	21.95	21.24	21.62
		1	49	21.75	21.78	21.22
		25	0	21.37	21.35	21.91
		25	13	21.72	21.91	21.39
		25	25	21.67	21.88	21.87
		50	0	21.71	21.77	21.49

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20025 1717.5MHz	Channel 20175 1732.5MHz	Channel 20325 1747.5MHz
15MHz	QPSK	1	0	21.95	22.32	22.45
		1	38	22.32	22.15	22.16
		1	74	22.03	21.99	21.76
		36	0	22.43	22.24	21.89
		36	18	21.86	22.53	22.45
		36	39	21.85	21.98	22.04
		75	0	21.97	22.12	22.46
	16QAM	1	0	21.87	21.68	21.53
		1	38	21.67	21.49	21.80
		1	74	22.01	22.05	21.59
		36	0	21.65	21.53	21.89
		36	18	22.02	21.88	21.73
		36	39	21.50	21.61	21.52
		75	0	21.62	21.54	21.46
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20050 1720.0MHz	Channel 20175 1732.5MHz	Channel 20300 1745.0MHz
20MHz	QPSK	1	0	22.39	22.10	22.25
		1	50	22.53	22.41	22.12
		1	99	22.82	22.22	22.58
		50	0	22.24	22.19	22.80
		50	25	22.69	22.83	22.70
		50	50	22.60	22.79	22.60
		100	0	22.51	22.30	22.70
	16QAM	1	0	21.75	21.99	22.30
		1	50	22.32	22.19	21.95
		1	99	21.89	22.14	22.25
		50	0	22.15	22.12	22.12
		50	25	22.08	21.77	22.07
		50	50	21.73	21.70	22.32
		100	0	21.97	21.85	21.88

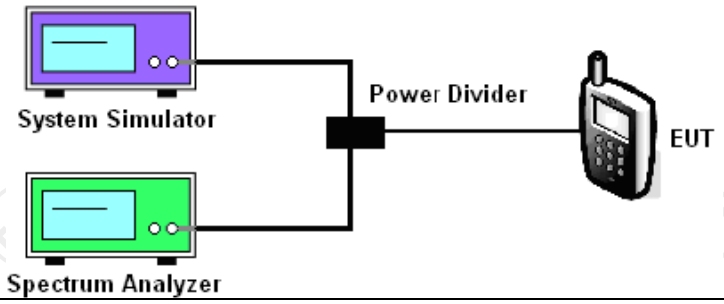
Band 7						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20775 2502.5MHz	Channel 21100 2535MHz	Channel 21425 2567.5MHz
5MHz	QPSK	1	0	22.32	22.49	22.09
		1	13	22.07	22.06	21.97
		1	24	22.46	22.86	21.87
		12	0	22.49	22.56	22.47
		12	6	22.06	22.08	22.18
		12	13	22.86	22.18	22.69
		25	0	22.56	22.64	22.01
	16QAM	1	0	21.07	21.68	21.44
		1	13	21.61	21.02	21.27
		1	24	21.23	21.50	21.23
		12	0	21.68	21.57	21.75
		12	6	21.02	21.59	21.54
		12	13	21.50	21.71	21.78
		25	0	21.57	21.54	21.21
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20800 2505MHz	Channel 21100 2535MHz	Channel 21400 2565MHz
10MHz	QPSK	1	0	22.13	21.77	22.36
		1	25	22.48	22.39	21.60
		1	49	22.25	22.00	22.33
		25	0	22.02	22.29	22.30
		25	13	21.87	22.02	21.87
		25	25	21.93	22.16	21.87
		50	0	22.33	22.30	21.94
	16QAM	1	0	21.69	20.79	21.16
		1	25	21.90	21.39	20.71
		1	49	21.03	21.42	21.50
		25	0	20.71	20.98	20.96
		25	13	20.51	20.98	20.61
		25	25	20.68	21.44	21.41
		50	0	20.50	21.08	21.50

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20825 2507.5MHz	Channel 21100 2535MHz	Channel 21375 2562.5MHz
15MHz	QPSK	1	0	22.49	21.76	22.14
		1	38	22.31	22.15	21.75
		1	74	21.50	21.61	22.39
		36	0	21.43	22.21	22.27
		36	18	22.00	22.51	21.71
		36	39	21.78	22.30	21.39
		75	0	22.39	22.30	21.56
	16QAM	1	0	20.85	20.50	21.38
		1	38	21.31	20.66	21.14
		1	74	20.66	21.11	21.16
		36	0	21.19	20.63	20.66
		36	18	20.91	20.61	20.64
		36	39	21.42	21.25	20.30
		75	0	20.50	20.98	20.08

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20850 2510MHz	Channel 21100 2535MHz	Channel 21350 2560MHz
20MHz	QPSK	1	0	22.21	21.81	21.82
		1	50	22.05	21.85	21.92
		1	99	22.36	22.6	22.13
		50	0	22.17	22.16	21.91
		50	25	21.79	22.01	21.90
		50	50	22.38	22.29	21.24
		100	0	21.46	21.65	21.73
	16QAM	1	0	21.32	21.24	20.92
		1	50	21.39	20.61	20.69
		1	99	20.66	21.43	21.41
		50	0	20.69	21.34	20.84
		50	25	20.94	20.73	20.86
		50	50	21.11	20.81	20.62
		100	0	21.27	20.92	20.95

6.2. 99% Occupied Bandwidth and 26dB Bandwidth Measurement

6.2.1. Test Specification

Test Requirement:	FCC part 27.53(a), FCC part 24.238(b)
Test Method:	FCC part 2.1049
Limit:	N/A
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 4.2. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The 99% occupied bandwidth were measured, set RBW= 1% of OBW, VBW= 3*RBW, sample detector, trace maximum hold. 5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.
Test Result:	PASS

6.2.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jun. 12, 2018
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-02	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.2.3. Test Data

EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 2	1.4MHz	Low range	6	0	1095.40	1287.00
		Mid range	6	0	1099.30	1268.00
		High range	6	0	1094.70	1261.00
	3MHz	Low range	15	0	2688.30	2914.00
		Mid range	15	0	2687.90	2918.00
		High range	15	0	2683.60	2921.00
	5MHz	Low range	25	0	4527.10	5039.00
		Mid range	25	0	4515.40	5024.00
		High range	25	0	4540.90	5039.00
	10MHz	Low range	50	0	8936.30	9719.00
		Mid range	50	0	8933.10	9643.00
		High range	50	0	8961.80	9847.00
	15MHz	Low range	75	0	13473.7	14735.0
		Mid range	75	0	13492.5	14849.0
		High range	75	0	13535.3	15068.0
	20MHz	Low range	100	0	17917.9	19532.0
		Mid range	100	0	17869.8	19428.0
		High range	100	0	17903.3	19420.0

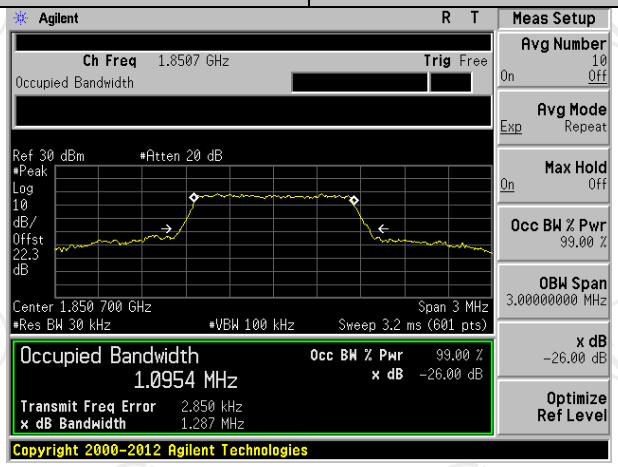
EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 4	1.4MHz	Low range	6	0	1098.70	1264.00
		Mid range	6	0	1093.20	1257.00
		High range	6	0	1094.70	1254.00
	3MHz	Low range	15	0	2686.40	2897.00
		Mid range	15	0	2684.50	2911.00
		High range	15	0	2687.30	2911.00
	5MHz	Low range	25	0	4524.10	5010.00
		Mid range	25	0	4514.10	5010.00
		High range	25	0	4522.10	4998.00
	10MHz	Low range	50	0	8948.20	9762.00
		Mid range	50	0	8932.00	9588.00
		High range	50	0	8943.20	9757.00
	15MHz	Low range	75	0	13538.4	14788.0
		Mid range	75	0	13412.0	14809.0
		High range	75	0	13515.2	14755.0
	20MHz	Low range	100	0	17899.0	19445.0

		Mid range	100	0	17848.2	19314.0
		High range	100	0	17929.5	19267.0

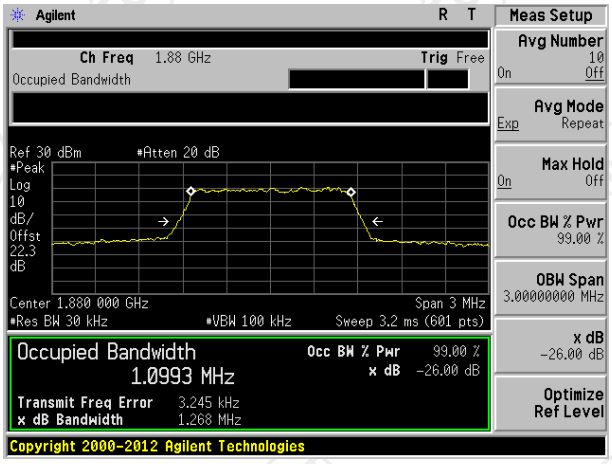
EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 7	5MHz	Low range	25	0	4522.00	4991.00
		Mid range	25	0	4532.00	5003.00
		High range	25	0	4524.20	5052.00
	10MHz	Low range	50	0	8951.40	9605.00
		Mid range	50	0	8946.40	9646.00
		High range	50	0	8964.90	9776.00
	15MHz	Low range	75	0	13486.1	14851.0
		Mid range	75	0	13486.3	14581.0
		High range	75	0	13528.0	14629.0
	20MHz	Low range	100	0	17871.9	19379.0
		Mid range	100	0	17882.0	19333.0
		High range	100	0	17906.8	19437.0

Test plot as follows:

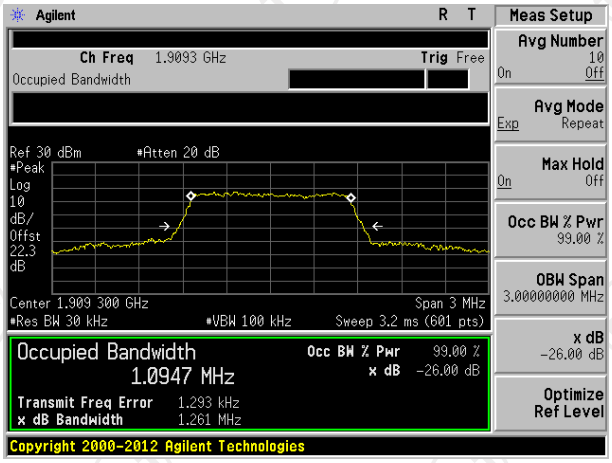
Test band: LTE Band 2	Channel Bandwidth: 1.4MHz



Lowest channel

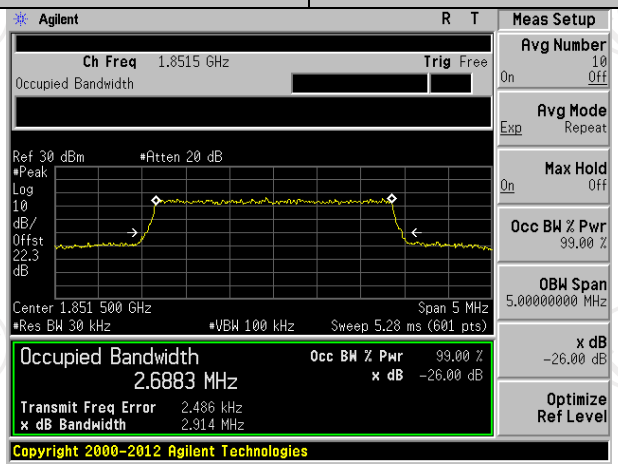


Middle channel

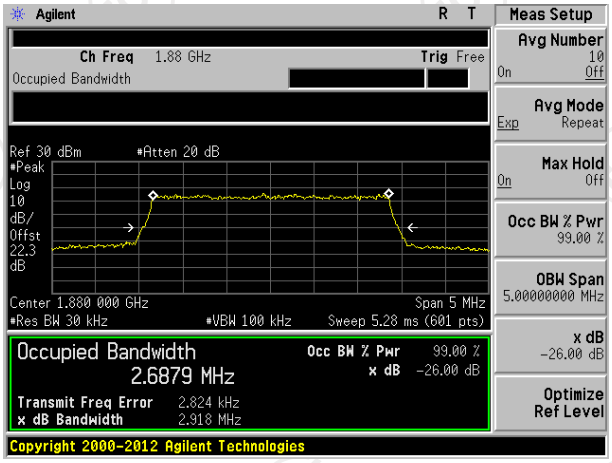


Highest channel

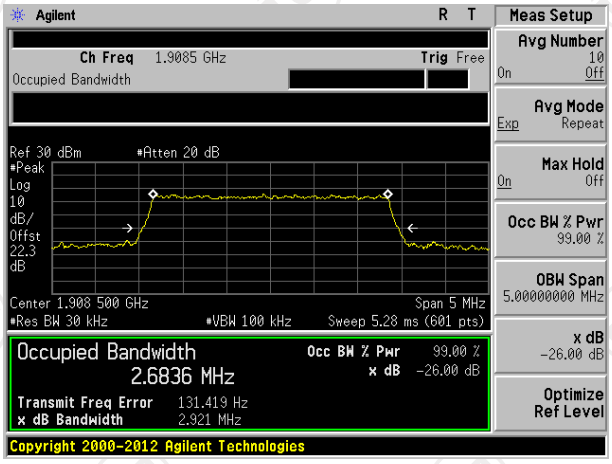
Test band: LTE Band 2	Channel Bandwidth: 3MHz



Lowest channel

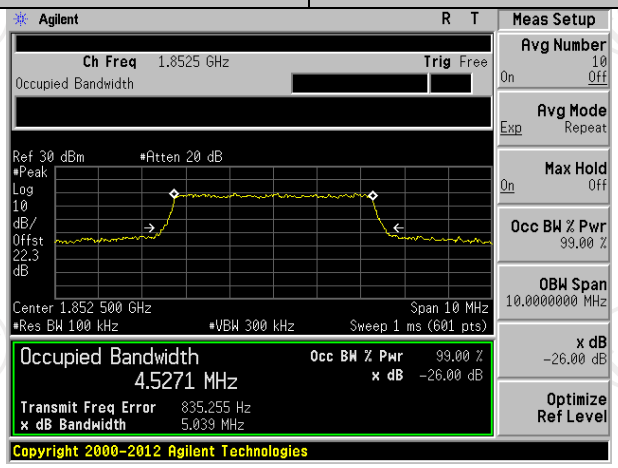


Middle channel

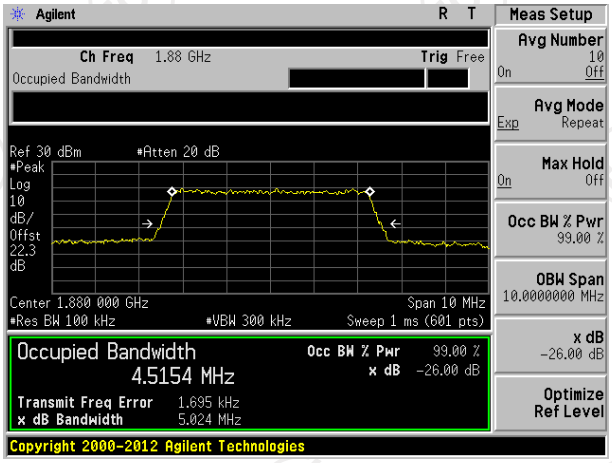


Highest channel

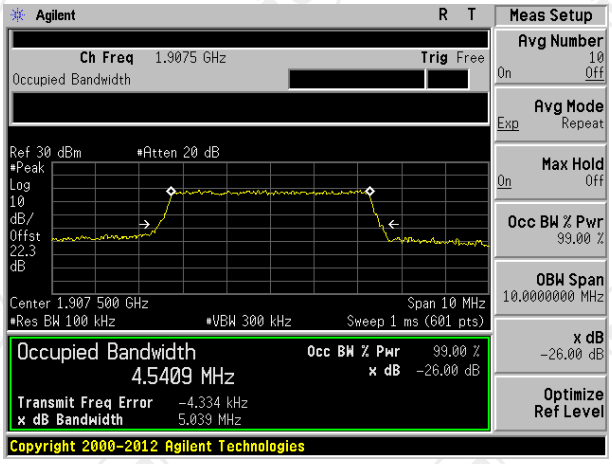
Test band: LTE Band 2	Channel Bandwidth: 5MHz



Lowest channel

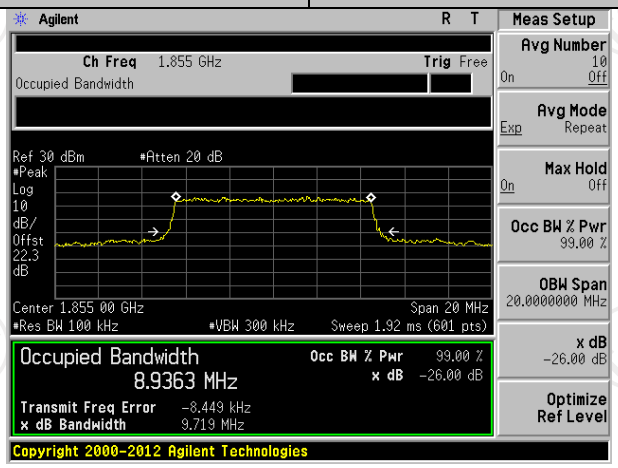


Middle channel

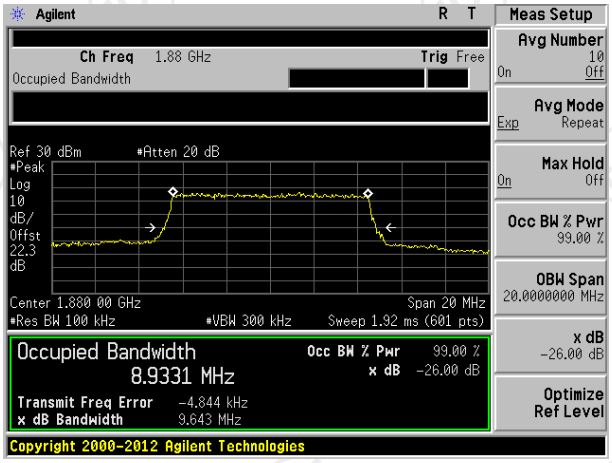


Highest channel

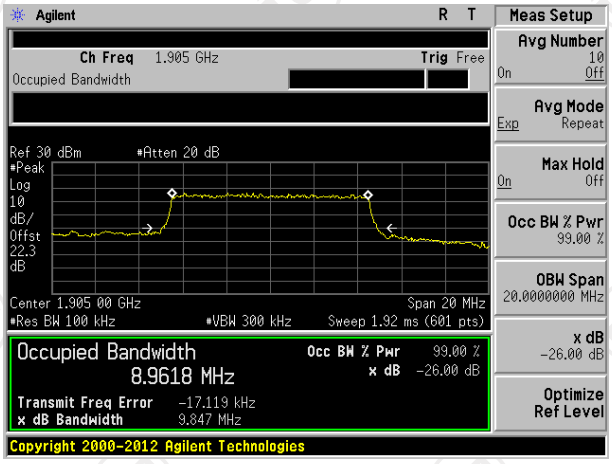
Test band: LTE Band 2	Channel Bandwidth: 10MHz



Lowest channel

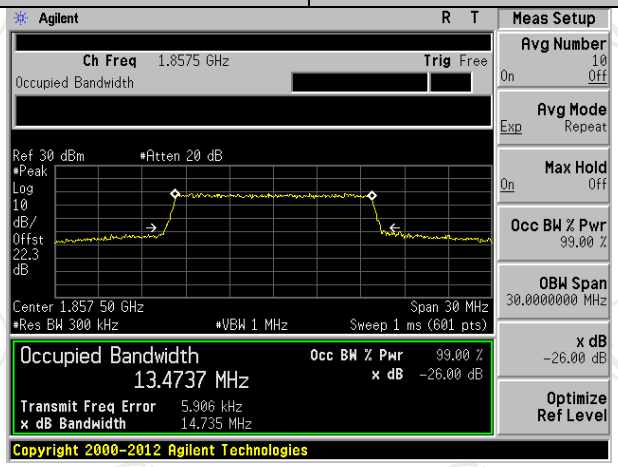


Middle channel

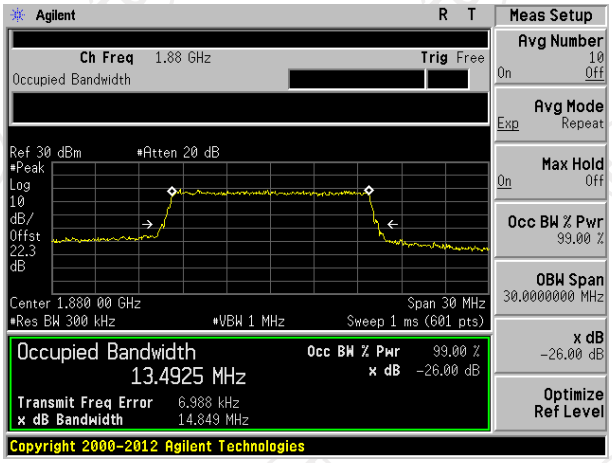


Highest channel

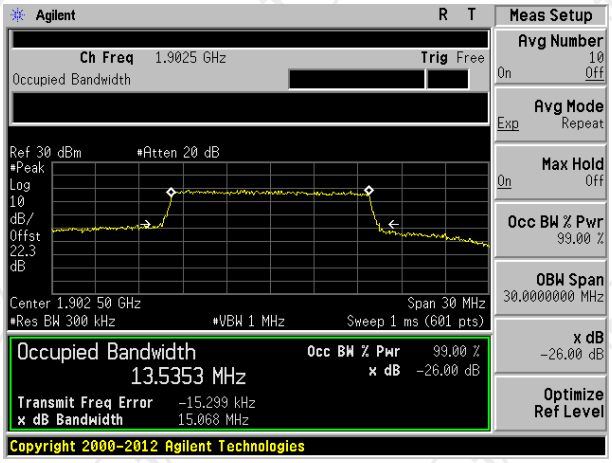
Test band: LTE Band 2	Channel Bandwidth: 15MHz



Lowest channel

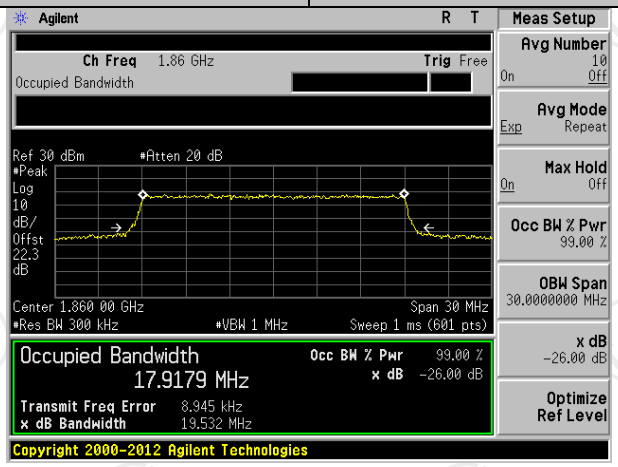


Middle channel

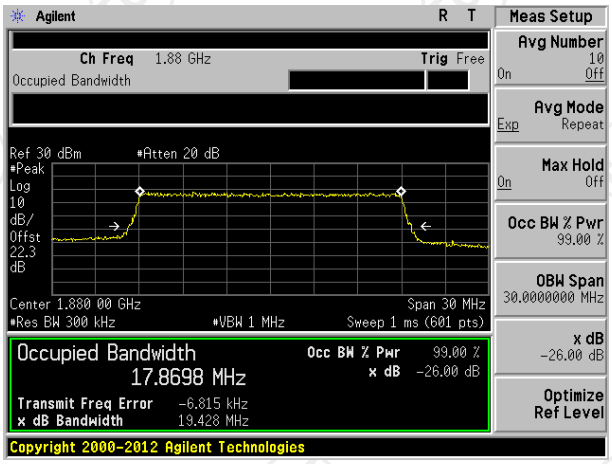


Highest channel

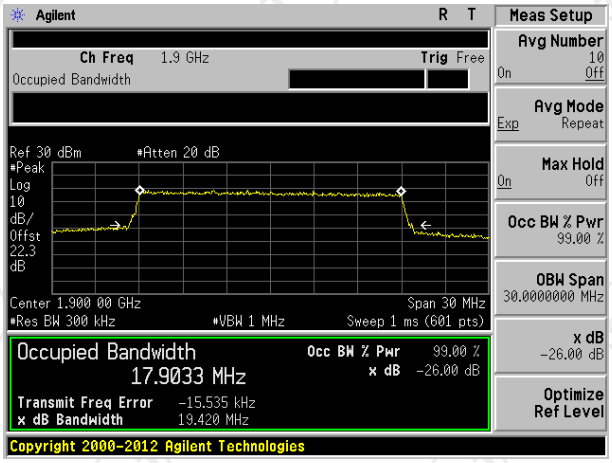
Test band: LTE Band 2	Channel Bandwidth: 20MHz



Lowest channel

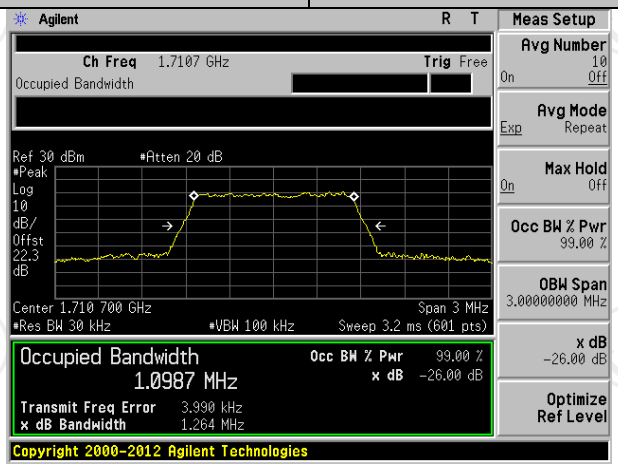


Middle channel

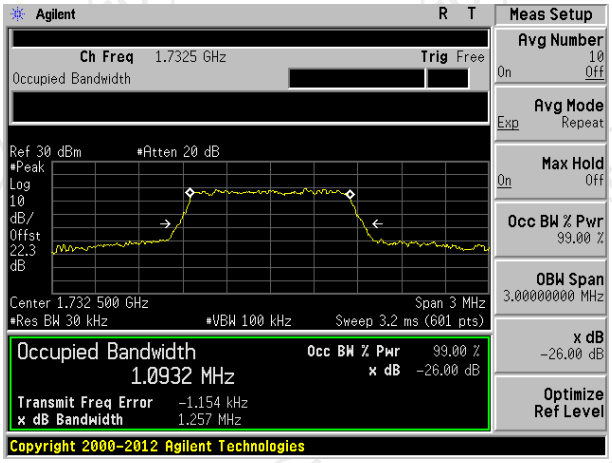


Highest channel

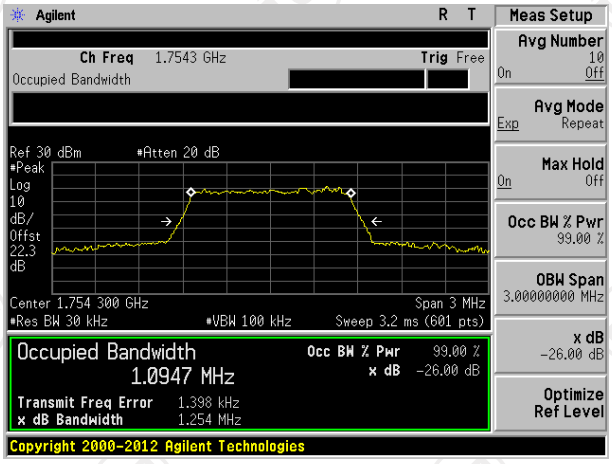
Test band: LTE Band 4	Channel Bandwidth: 1.4MHz



Lowest channel

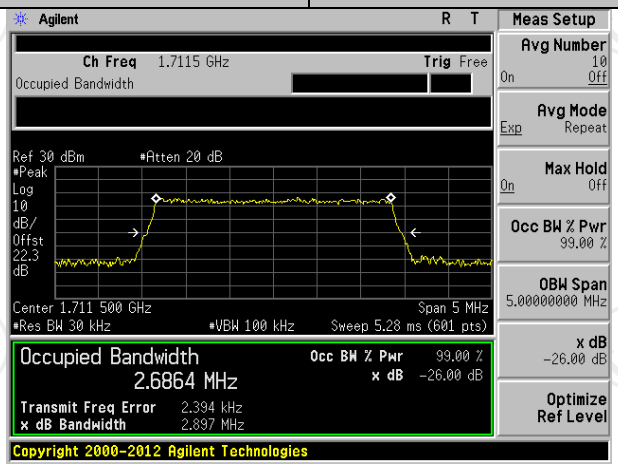


Middle channel

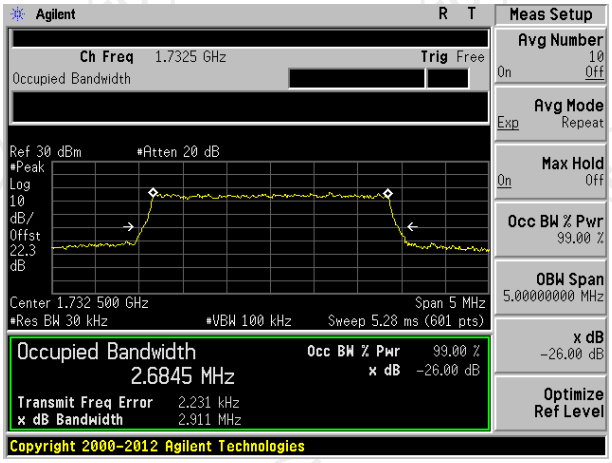


Highest channel

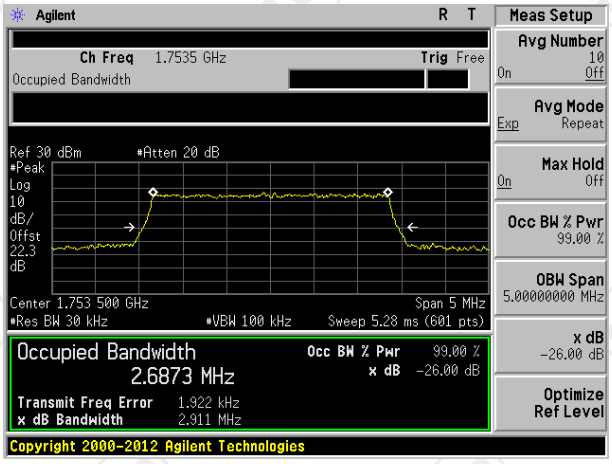
Test band: LTE Band 4	Channel Bandwidth: 3MHz



Lowest channel

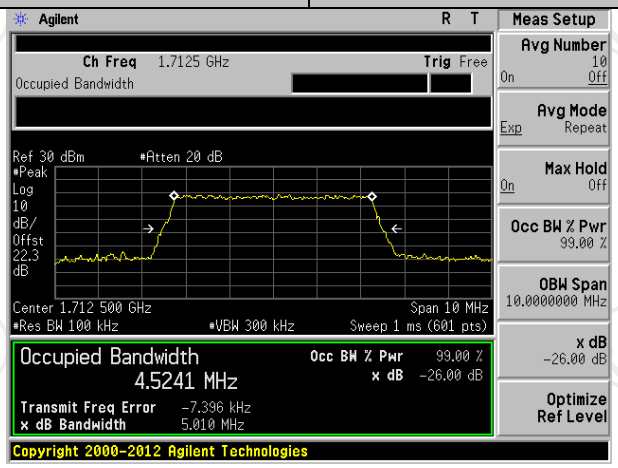


Middle channel

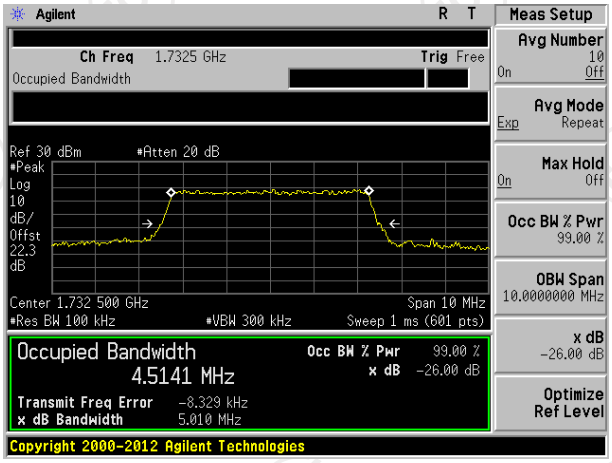


Highest channel

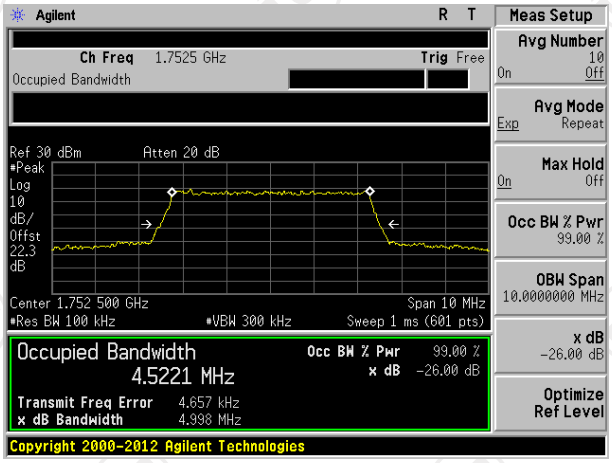
Test band: LTE Band 4	Channel Bandwidth: 5MHz



Lowest channel

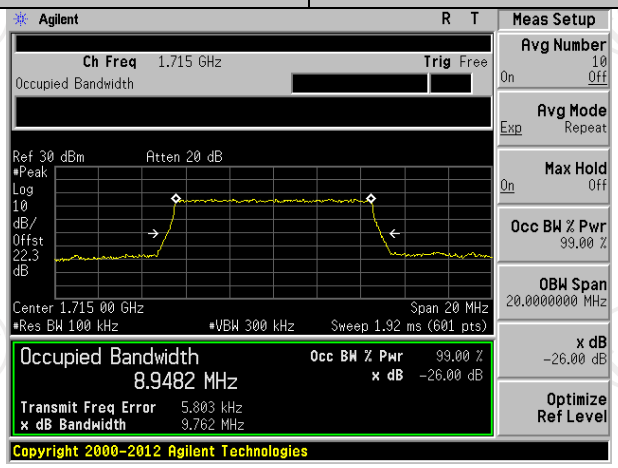


Middle channel

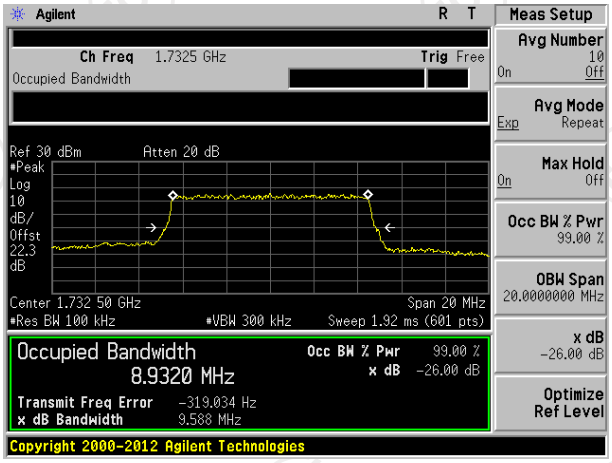


Highest channel

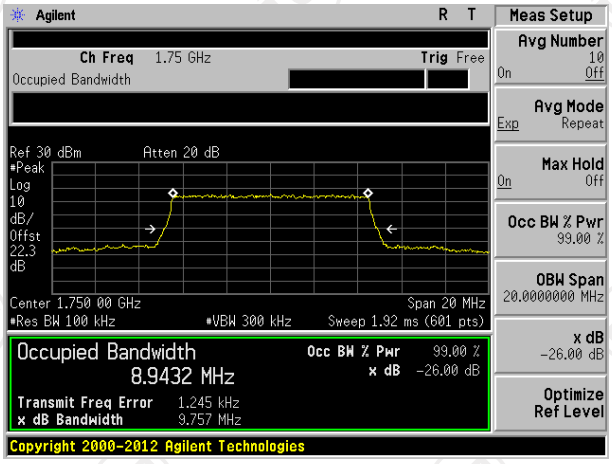
Test band: LTE Band 4	Channel Bandwidth: 10MHz



Lowest channel

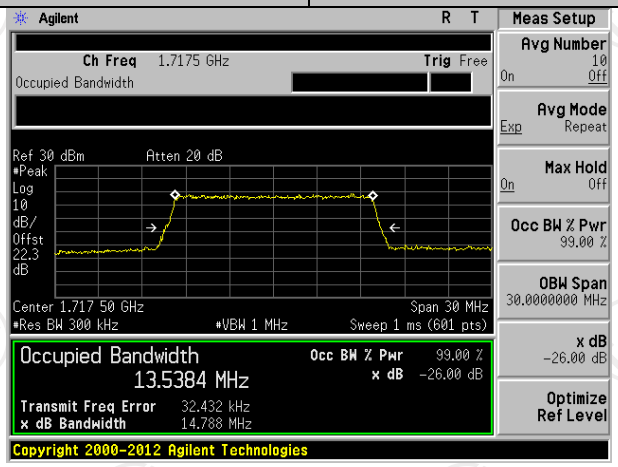


Middle channel

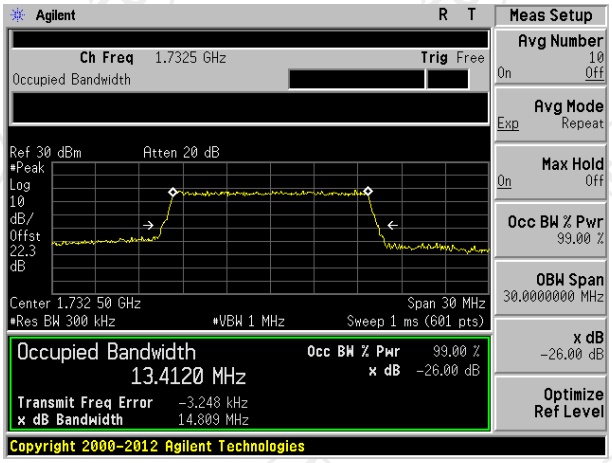


Highest channel

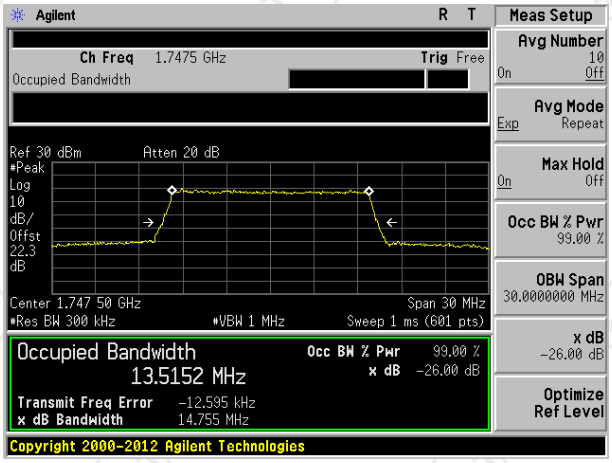
Test band: LTE Band 4	Channel Bandwidth: 15MHz



Lowest channel

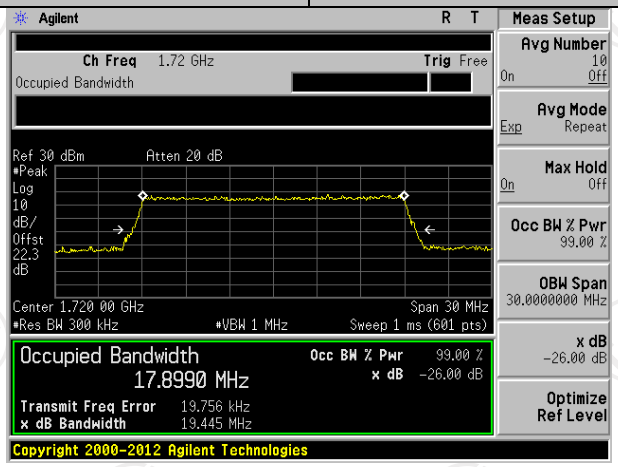


Middle channel

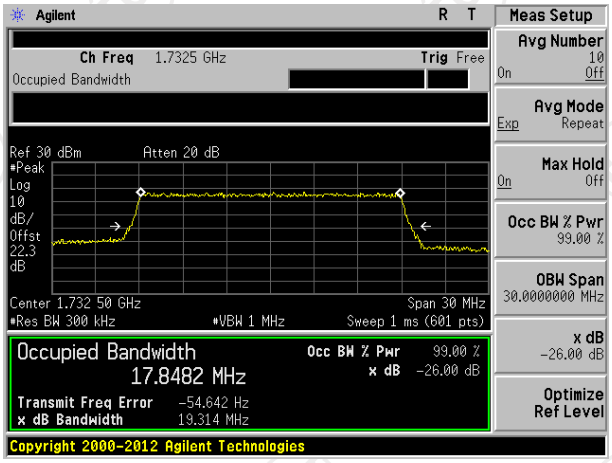


Highest channel

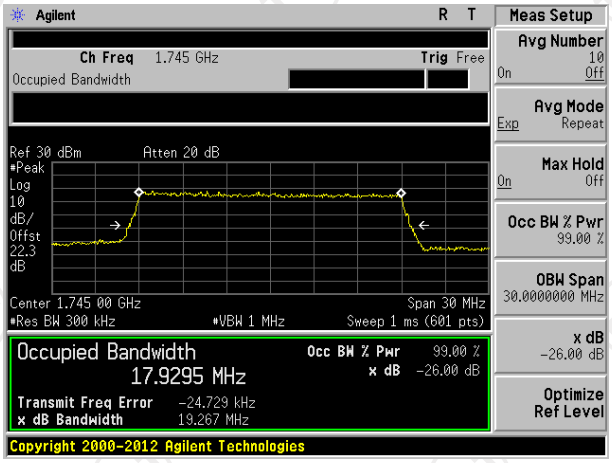
Test band: LTE Band 4	Channel Bandwidth: 20MHz



Lowest channel

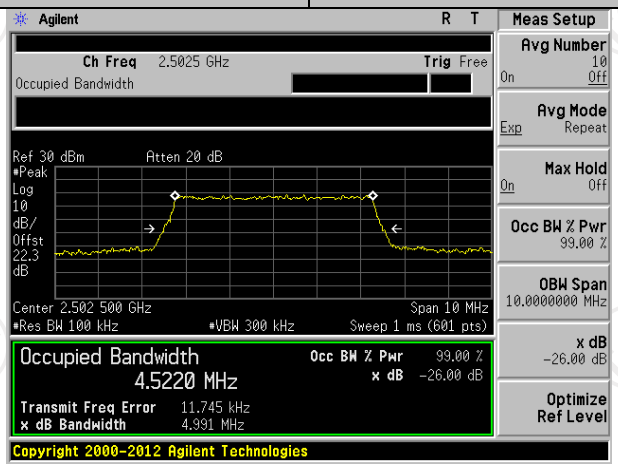


Middle channel

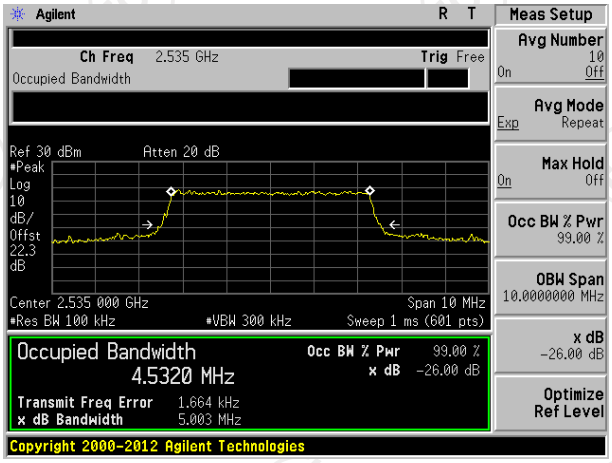


Highest channel

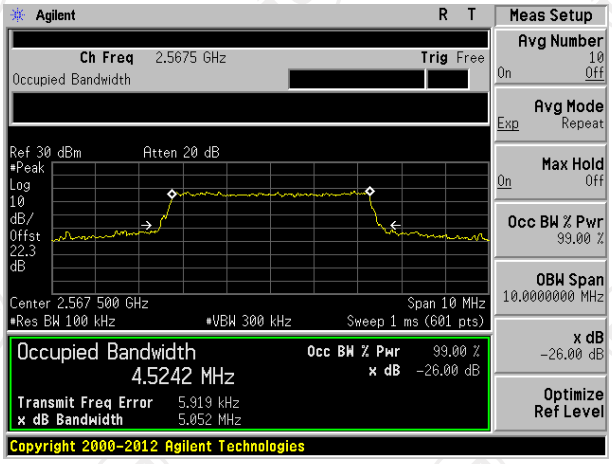
Test band: LTE Band 7	Channel Bandwidth: 5MHz



Lowest channel

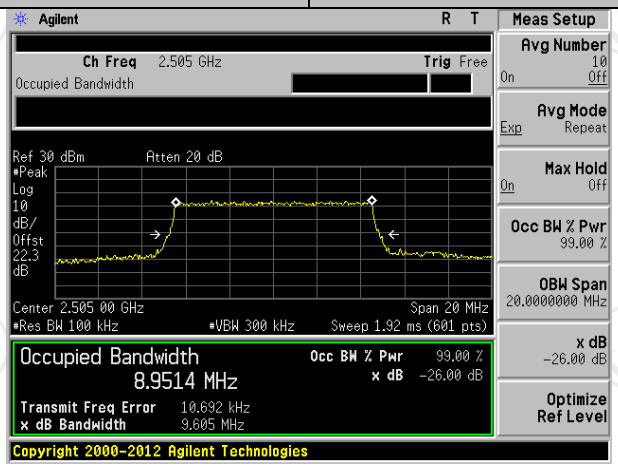


Middle channel

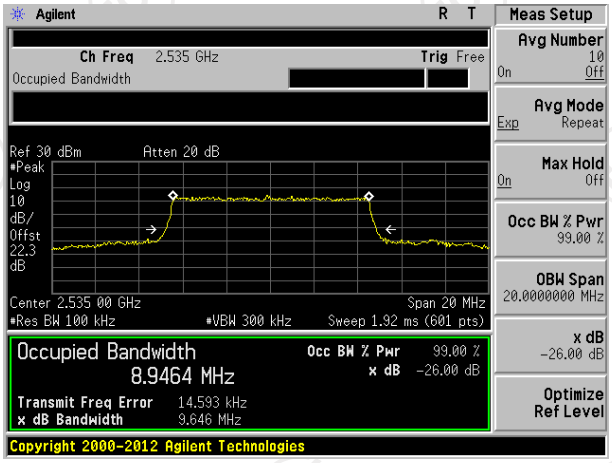


Highest channel

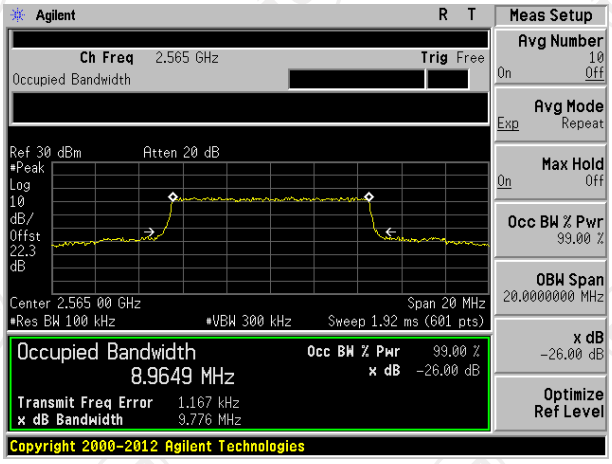
Test band: LTE Band 7	Channel Bandwidth: 10MHz



Lowest channel

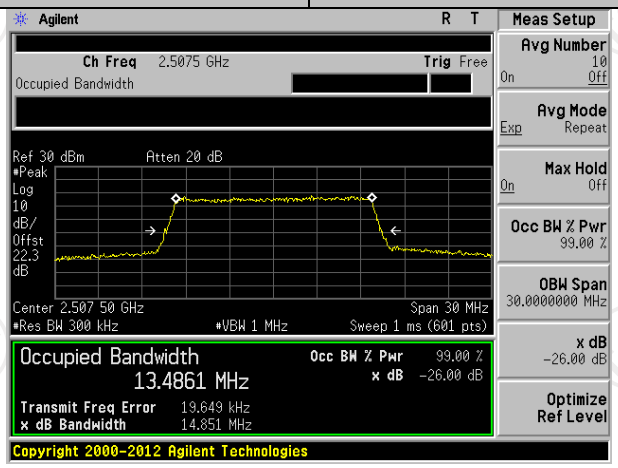


Middle channel

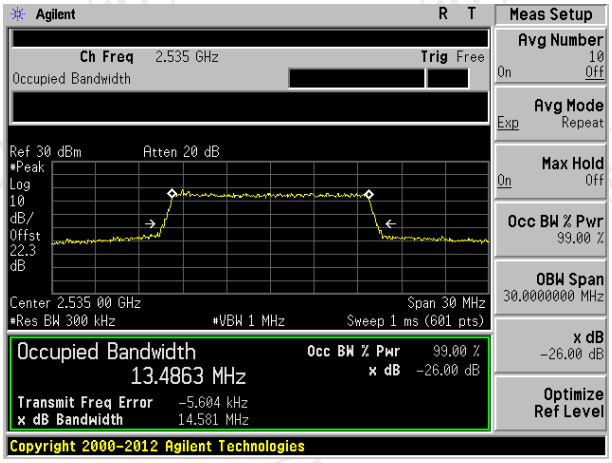


Highest channel

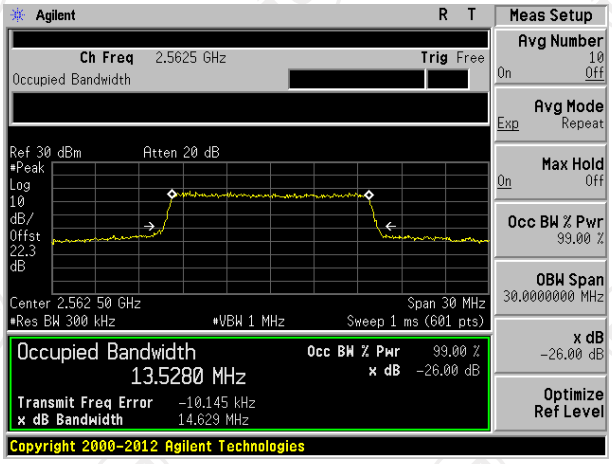
Test band: LTE Band 7	Channel Bandwidth: 15MHz



Lowest channel

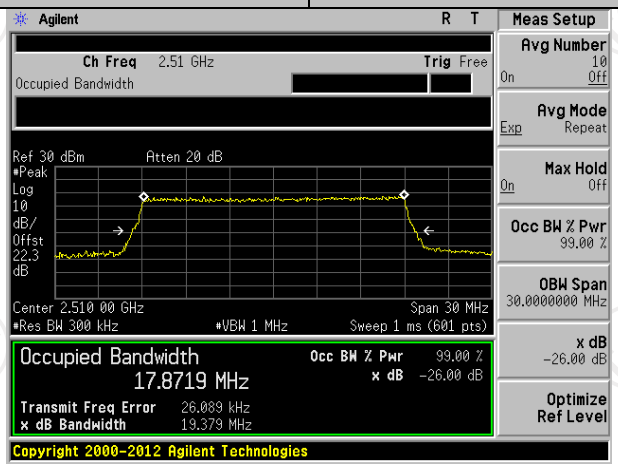


Middle channel

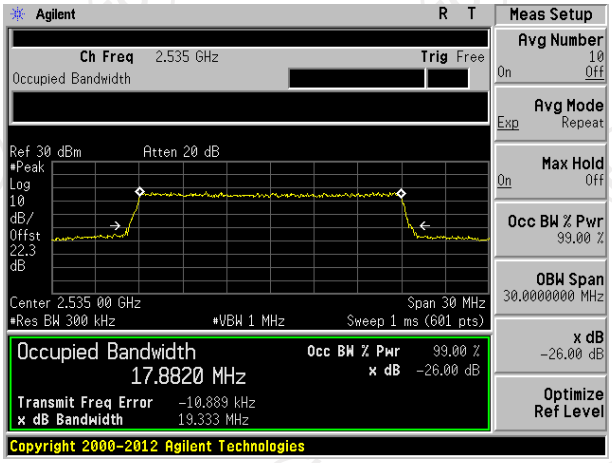


Highest channel

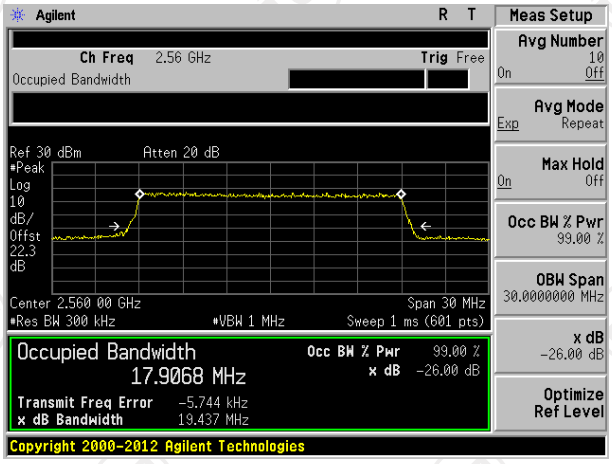
Test band: LTE Band 7	Channel Bandwidth: 20MHz



Lowest channel



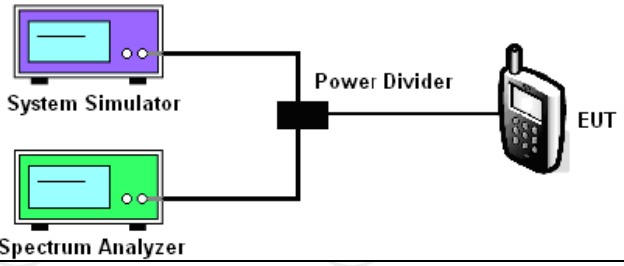
Middle channel



Highest channel

6.3. Band Edge and Conducted Spurious Emission Measurement

6.3.1. Test Specification

Test Requirement:	FCC part 27.53(h), FCC part 24.238(a)
Test Method:	FCC part2.1051
Limit:	Band 2/4:-13dBm Band 7:-25dBm
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 6.0. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The band edges of low and high channels for the highest RF powers were measured. 5. The conducted spurious emission for the whole frequency range was taken. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

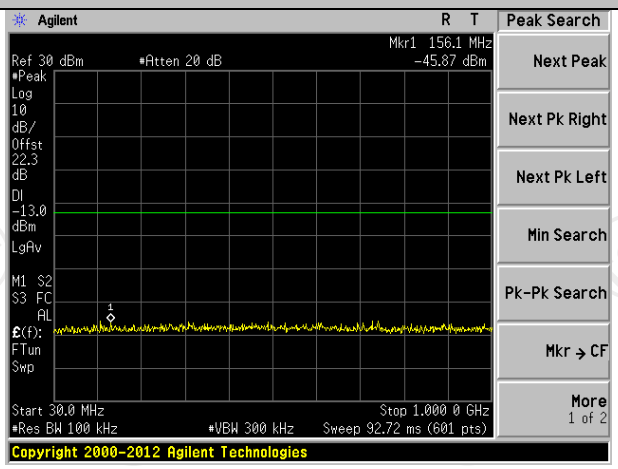
6.3.2. Test Instruments

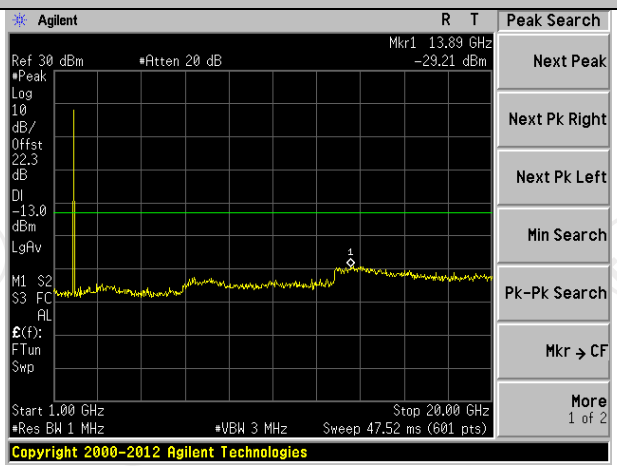
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jun. 12, 2018
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-02	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

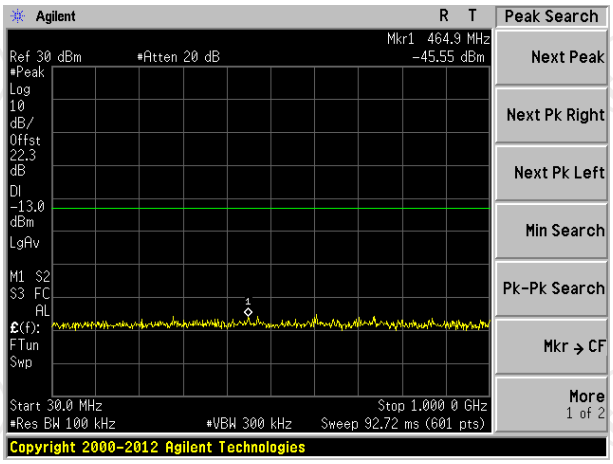
6.3.3. Test Data

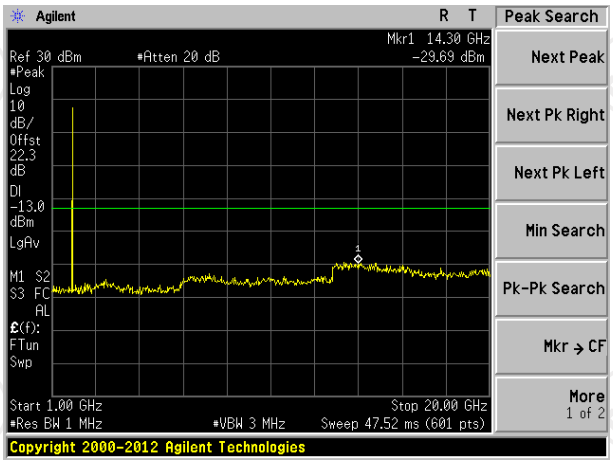
Test Mode: LTE Band 2	Channel Bandwidth: 1.4MHz



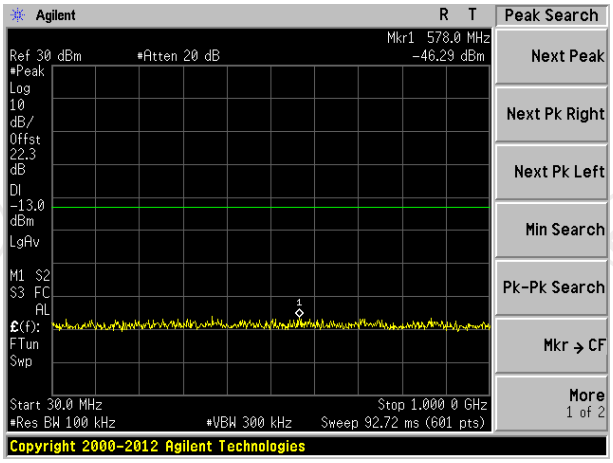


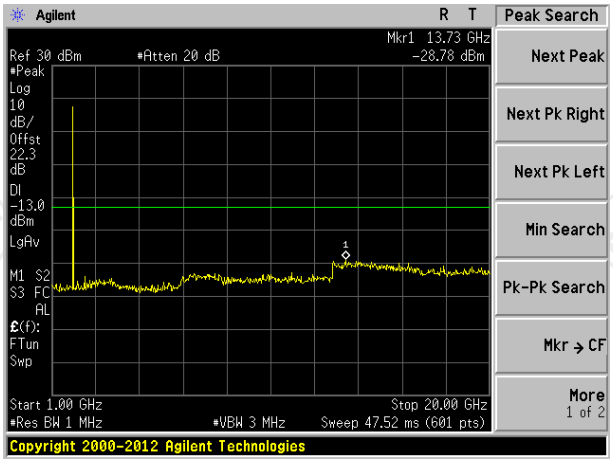
Lowest channel





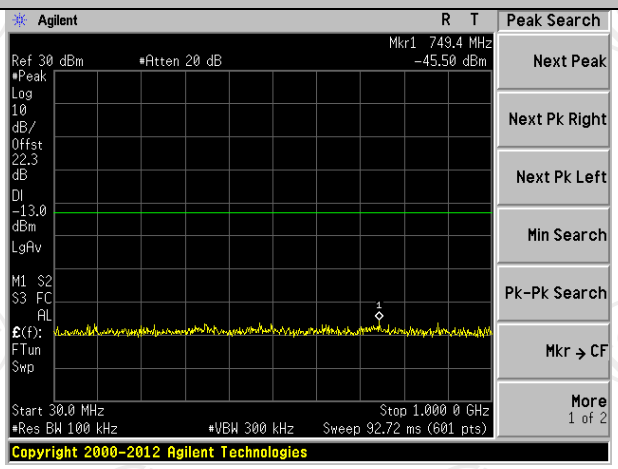
Middle channel

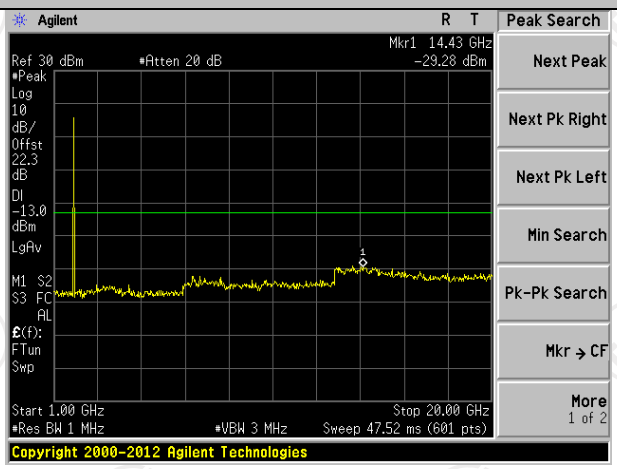




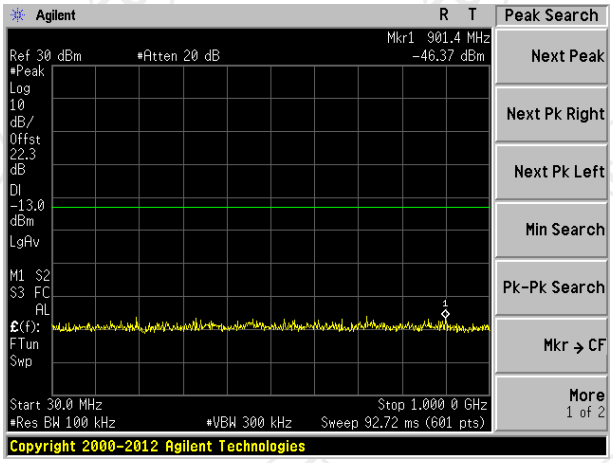
Highest channel

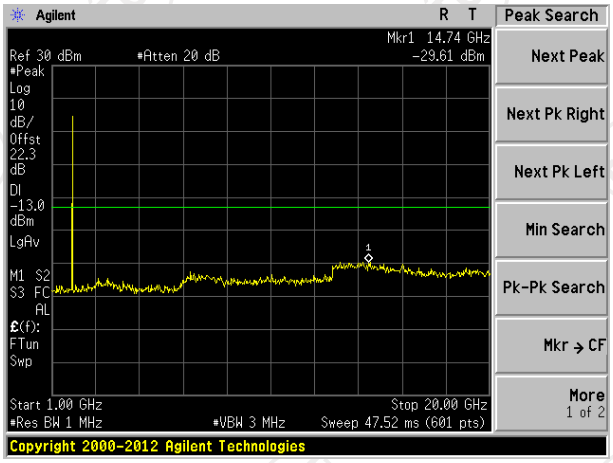
Test Mode: LTE Band 2	Channel Bandwidth: 3MHz



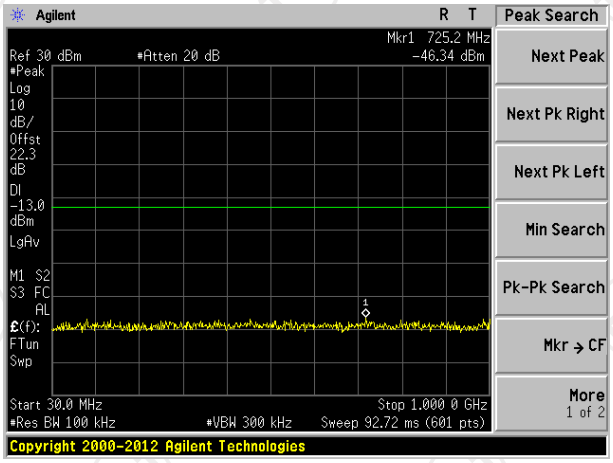


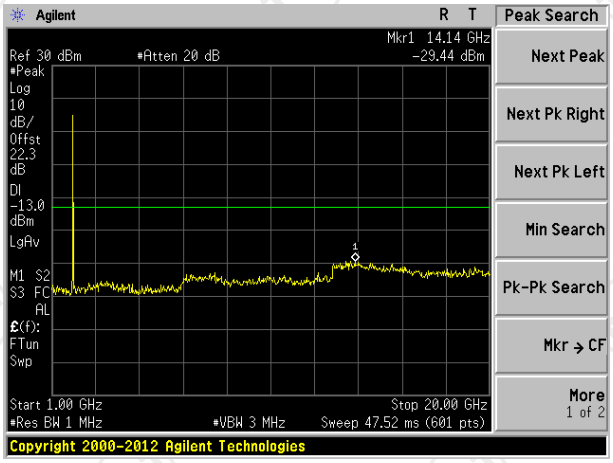
Lowest channel





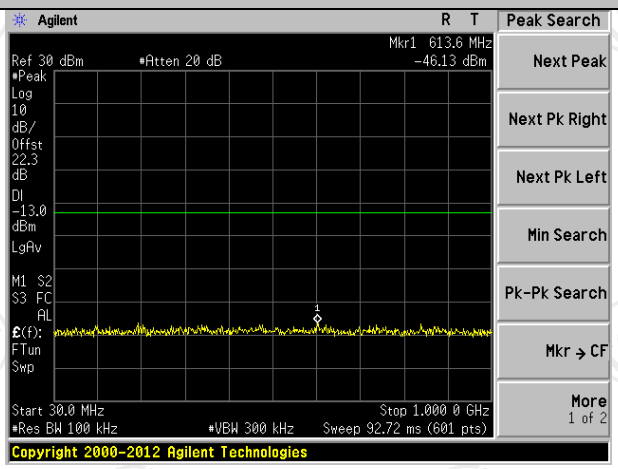
Middle channel

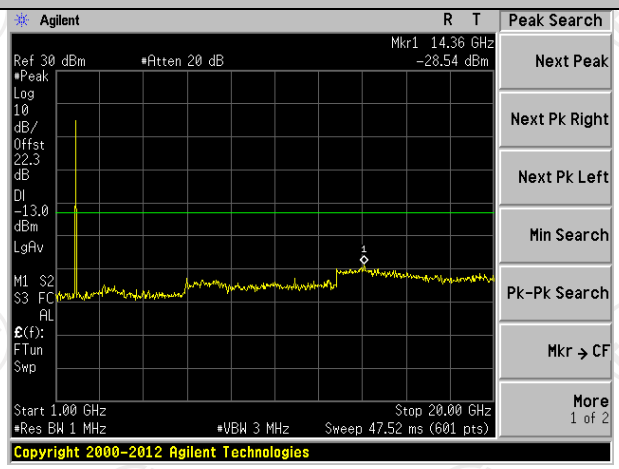




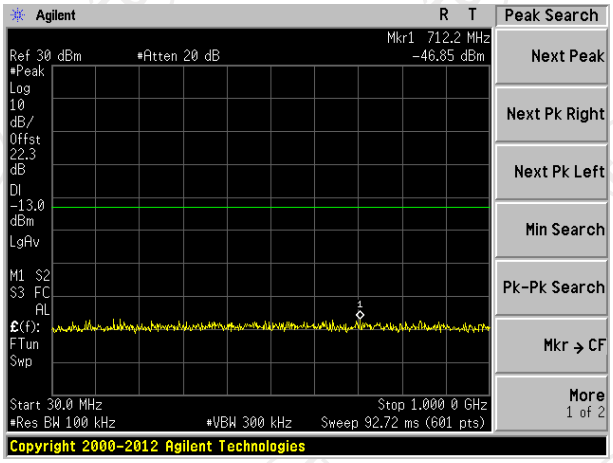
Highest channel

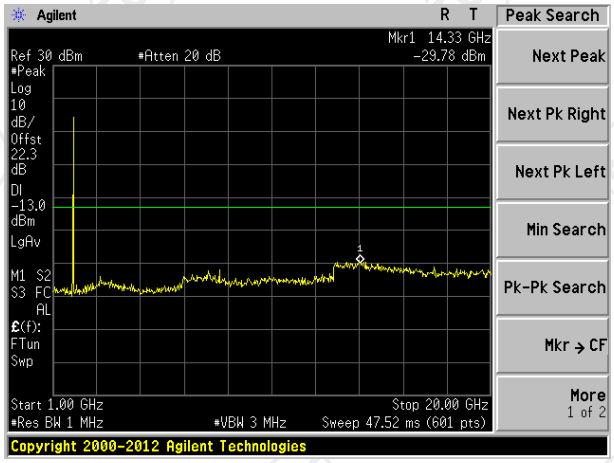
Test Mode: LTE Band 2	Channel Bandwidth: 5MHz



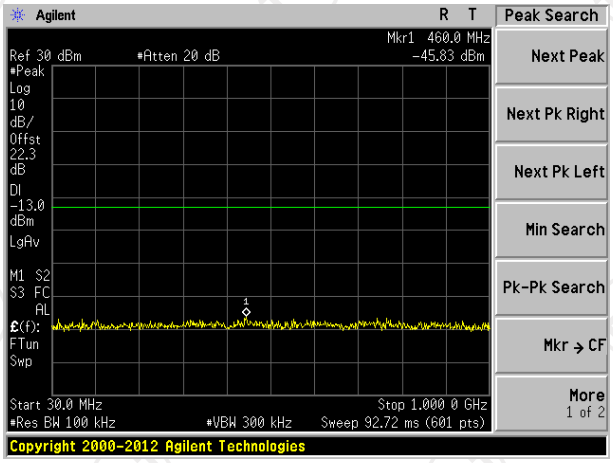


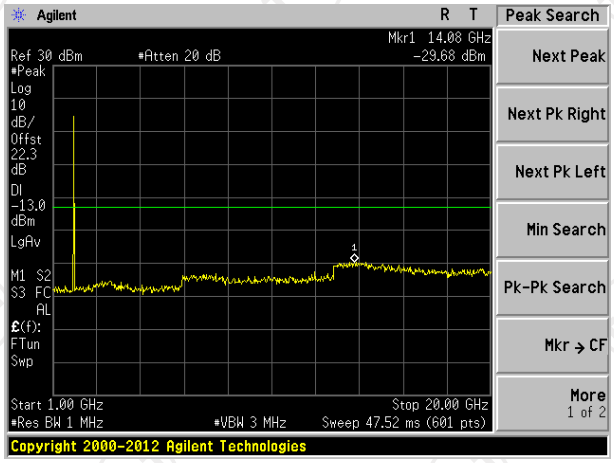
Lowest channel





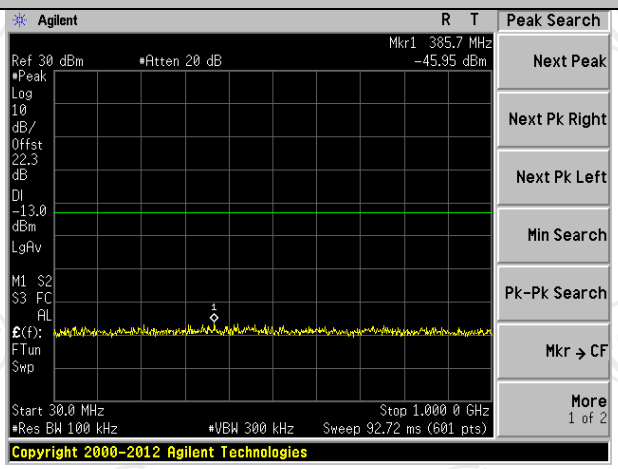
Middle channel

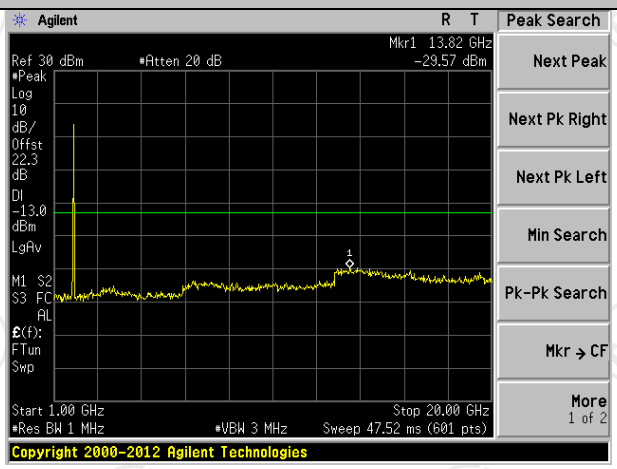




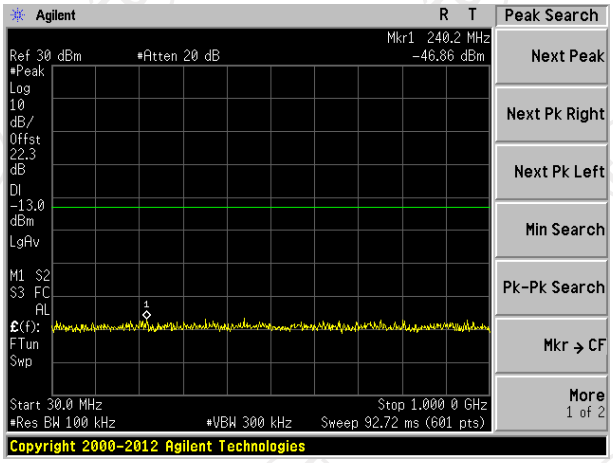
Highest channel

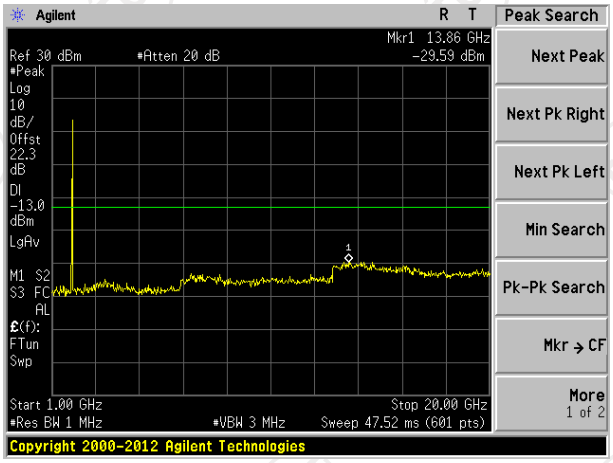
Test Mode: LTE Band 2	Channel Bandwidth: 10MHz



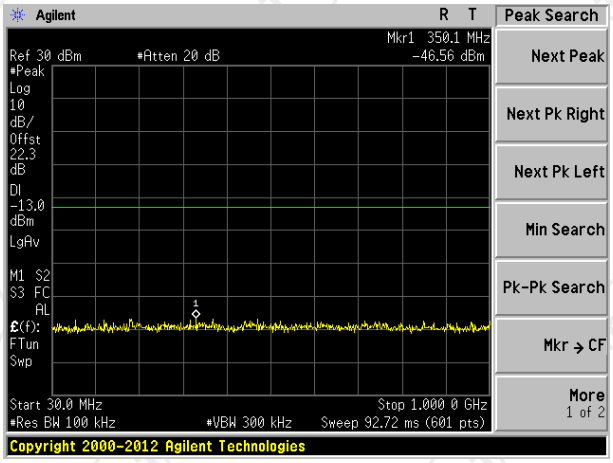


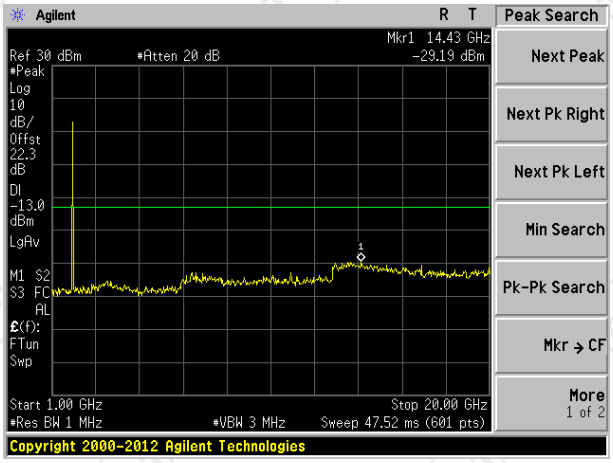
Lowest channel





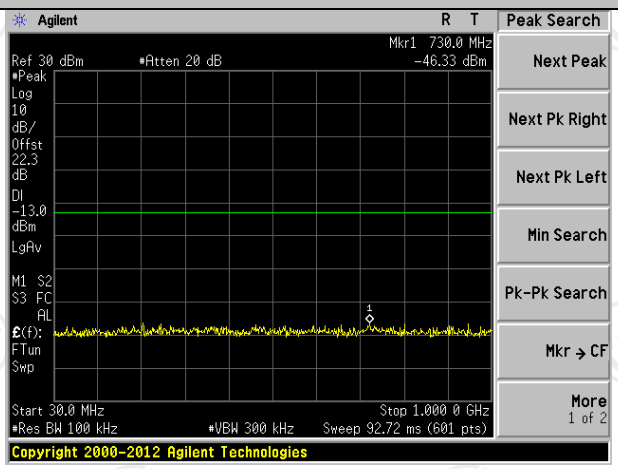
Middle channel

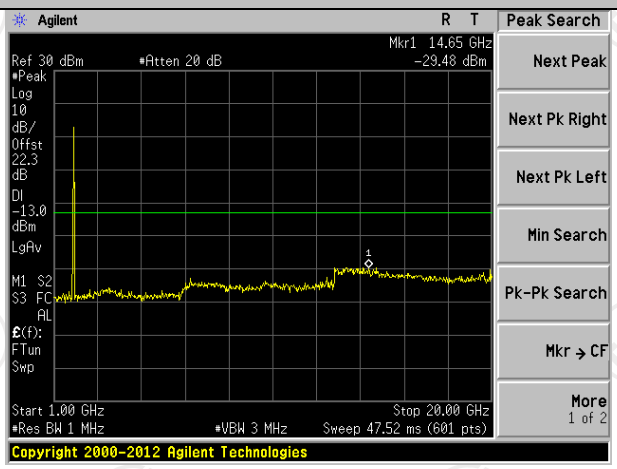




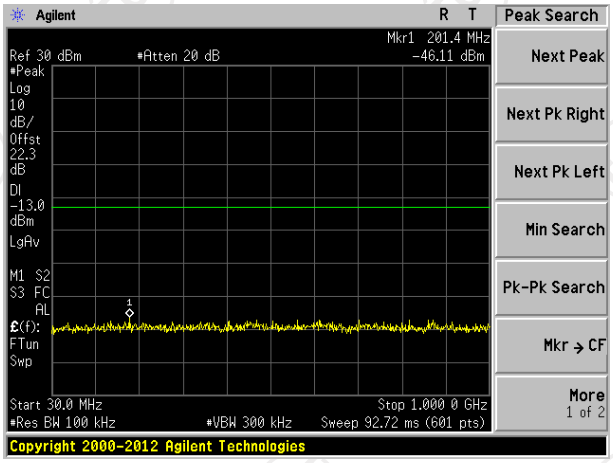
Highest channel

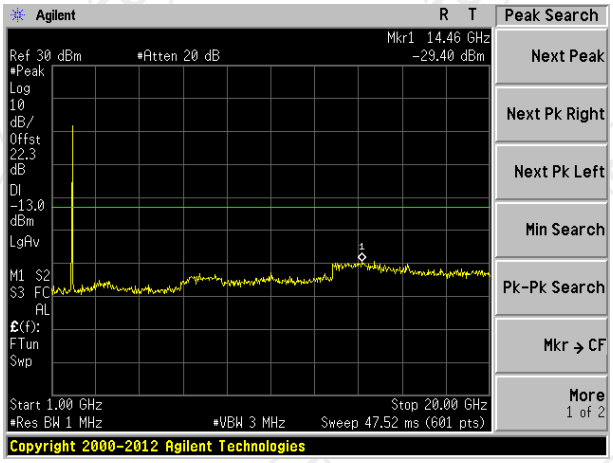
Test Mode: LTE Band 2	Channel Bandwidth: 15MHz



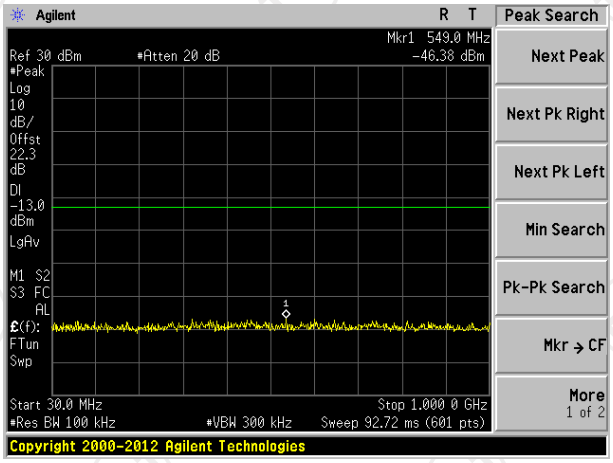


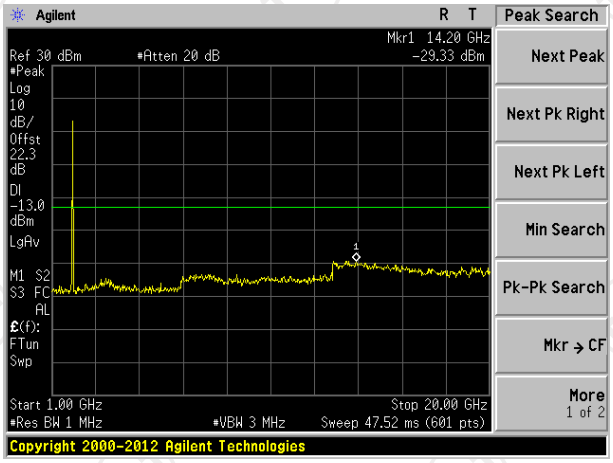
Lowest channel





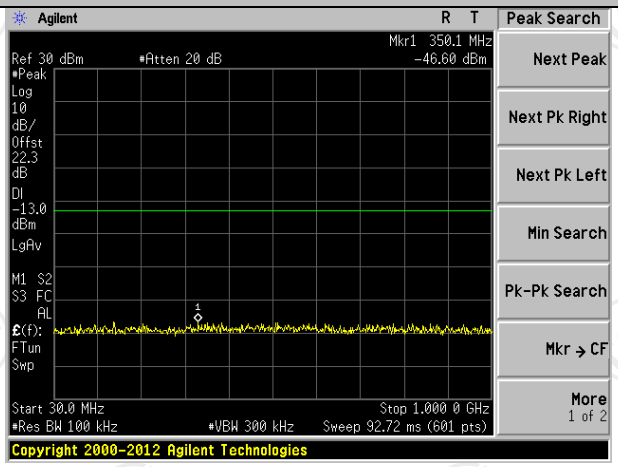
Middle channel

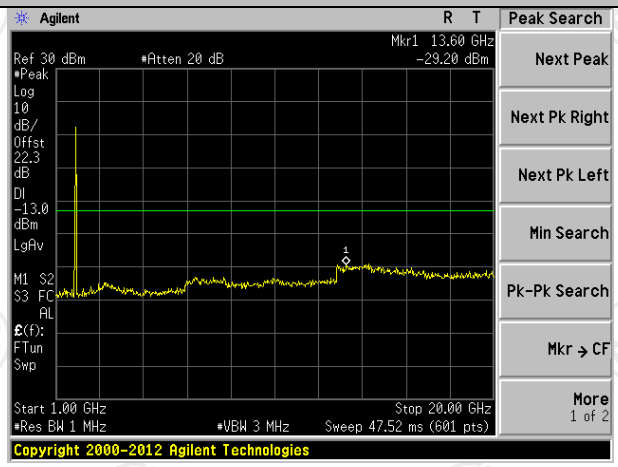




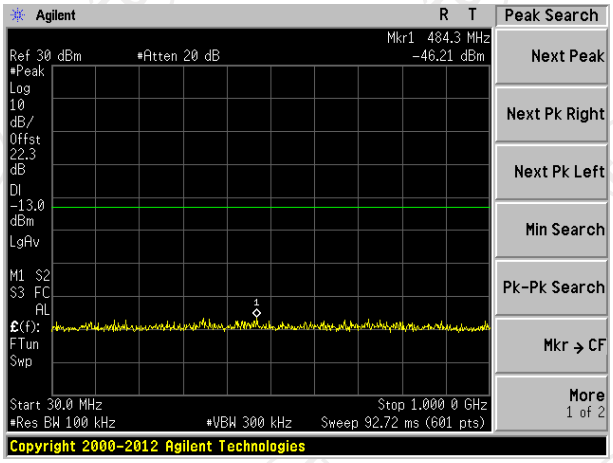
Highest channel

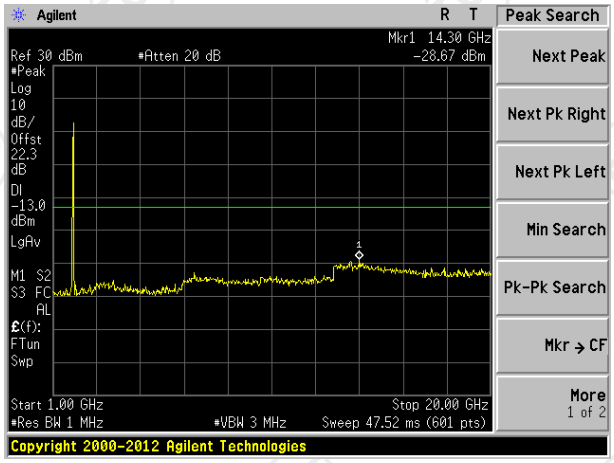
Test Mode: LTE Band 2	Channel Bandwidth: 20MHz



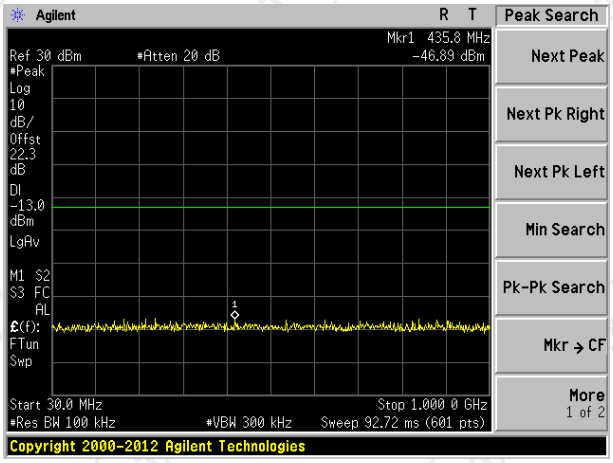


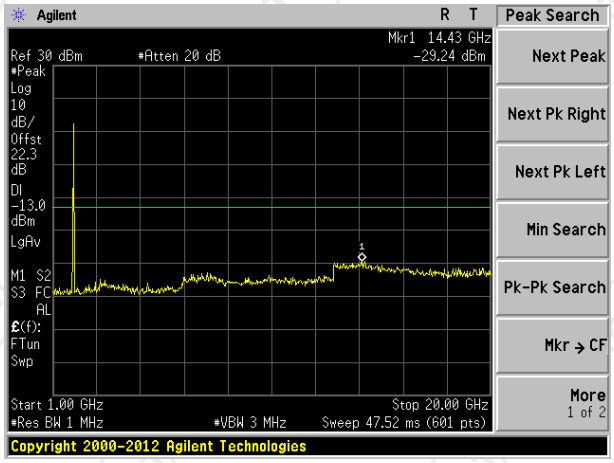
Lowest channel





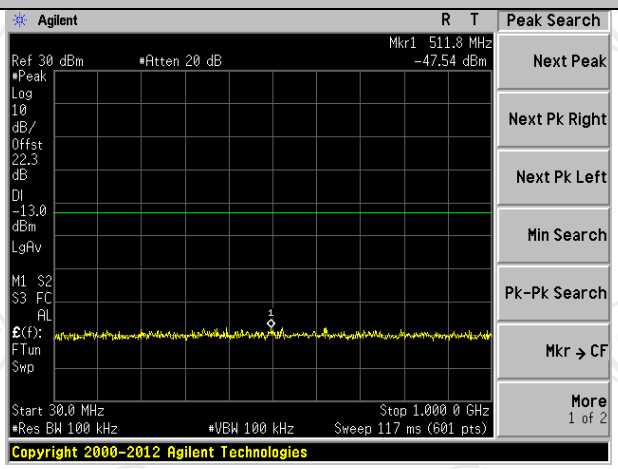
Middle channel

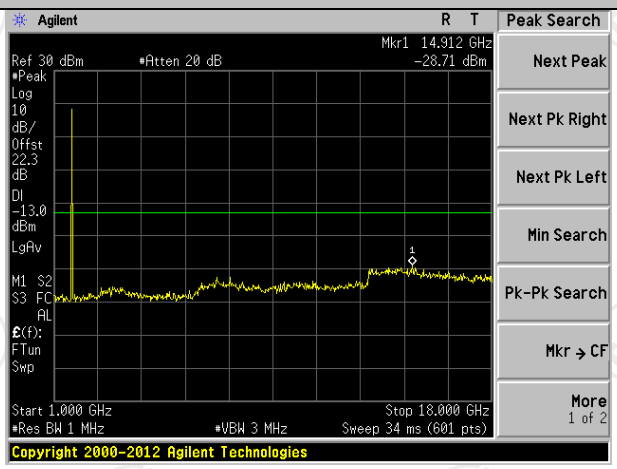




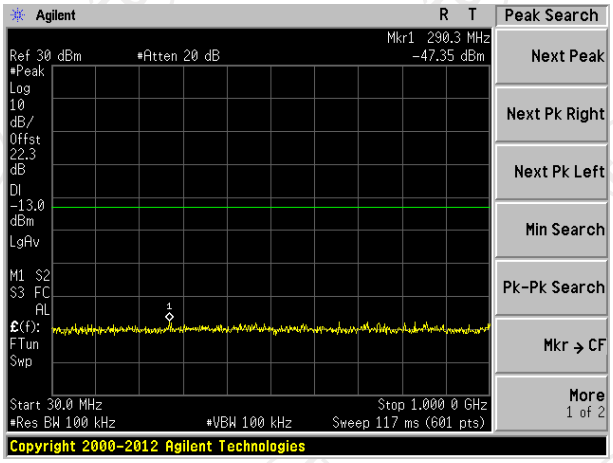
Highest channel

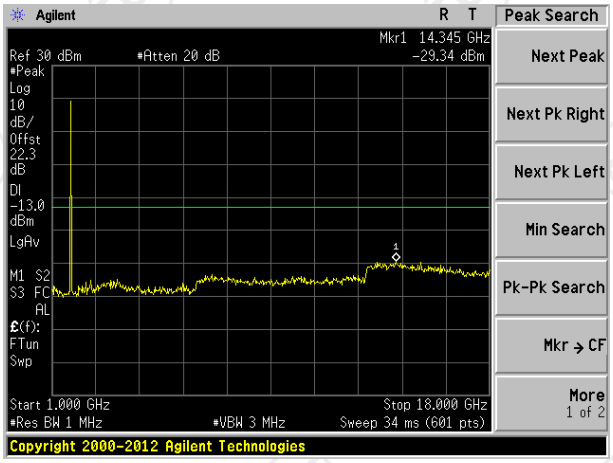
Test Mode: LTE Band 4	Channel Bandwidth: 1.4MHz



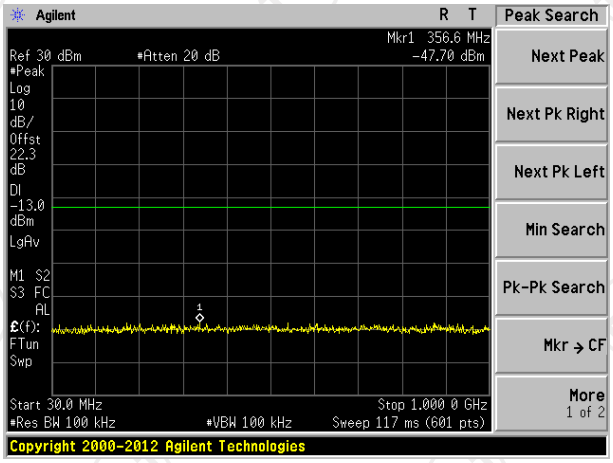


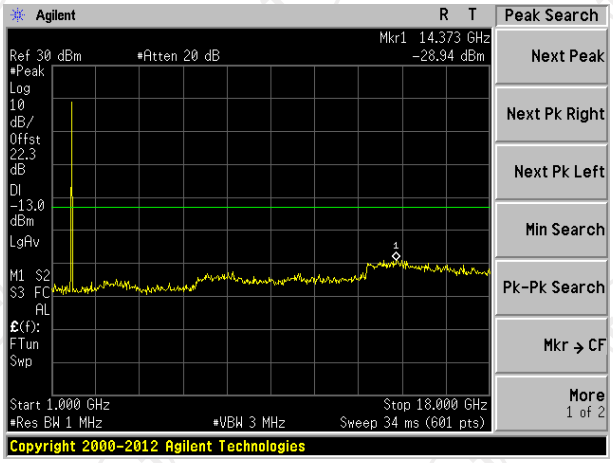
Lowest channel





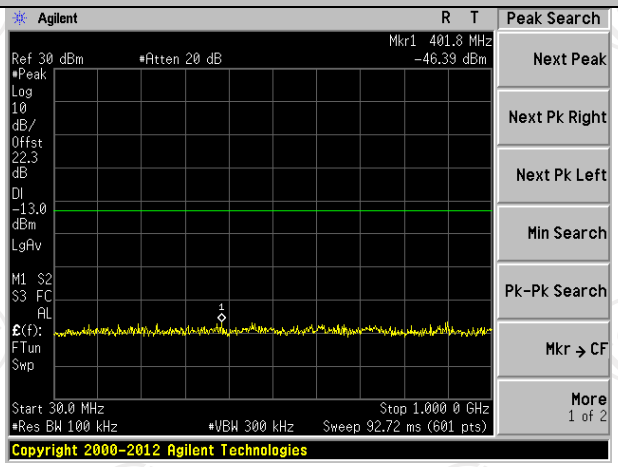
Middle channel

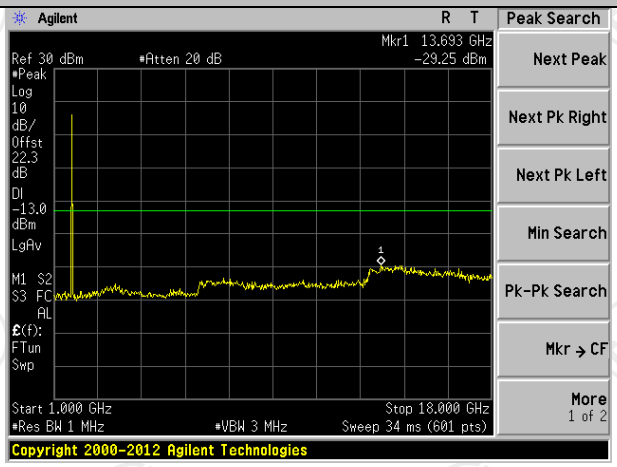




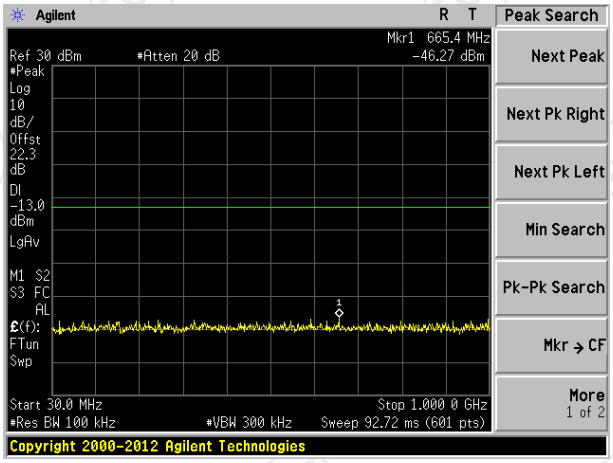
Highest channel

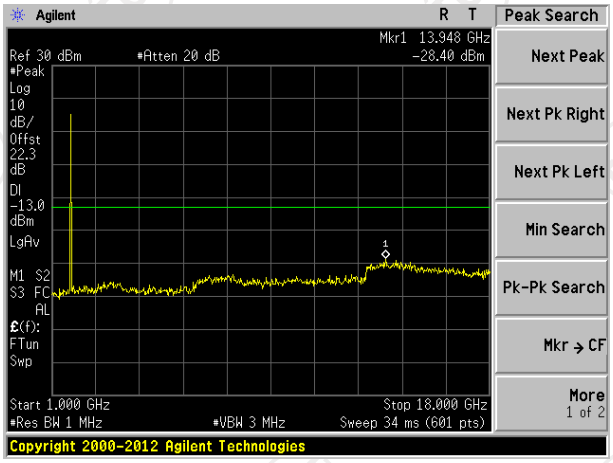
Test Mode: LTE Band 4	Channel Bandwidth: 3MHz



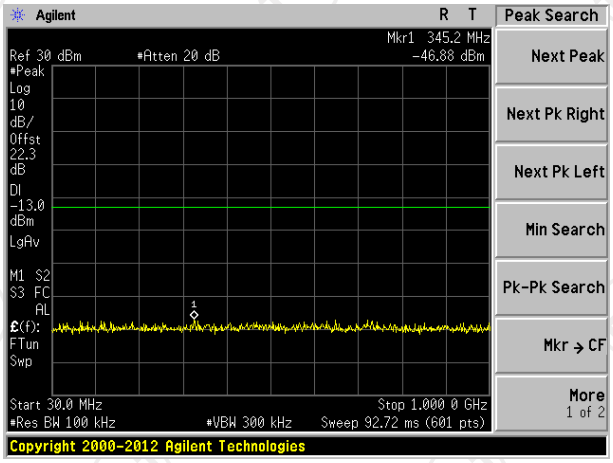


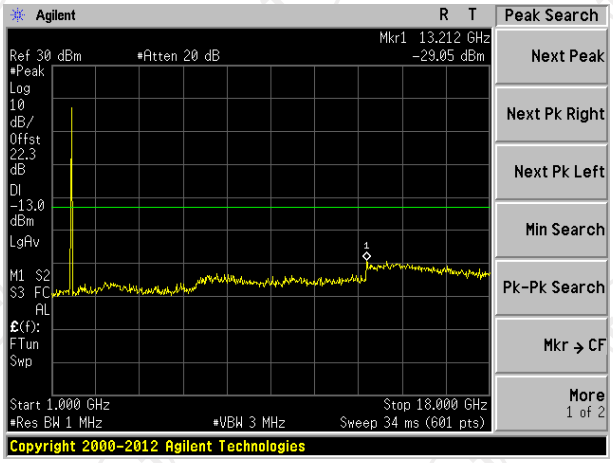
Lowest channel





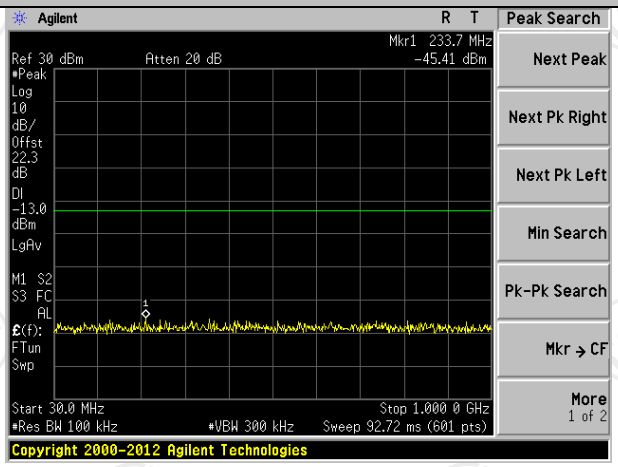
Middle channel

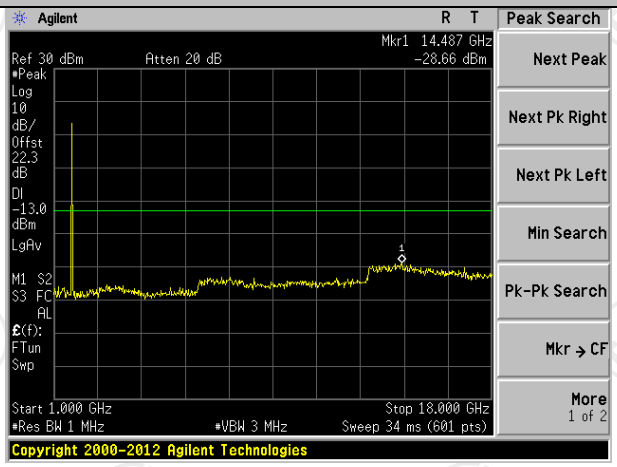




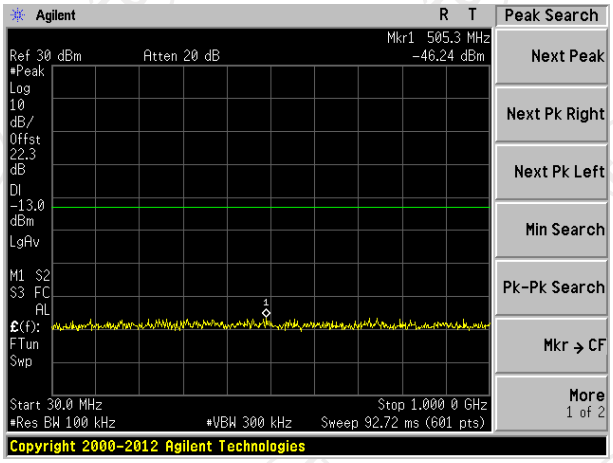
Highest channel

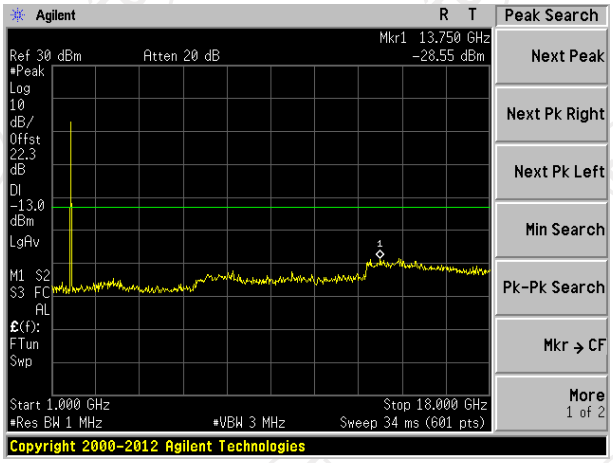
Test Mode: LTE Band 4	Channel Bandwidth: 5MHz



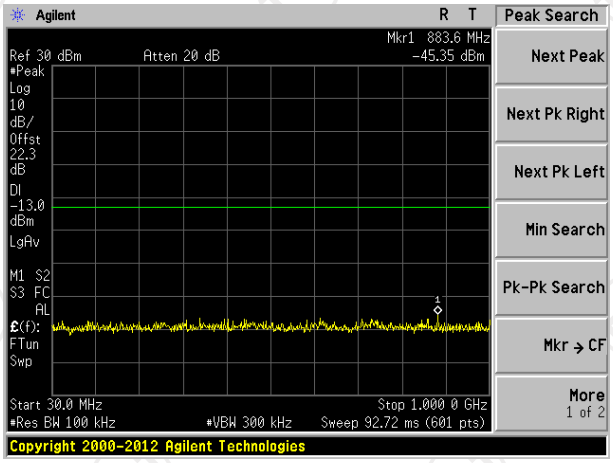


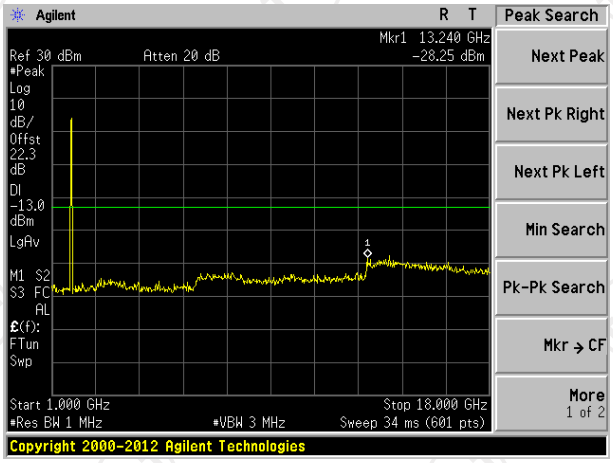
Lowest channel





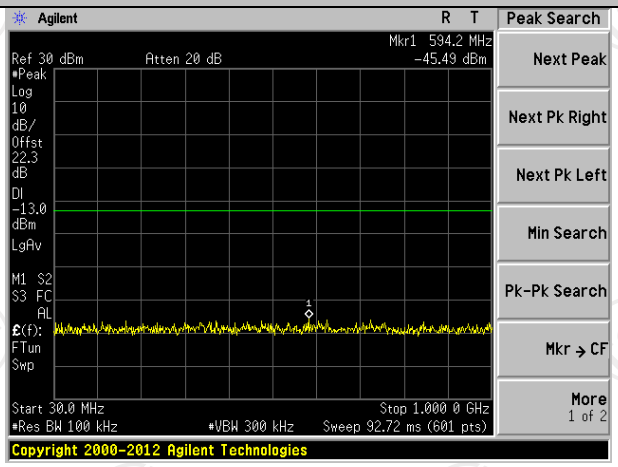
Middle channel

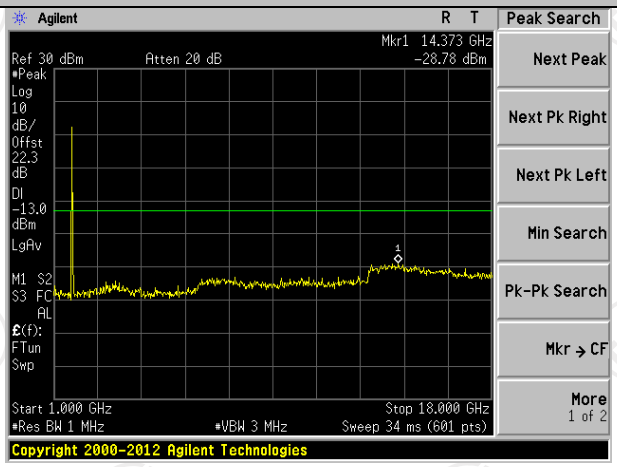




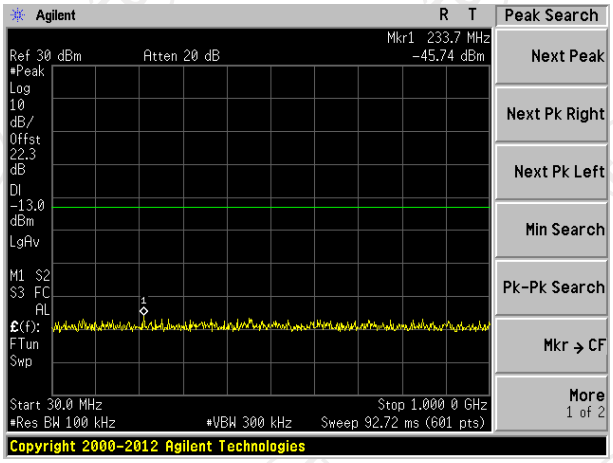
Highest channel

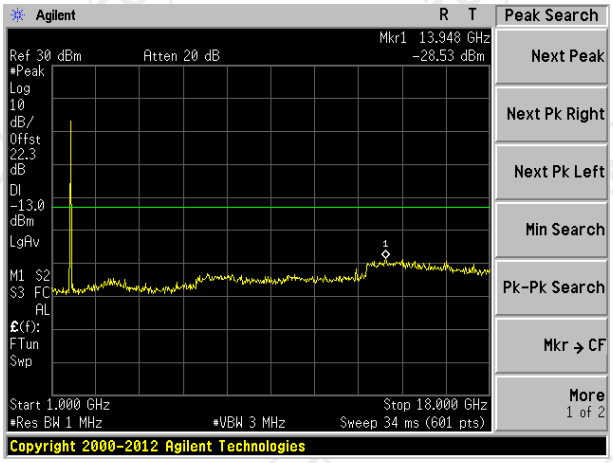
Test Mode: LTE Band 4	Channel Bandwidth: 10MHz



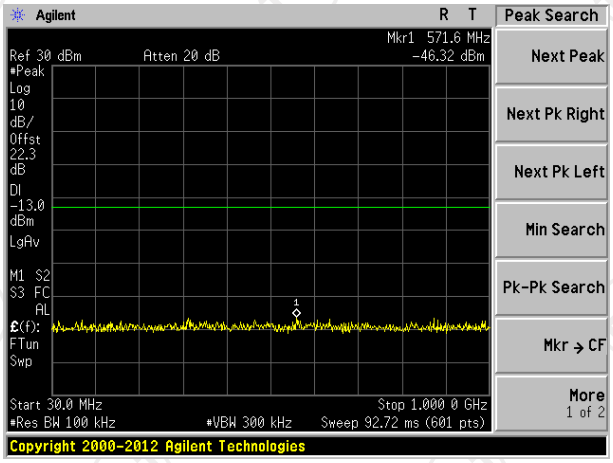


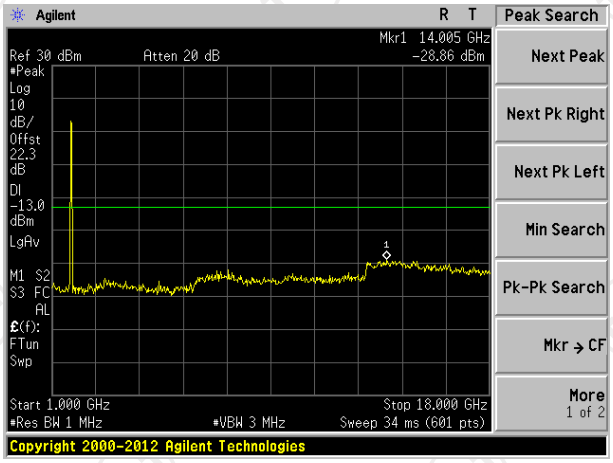
Lowest channel





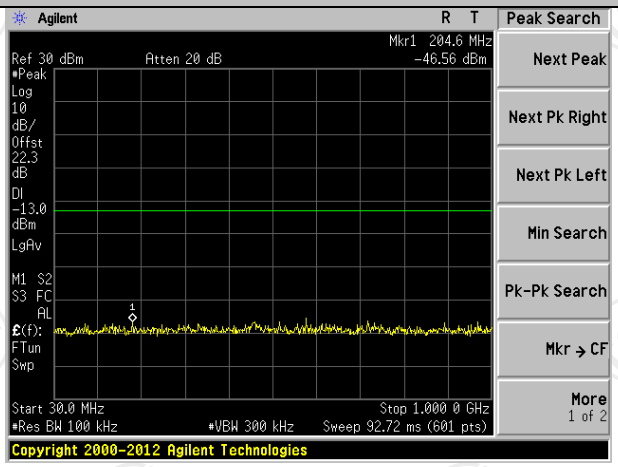
Middle channel

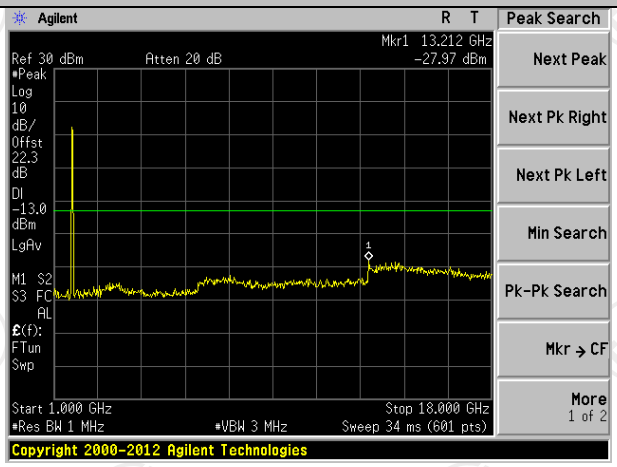




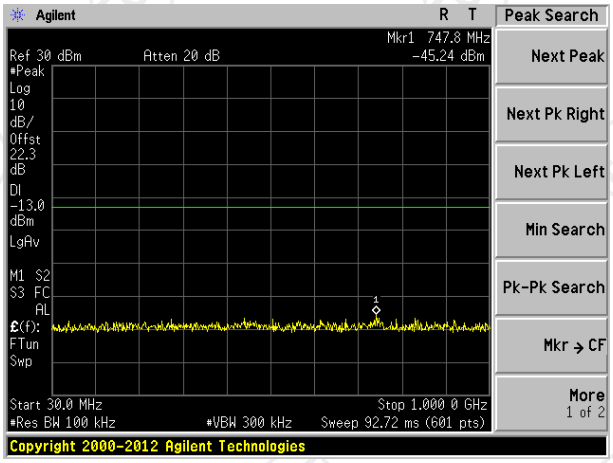
Highest channel

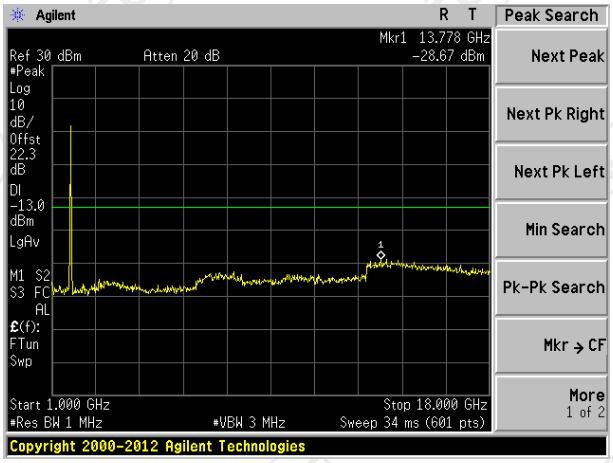
Test Mode: LTE Band 4	Channel Bandwidth: 15MHz



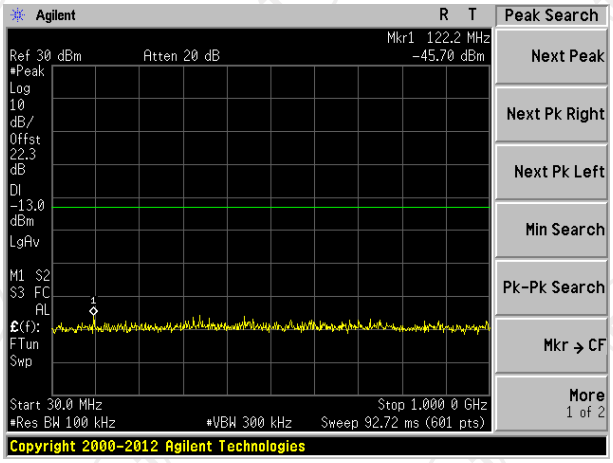


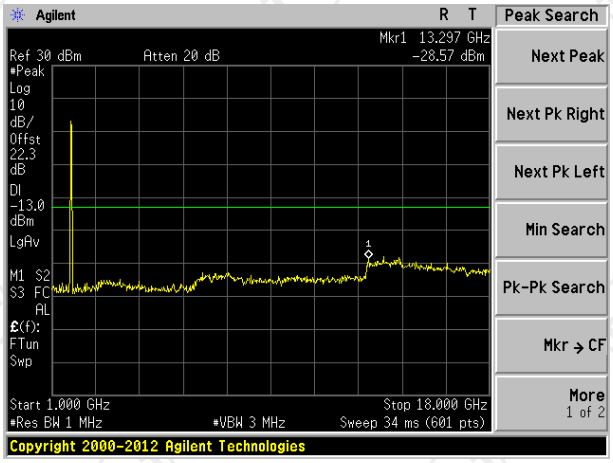
Lowest channel





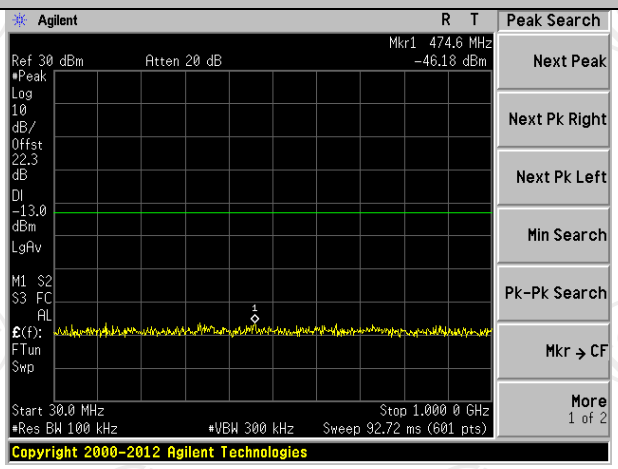
Middle channel

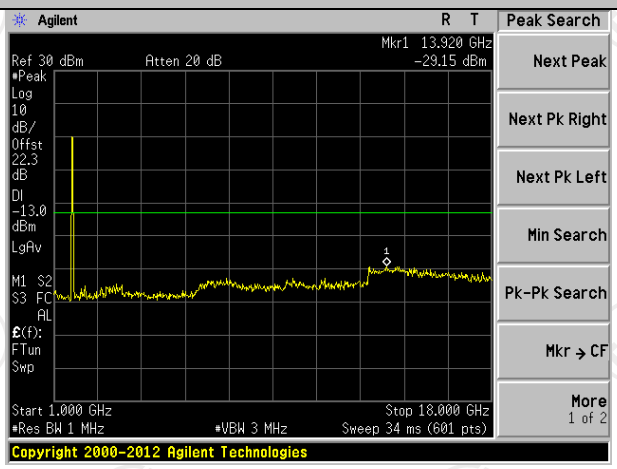




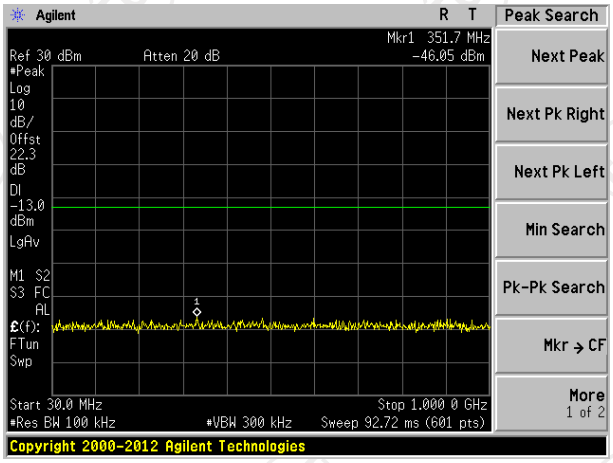
Highest channel

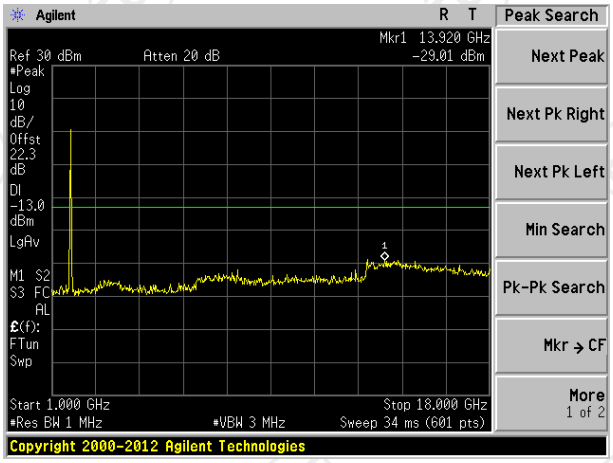
Test Mode: LTE Band 4	Channel Bandwidth: 20MHz



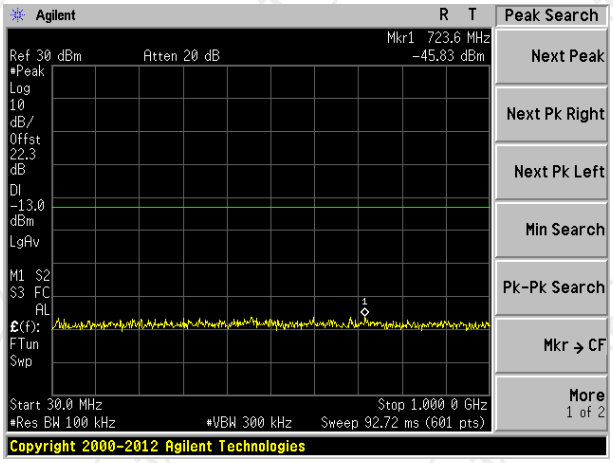


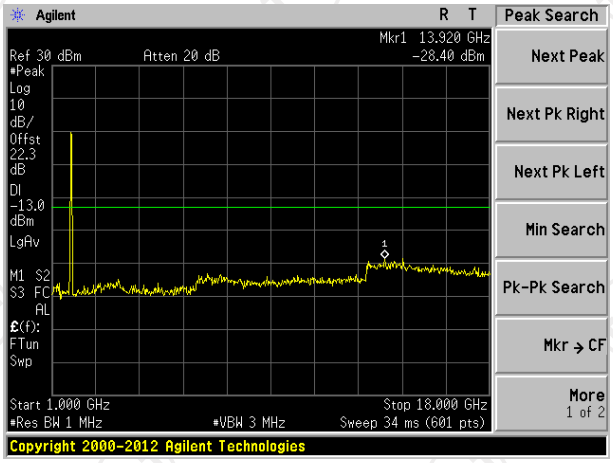
Lowest channel





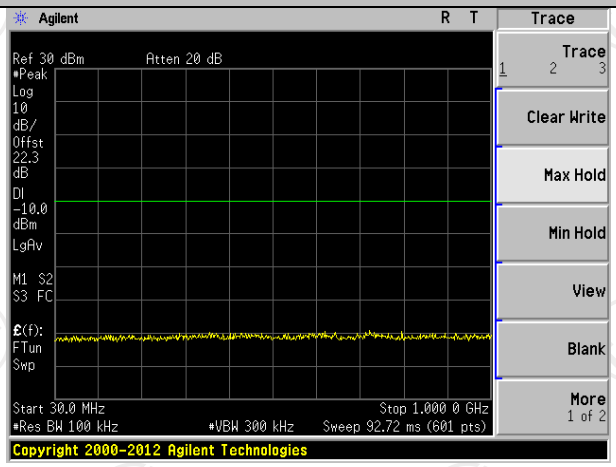
Middle channel

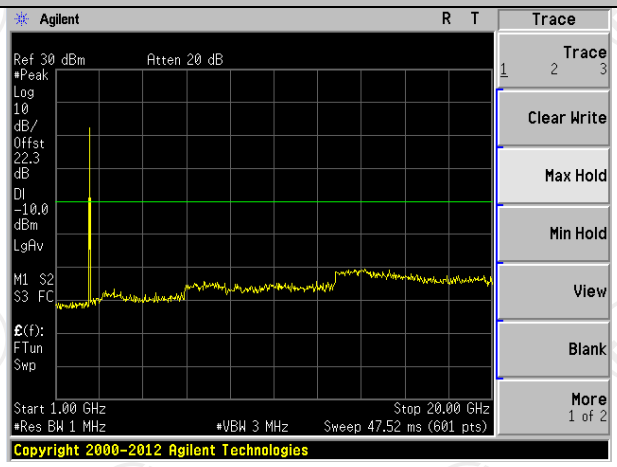




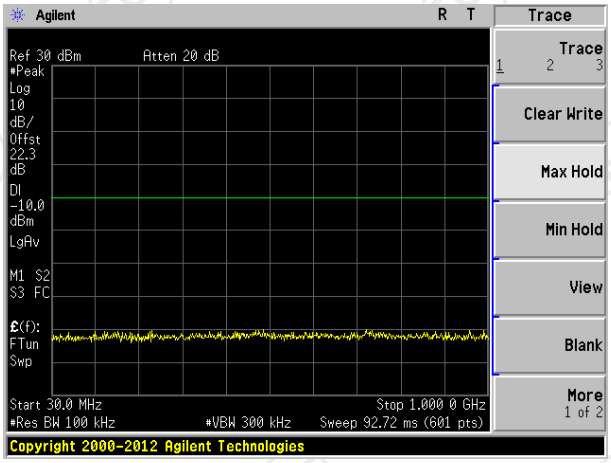
Highest channel

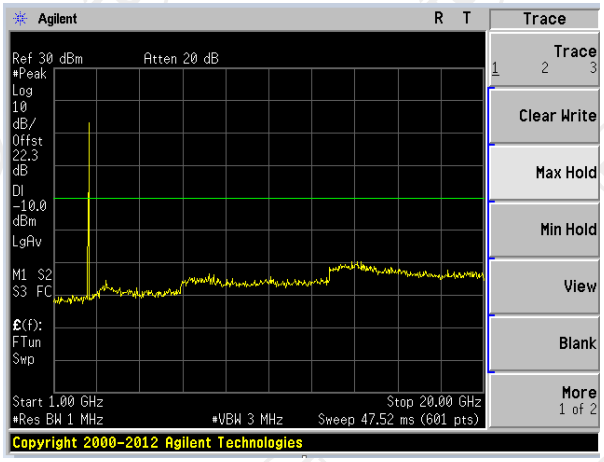
Test Mode: LTE Band 7	Channel Bandwidth: 5MHz



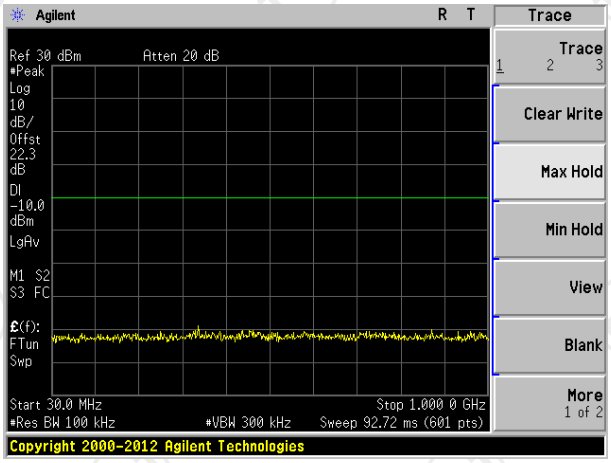


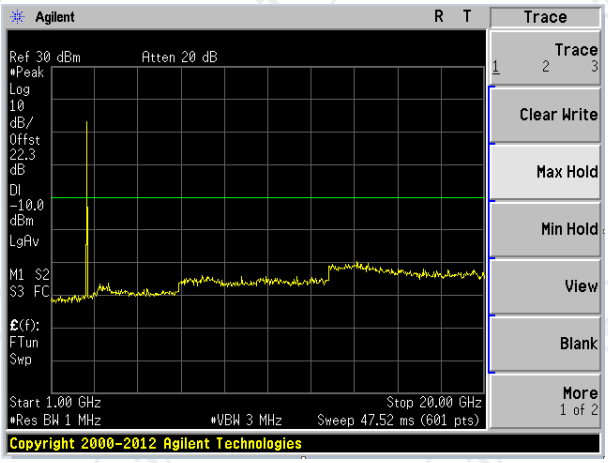
Lowest channel





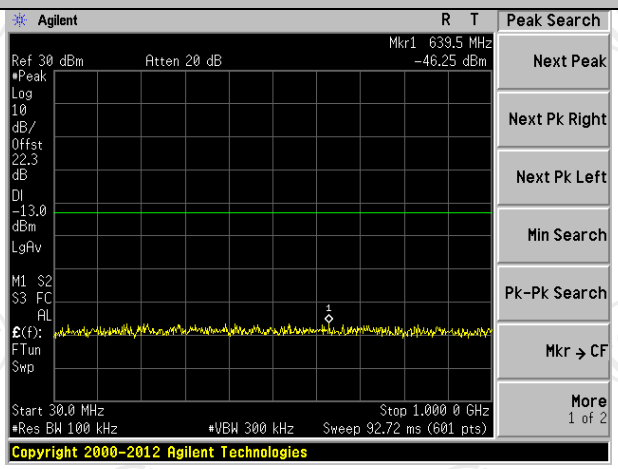
Middle channel

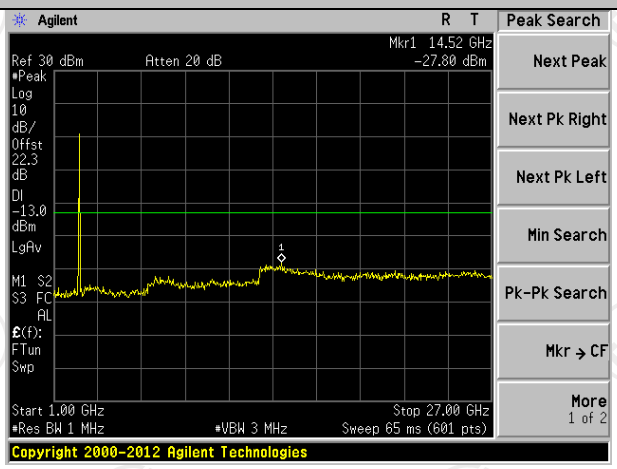




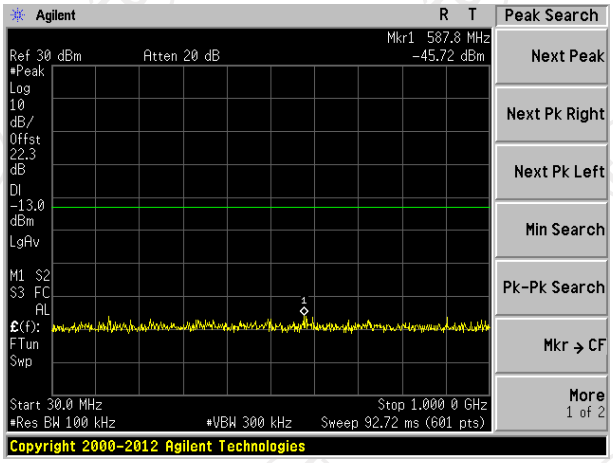
Highest channel

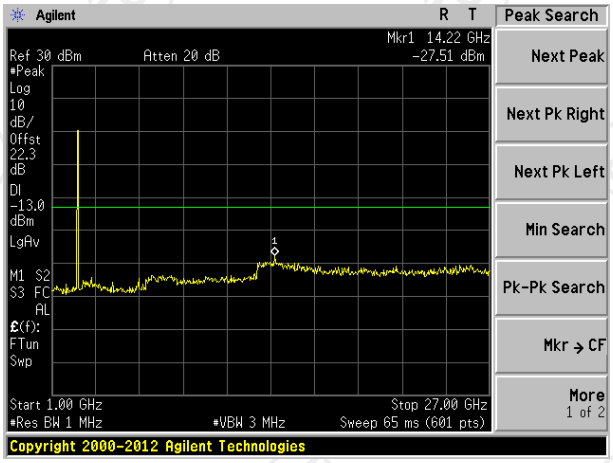
Test Mode: LTE Band 7	Channel Bandwidth: 10MHz



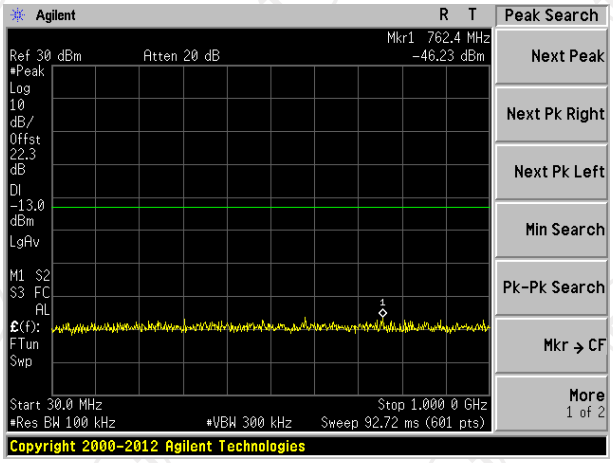


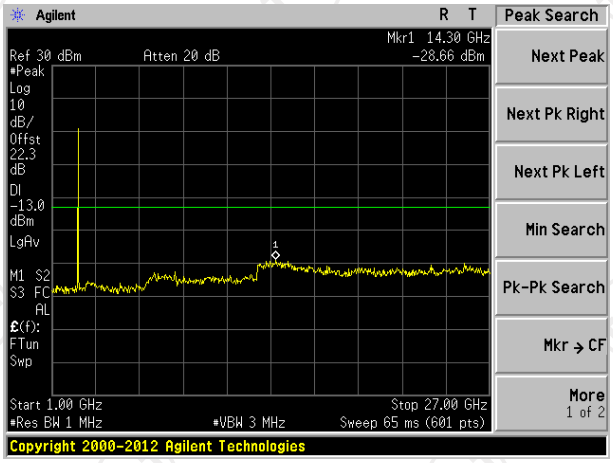
Lowest channel





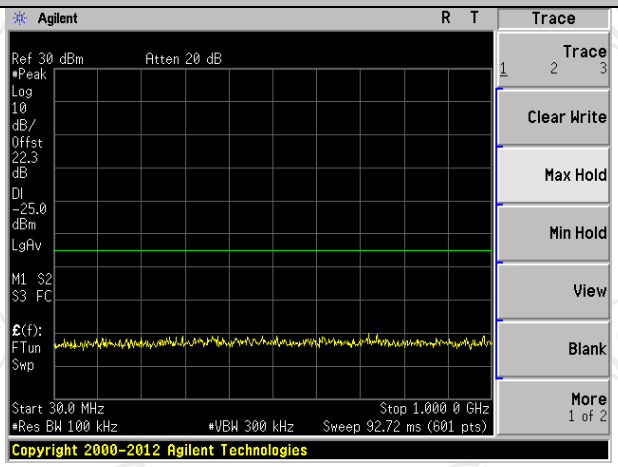
Middle channel

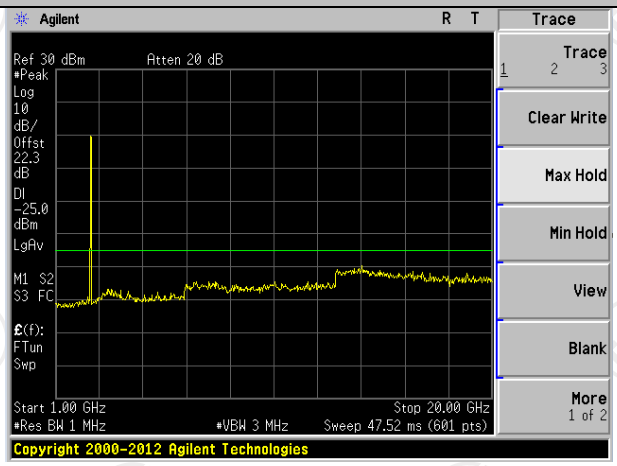




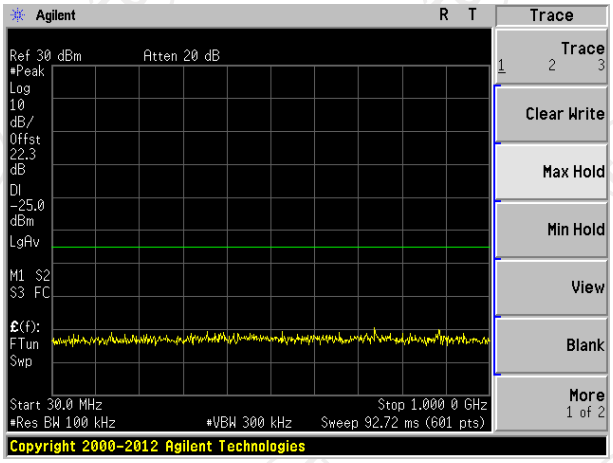
Highest channel

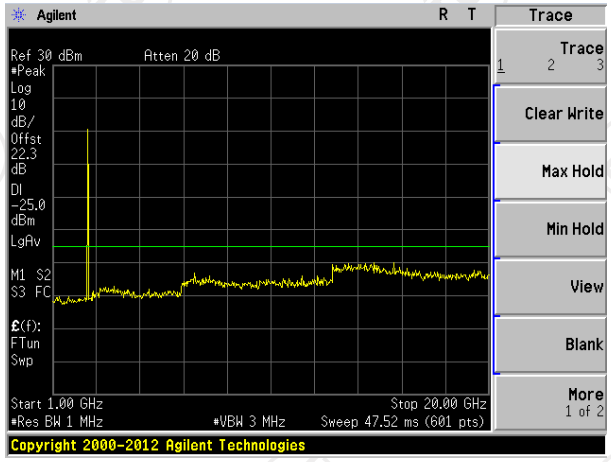
Test Mode: LTE Band 7	Channel Bandwidth: 15MHz



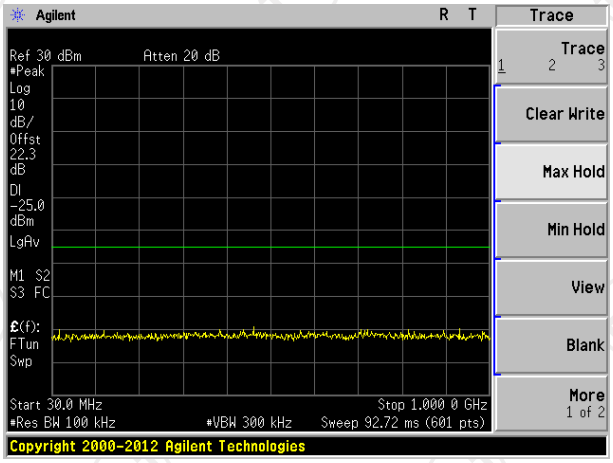


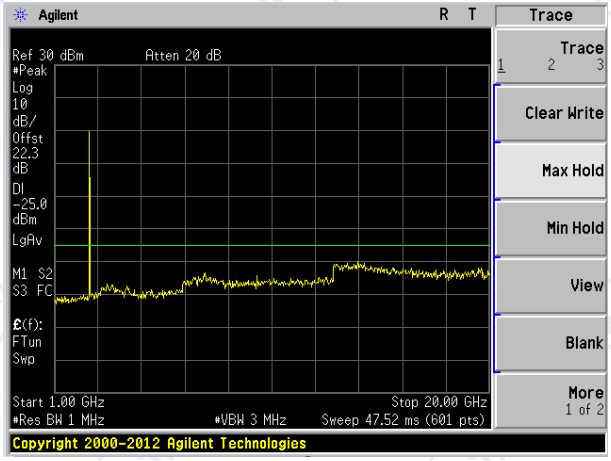
Lowest channel





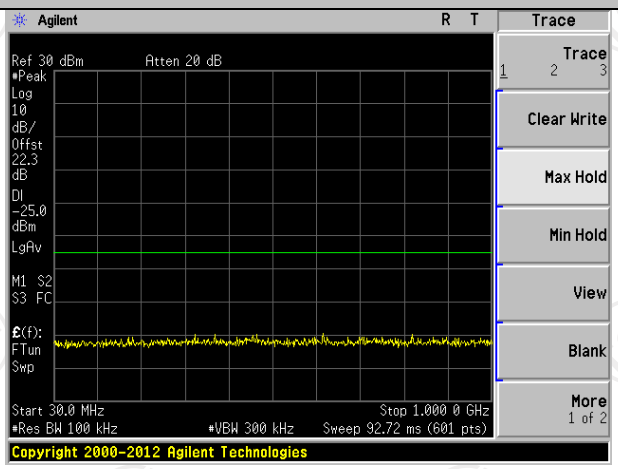
Middle channel

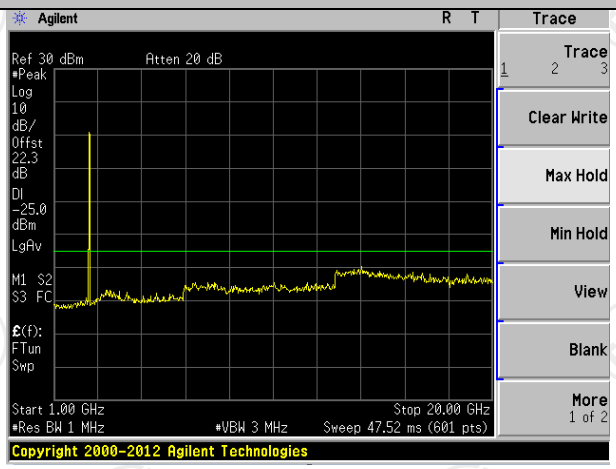




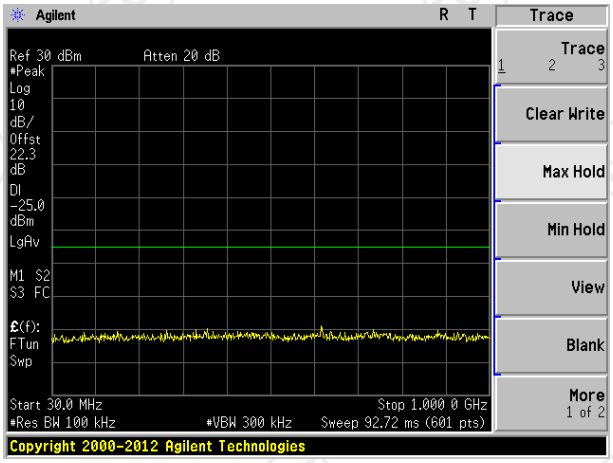
Highest channel

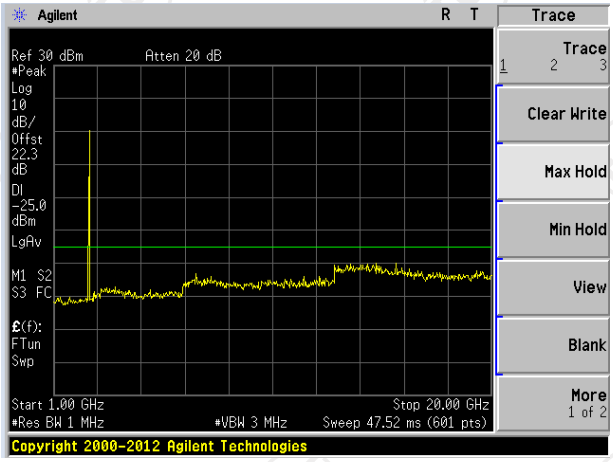
Test Mode: LTE Band 7	Channel Bandwidth: 20MHz



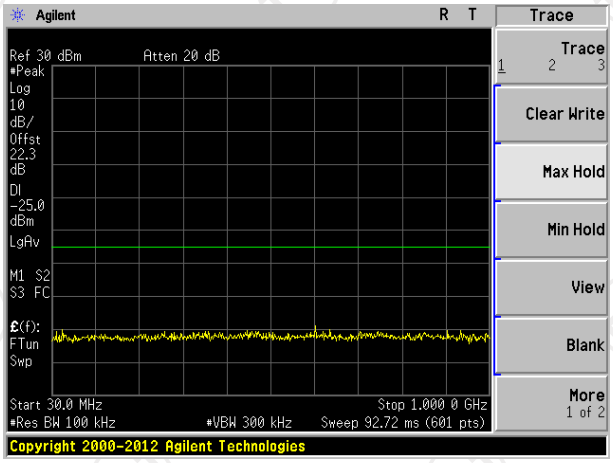


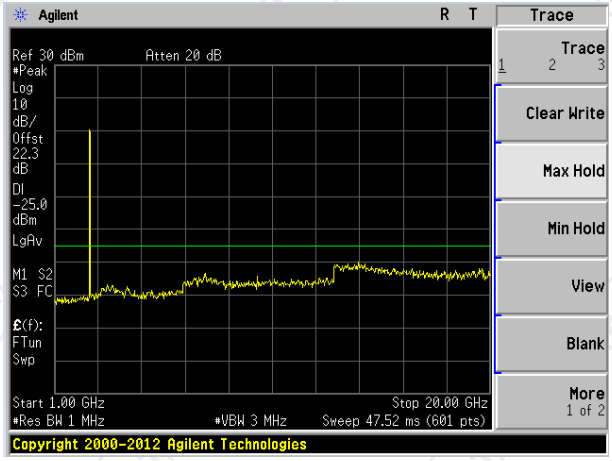
Lowest channel





Middle channel

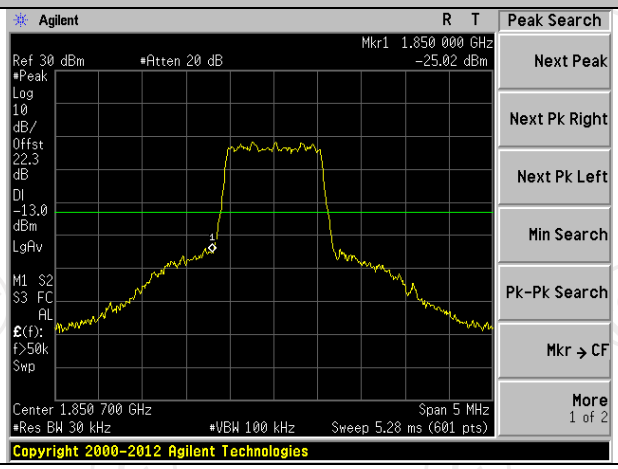




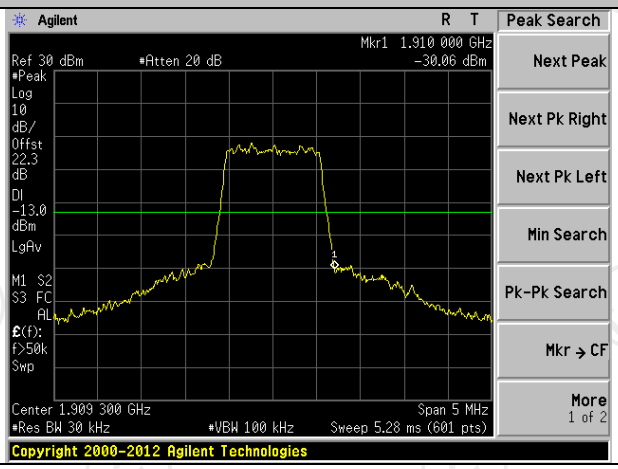
Highest channel

Band Edge:

Test Mode: LTE Band 2	Channel Bandwidth: 1.4MHz

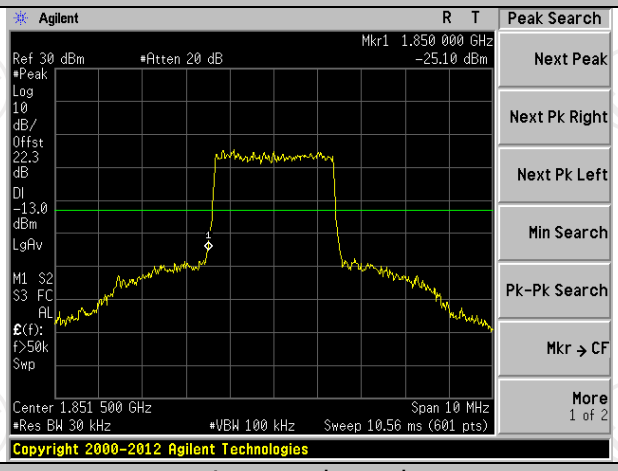


Lowest channel

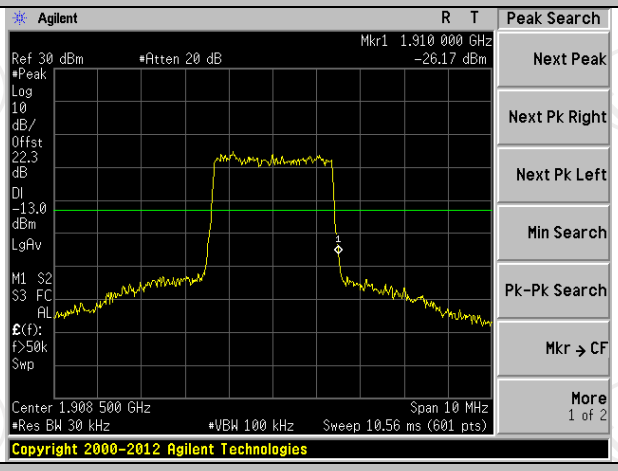


Highest channel

Test Mode: LTE Band 2	Channel Bandwidth: 3MHz

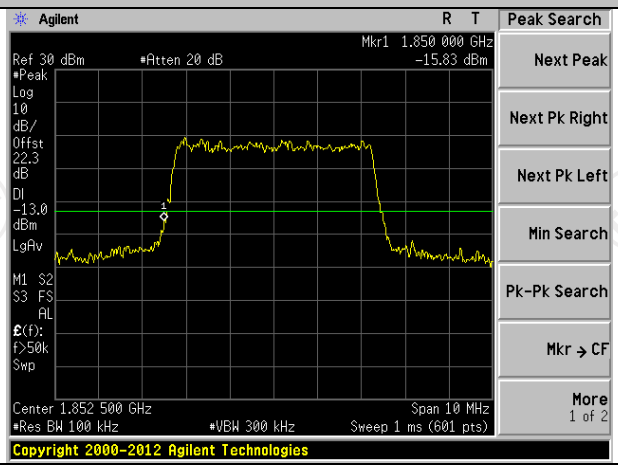


Lowest channel

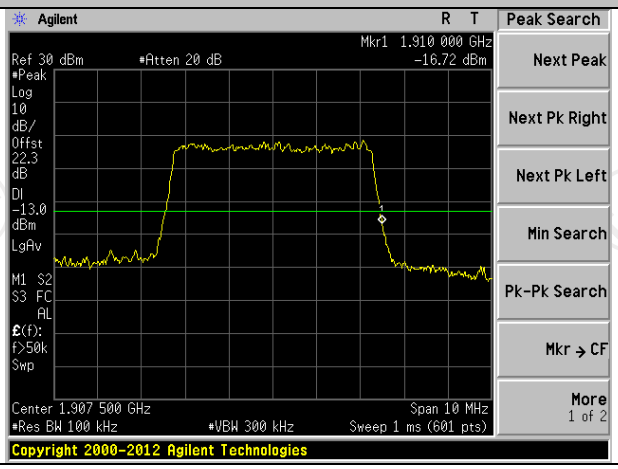


Highest channel

Test Mode: LTE Band 2	Channel Bandwidth: 5MHz

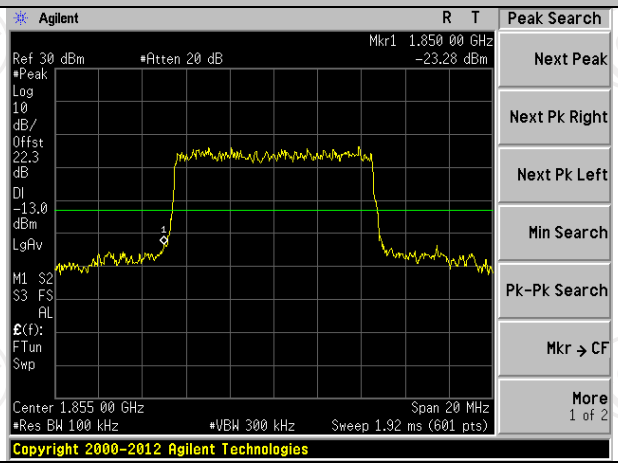


Lowest channel

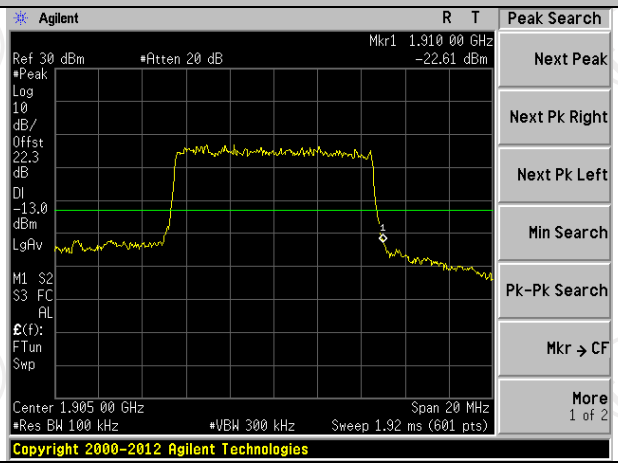


Highest channel

Test Mode: LTE Band 2	Channel Bandwidth: 10MHz

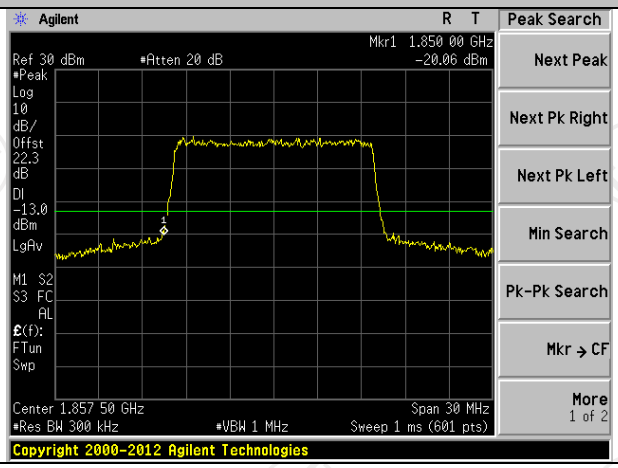


Lowest channel

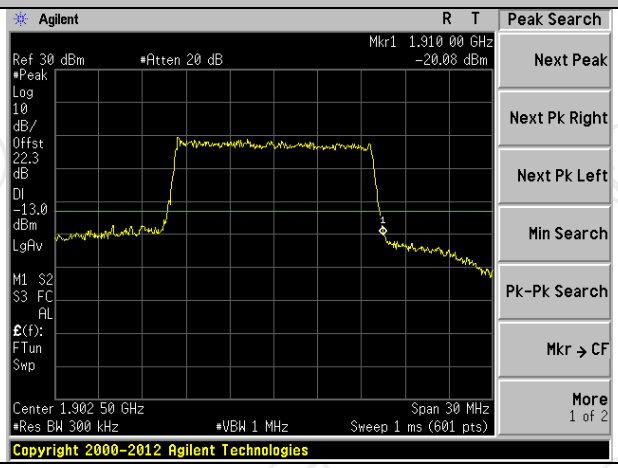


Highest channel

Test Mode: LTE Band 2	Channel Bandwidth: 15MHz

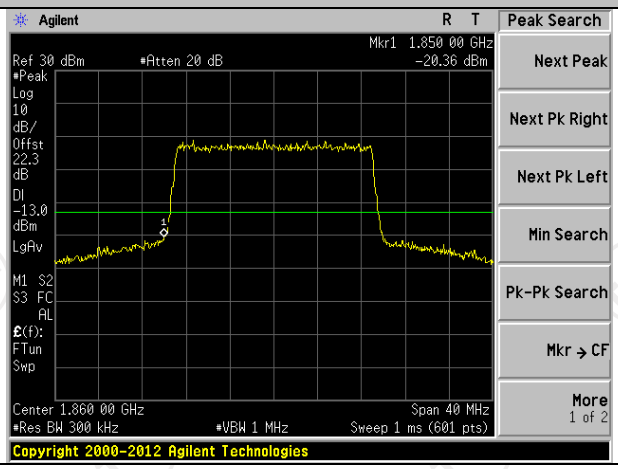


Lowest channel

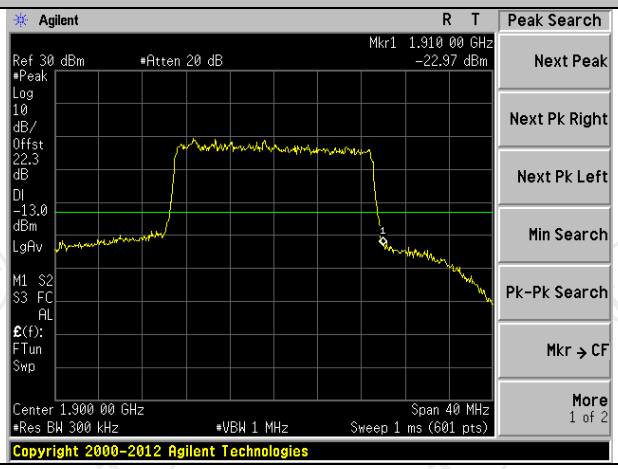


Highest channel

Test Mode: LTE Band 2	Channel Bandwidth: 20MHz

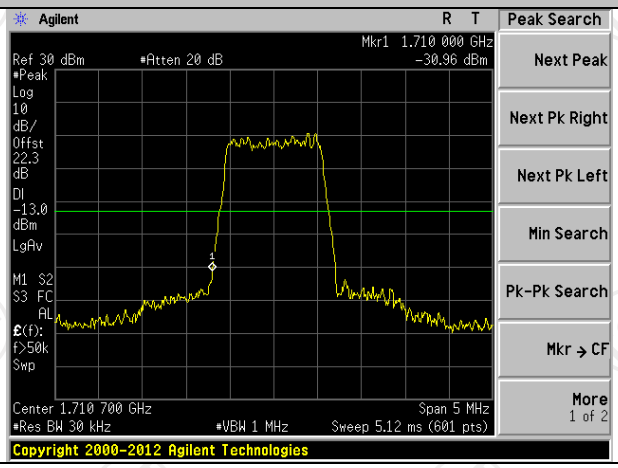


Lowest channel

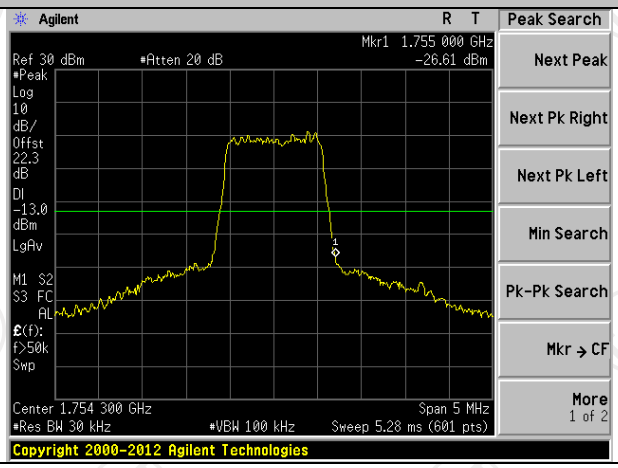


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 1.4MHz

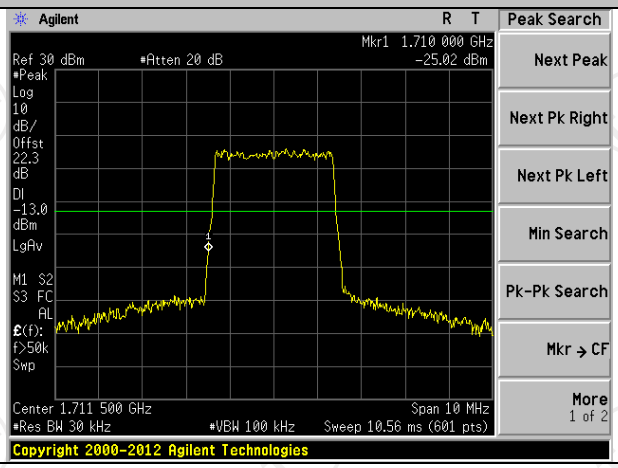


Lowest channel

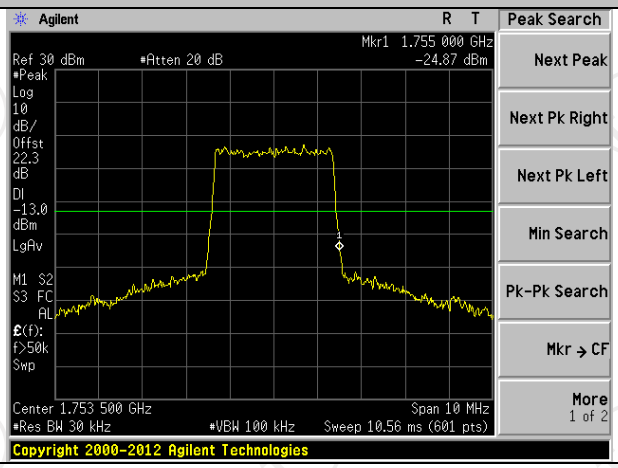


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 3MHz

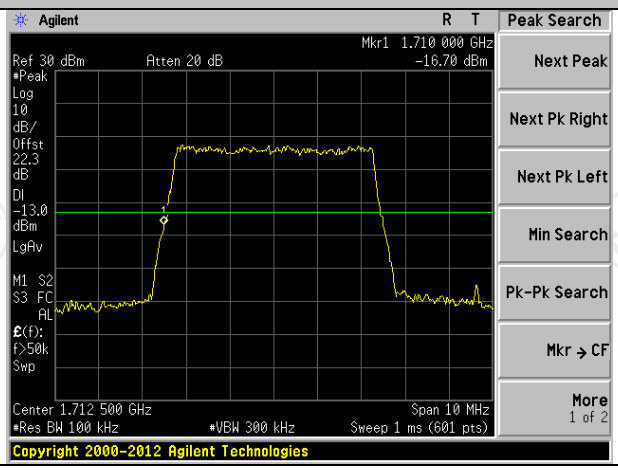


Lowest channel

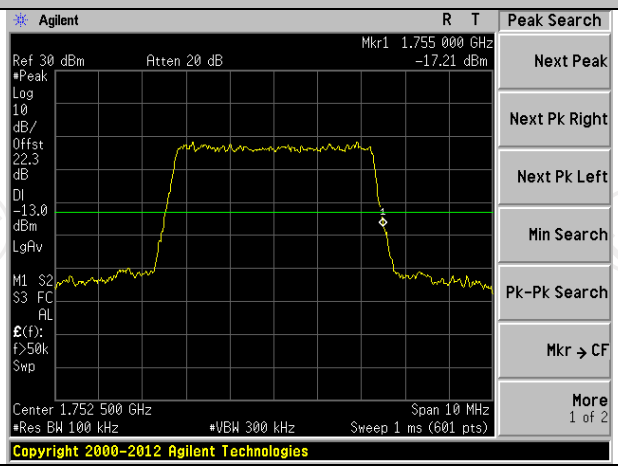


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 5MHz

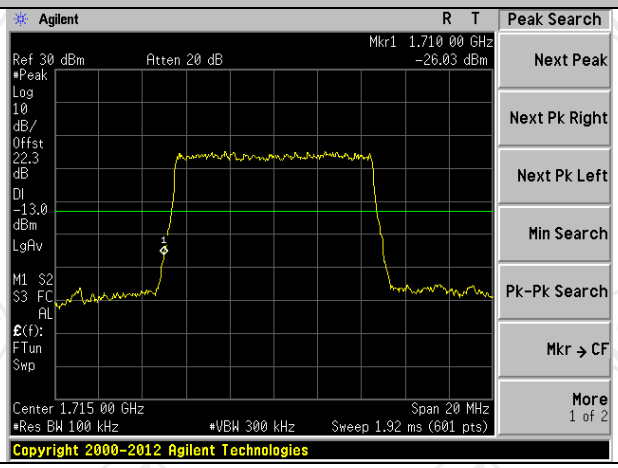


Lowest channel

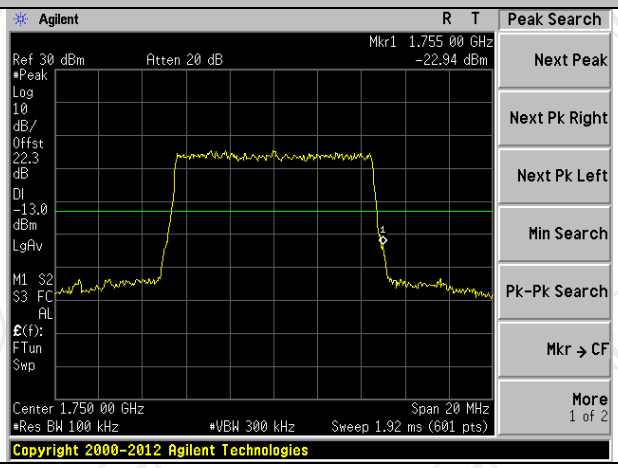


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 10MHz

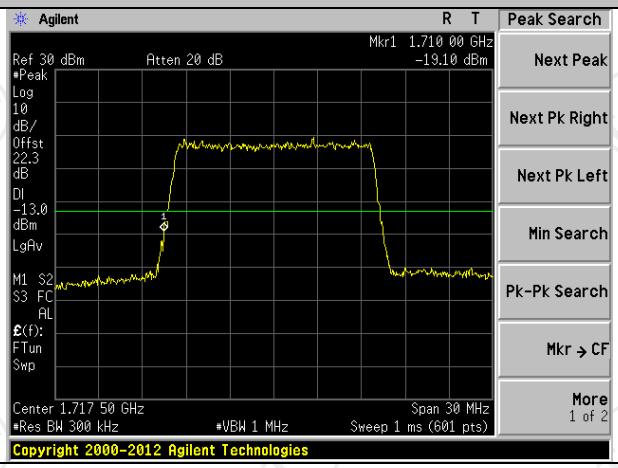


Lowest channel

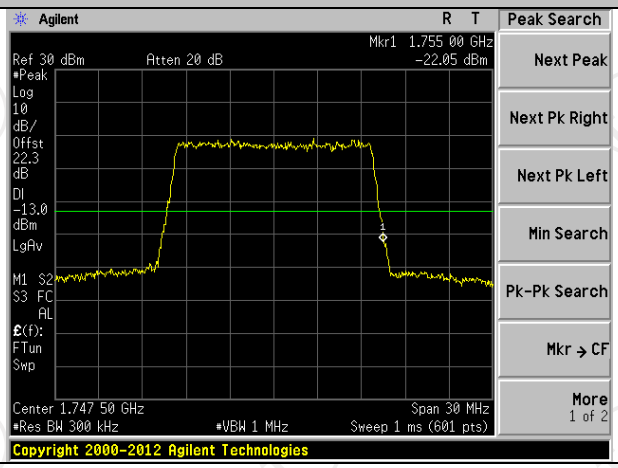


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 15MHz

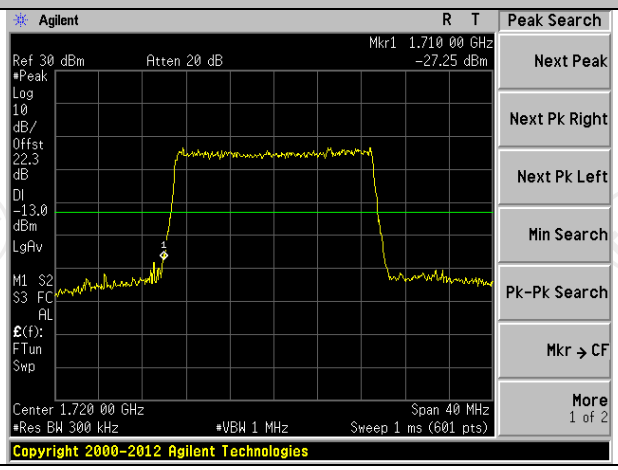


Lowest channel

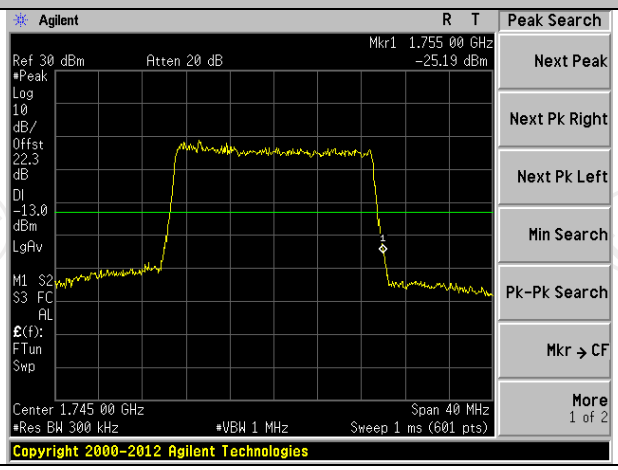


Highest channel

Test Mode: LTE Band 4	Channel Bandwidth: 20MHz

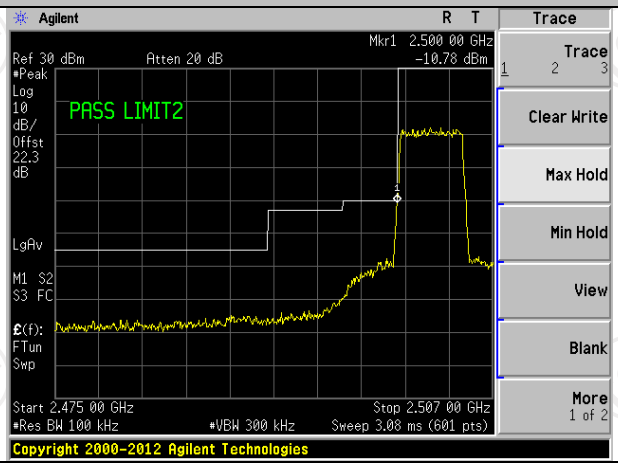


Lowest channel

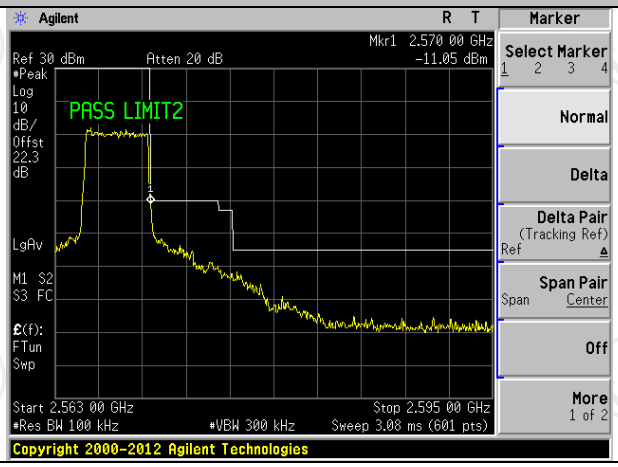


Highest channel

Test Mode: LTE Band 7	Channel Bandwidth: 5MHz

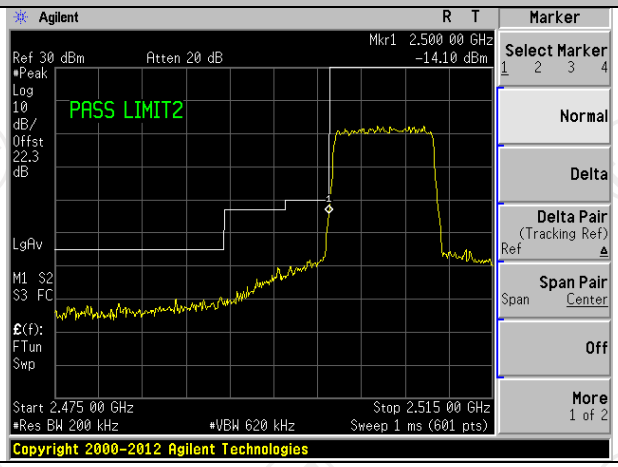


Lowest channel

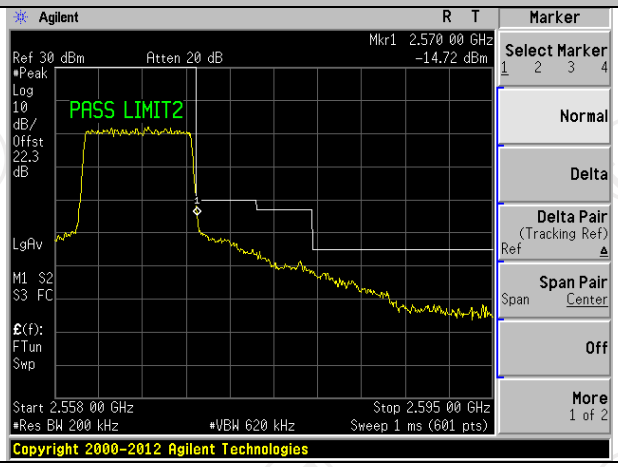


Highest channel

Test Mode: LTE Band 7	Channel Bandwidth: 10MHz

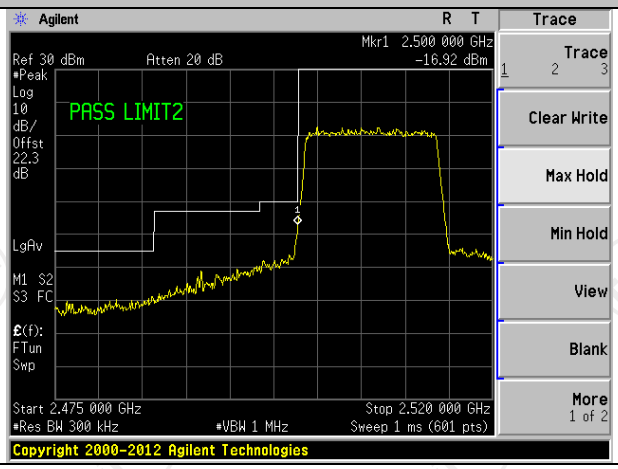


Lowest channel

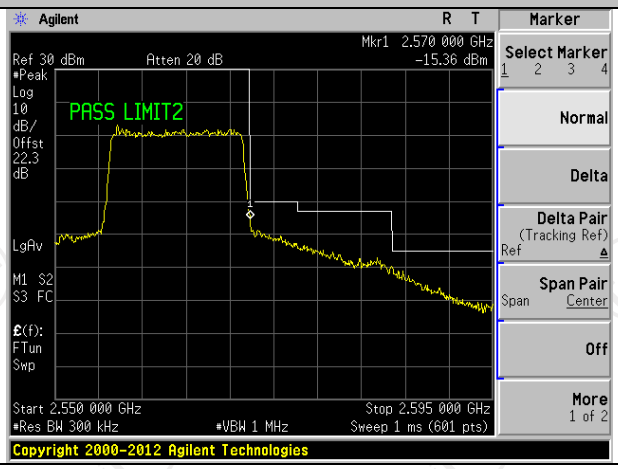


Highest channel

Test Mode: LTE Band 7	Channel Bandwidth: 15MHz

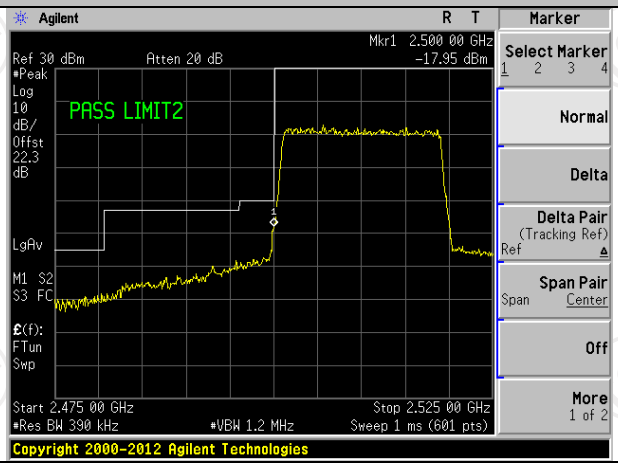


Lowest channel

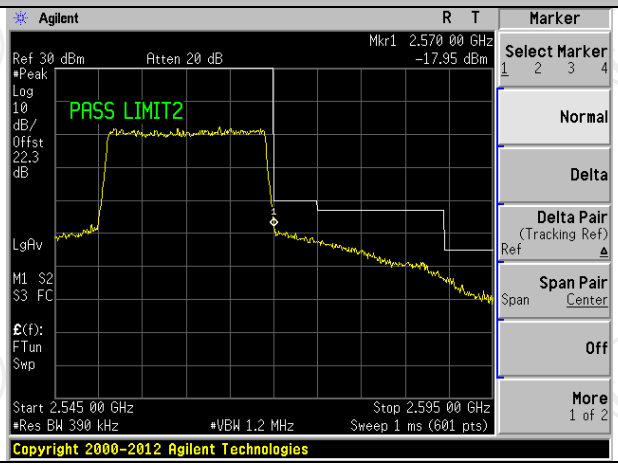


Highest channel

Test Mode: LTE Band 7	Channel Bandwidth: 20MHz



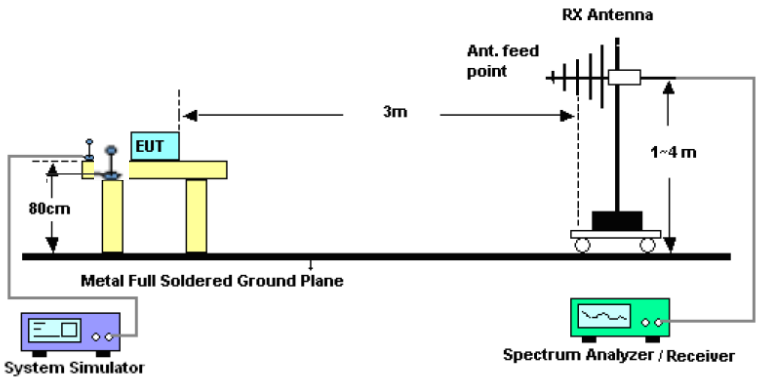
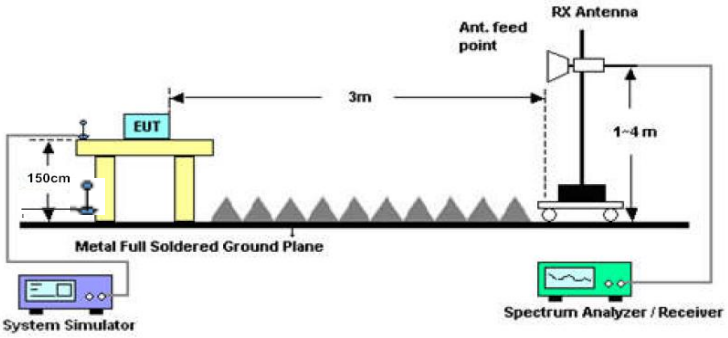
Lowest channel



Highest channel

6.4. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

6.4.1. Test Specification

Test Requirement:	FCC part24.232(b) and FCC part 27.53
Test Method:	FCC part 2.1046
Limit:	LTE Band 2: 2W (EIRP) LTE Band 4/7: 1W (EIRP)
Test Setup：	From 30MHz to 1GHz  Above 1GHz 
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.8. and ANSI / TIA-603-D-2010 Section 2.2.17. 2. The EUT was placed on a non-conductive rotating platform 0.8 meters high below 1GHz and a non-conductive rotating platform 1.5 meters high above 1GHz in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01. 3. Key the transmitter, then rotate the EUT 360^{o}

	azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. 4. Replace the transmitter under test with a substitution antenna. The center of the antenna should be at the same location as the center of the antenna under test. 5. Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. LOSS = Generator Output Power (dBm) – Analyzer reading (dBm) 6. Determine the effective radiated output power at each angular position from the readings in steps 3) and 5) using the following equation: ERP (dBm) = LVL (dBm) + LOSS (dB) 7. The maximum ERP is the maximum value determined in the preceding step. 8. Calculating ERP: ERP (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBd) Antenna Gain (dBd) = Antenna Gain (dBi) - 2.15 EIRP = ERP – 2.15
Test results:	PASS

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

6.4.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	R&S	FSQ	Sep. 27, 2018
Signal Generator	HP	83623B	3614A00396	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	412	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	1201	Mar. 05, 2018
Dipole Antenna	TCT	TCT-RF	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Sep. 27, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.4.3. Test Data

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (1.4MHz)	Lowest	H	V	22.62	33.00	Pass
			H	20.59		
		E1	V	22.31		
			H	19.93		
		E2	V	21.55		
			H	18.72		
	Middle	H	V	22.65	33.00	Pass
			H	19.98		
		E1	V	22.23		
			H	19.78		
		E2	V	22.07		
			H	18.96		
	Highest	H	V	22.39	33.00	Pass
			H	20.10		
		E1	V	22.18		
			H	19.87		
		E2	V	21.87		
			H	19.30		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (3MHz)	Lowest	H	V	22.70	33.00	Pass
			H	20.68		
		E1	V	22.42		
			H	20.04		
		E2	V	21.67		
			H	18.86		
	Middle	H	V	22.77	33.00	Pass
			H	20.12		
		E1	V	22.39		
			H	19.95		
		E2	V	22.21		
			H	19.11		
	Highest	H	V	22.50	33.00	Pass
			H	20.23		
		E1	V	22.32		
			H	20.01		
		E2	V	21.97		
			H	19.41		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (5MHz)	Lowest	H	V	22.76	33.00	Pass
			H	20.75		
		E1	V	22.49		
			H	20.13		
		E2	V	21.76		
			H	18.96		
	Middle	H	V	22.86	33.00	Pass
			H	20.23		
		E1	V	22.51		
			H	20.07		
		E2	V	22.31		
			H	19.22		
	Highest	H	V	22.59	33.00	Pass
			H	20.33		
		E1	V	22.42		
			H	20.13		
		E2	V	22.05		
			H	19.49		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
LTE Band 2 (10MHz)	Lowest	H	V	22.81	33.00	Pass
			H	20.80		
		E1	V	22.55		
			H	20.19		
		E2	V	21.83		
			H	19.03		
	Middle	H	V	22.92	33.00	Pass
			H	20.31		
		E1	V	22.60		
			H	20.17		
		E2	V	22.40		
			H	19.31		
	Highest	H	V	22.66	33.00	Pass
			H	20.40		
		E1	V	22.50		
			H	20.21		
		E2	V	22.11		
			H	19.56		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
LTE Band 2 (15MHz)	Lowest	H	V	22.85	33.00	Pass
			H	20.84		
		E1	V	22.60		
			H	20.24		
		E2	V	21.89		
			H	19.09		
	Middle	H	V	22.98	33.00	Pass
			H	20.37		
		E1	V	22.66		
			H	20.24		
		E2	V	22.46		
			H	19.37		
	Highest	H	V	22.71	33.00	Pass
			H	20.45		
		E1	V	22.56		
			H	20.28		
		E2	V	22.15		
			H	19.61		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
LTE Band 2 (20MHz)	Lowest	H	V	22.87	33.00	Pass
			H	20.87		
		E1	V	22.63		
			H	20.28		
		E2	V	21.93		
			H	19.14		
	Middle	H	V	23.02	33.00	Pass
			H	20.42		
		E1	V	22.72		
			H	20.30		
		E2	V	22.50		
			H	19.42		
	Highest	H	V	22.75	33.00	Pass
			H	20.50		
		E1	V	22.61		
			H	20.32		
		E2	V	22.18		
			H	19.64		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (1.4MHz)	Lowest	H	V	22.87	30.00	Pass
			H	20.87		
		E1	V	22.63		
			H	20.28		
		E2	V	21.93		
			H	19.14		
	Middle	H	V	23.01	30.00	Pass
			H	20.42		
		E1	V	22.71		
			H	20.29		
		E2	V	22.50		
			H	19.42		
	Highest	H	V	22.75	30.00	Pass
			H	20.49		
		E1	V	22.60		
			H	20.32		
		E2	V	22.18		
			H	19.64		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (3MHz)	Lowest	H	V	22.75	30.00	Pass
			H	20.73		
		E1	V	22.47		
			H	20.11		
		E2	V	21.74		
			H	18.93		
	Middle	H	V	22.83	30.00	Pass
			H	20.20		
		E1	V	22.48		
			H	20.04		
		E2	V	22.29		
			H	19.19		
	Highest	H	V	22.57	30.00	Pass
			H	20.30		
		E1	V	22.40		
			H	20.10		
		E2	V	22.03		
			H	19.47		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (5MHz)	Lowest	H	V	22.22	30.00	Pass
			H	20.14		
		E1	V	21.81		
			H	19.38		
		E2	V	20.94		
			H	18.07		
	Middle	H	V	22.07	30.00	Pass
			H	19.29		
		E1	V	21.48		
			H	18.97		
		E2	V	21.39		
			H	18.22		
	Highest	H	V	21.82	30.00	Pass
			H	19.49		
		E1	V	21.51		
			H	19.15		
		E2	V	21.39		
			H	18.76		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (10MHz)	Lowest	H	V	21.88	30.00	Pass
			H	19.75		
		E1	V	21.38		
			H	18.90		
		E2	V	20.43		
			H	17.51		
	Middle	H	V	21.58	30.00	Pass
			H	18.69		
		E1	V	20.83		
			H	18.28		
		E2	V	20.81		
			H	17.60		
	Highest	H	V	21.34	30.00	Pass
			H	18.96		
		E1	V	20.94		
			H	18.53		
		E2	V	20.97		
			H	18.30		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (15MHz)	Lowest	H	V	21.77	30.00	Pass
			H	19.62		
		E1	V	21.24		
			H	18.75		
		E2	V	20.25		
			H	17.32		
	Middle	H	V	21.41	30.00	Pass
			H	18.49		
		E1	V	20.61		
			H	18.05		
		E2	V	20.61		
			H	17.39		
	Highest	H	V	21.18	30.00	Pass
			H	18.79		
		E1	V	20.75		
			H	18.33		
		E2	V	20.83		
			H	18.15		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (20MHz)	Lowest	H	V	22.24	30.00	Pass
			H	20.06		
		E1	V	22.25		
			H	19.62		
		E2	V	21.60		
			H	18.76		
	Middle	H	V	22.72	30.00	Pass
			H	20.21		
		E1	V	22.49		
			H	20.05		
		E2	V	22.16		
			H	19.03		
	Highest	H	V	22.48	30.00	Pass
			H	20.30		
		E1	V	22.39		
			H	20.02		
		E2	V	21.90		
			H	19.34		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (5MHz)	Lowest	H	V	22.90	30.00	Pass
			H	20.90		
		E1	V	22.67		
			H	20.32		
		E2	V	21.97		
			H	19.18		
	Middle	H	V	23.05	30.00	Pass
			H	20.47		
		E1	V	22.77		
			H	20.35		
		E2	V	22.55		
			H	19.47		
	Highest	H	V	22.79	30.00	Pass
			H	20.54		
		E1	V	22.65		
			H	20.37		
		E2	V	22.22		
			H	19.68		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (10MHz)	Lowest	H	V	22.80	30.00	Pass
			H	20.79		
		E1	V	22.54		
			H	20.18		
		E2	V	21.82		
			H	19.02		
	Middle	H	V	22.91	30.00	Pass
			H	20.29		
		E1	V	22.58		
			H	20.15		
		E2	V	22.38		
			H	19.29		
	Highest	H	V	22.64	30.00	Pass
			H	20.38		
		E1	V	22.48		
			H	20.19		
		E2	V	22.09		
			H	19.54		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

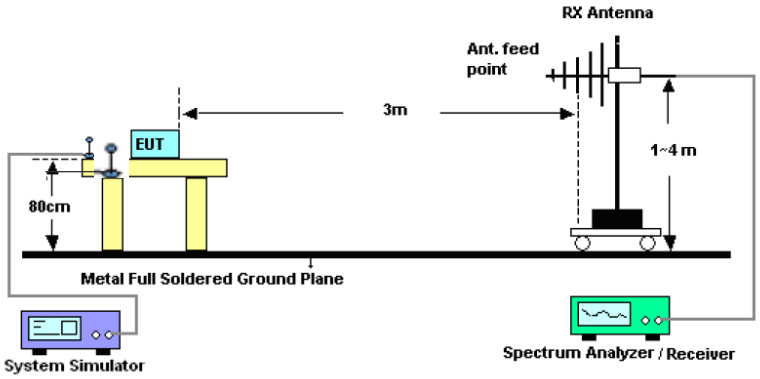
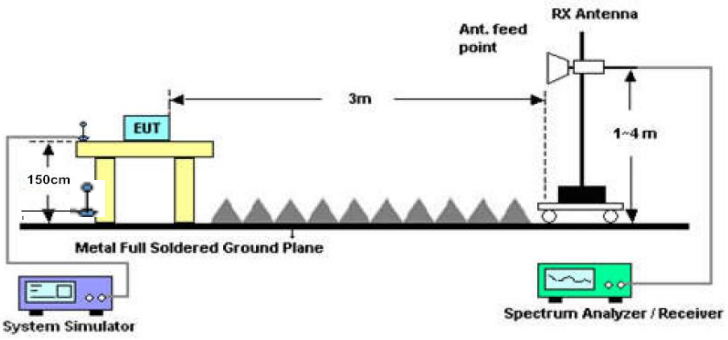
EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (15MHz)	Lowest	H	V	22.84	30.00	Pass
			H	20.84		
		E1	V	22.59		
			H	20.24		
		E2	V	21.88		
			H	19.08		
	Middle	H	V	22.97	30.00	Pass
			H	20.36		
		E1	V	22.65		
			H	20.23		
		E2	V	22.45		
			H	19.36		
	Highest	H	V	22.70	30.00	Pass
			H	20.45		
		E1	V	22.55		
			H	20.27		
		E2	V	22.14		
			H	19.60		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (20MHz)	Lowest	H	V	22.87	30.00	Pass
			H	20.86		
		E1	V	22.62		
			H	20.27		
		E2	V	21.92		
			H	19.12		
	Middle	H	V	23.00	30.00	Pass
			H	20.40		
		E1	V	22.70		
			H	20.28		
		E2	V	22.49		
			H	19.41		
	Highest	H	V	22.74	30.00	Pass
			H	20.48		
		E1	V	22.59		
			H	20.31		
		E2	V	22.17		
			H	19.63		

6.5. Field Strength of Spurious Radiation Measurement

6.5.1. Test Specification

Test Requirement:	FCC part 27.53(h), FCC part 24.238(a)
Test Method:	FCC part 2.1053
Limit:	Band 2/4: -13dBm Band 7: -25dBm
Test setup:	From 30MHz to 1GHz  Above 1GHz 
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010Section 2.2.12. 2. The EUT was placed on a rotatable wooden table 0.8 meters below 1GHz and a rotatable wooden table 1.5 meters above 1GHz above the ground. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower. 4. The table was rotated 360 degrees to determine the position of the highest spurious emission. 5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.

	6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission. 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission. 9. Taking the record of output power at antenna port. 10. Repeat step 7 to step 8 for another polarization. 11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain 12. ERP (dBm) = EIRP - 2.15 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm. For Band 17, he limit line is derived from 55 + 10log(P) dB below the transmitter power
Test results:	PASS

6.5.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
System simulator	R&S	CMU200	111382	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	R&S	FSQ	Sep. 27, 2018
Signal Generator	HP	83623B	3614A00396	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	412	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	1201	Mar. 05, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Dipole Antenna	TCT	TCT-RF	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018

Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9kHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Sep. 27, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5.3. Test Data

Test mode:	LTE Band 2(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3701.40	Vertical	-36.85	-13.00	Pass
5552.10	V	-39.55		
7402.80	V	-41.77		
9253.50	V	-43.92		
11104.20	V	---		
3701.40	Horizontal	-42.03	-13.00	Pass
5552.10	H	-45.84		
7402.80	H	-47.37		
9253.50	H	-50.05		
11104.20	H	---		
Test mode:	**LTE Band 2(1.4MHz)**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-37.97	-13.00	Pass
5640.00	V	-40.22		
7520.00	V	-42.08		
9400.00	V	-43.88		
11280.00	V	---		
3760.00	Horizontal	-42.30	-13.00	Pass
5640.00	H	-45.48		
7520.00	H	-46.76		
9400.00	H	-49.00		
11280.00	H	---		
Test mode:	**LTE Band 2(1.4MHz)**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3818.60	Vertical	-38.01	-13.00	Pass
5727.90	V	-40.02		
7637.20	V	-41.67		
9546.50	V	-43.28		
11455.80	V	---		
3818.60	Horizontal	-41.87	-13.00	Pass
5727.90	H	-44.71		
7637.20	H	-45.85		
9546.50	H	-47.85		
11455.80	H	---		

Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 4(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3421.40	Vertical	-34.60	-13.00	Pass
5132.10	V	-37.08		
6842.80	V	-39.17		
8553.50	V	-41.11		
10264.20	V	---		
3421.40	Horizontal	-39.36	-13.00	Pass
5132.10	H	-42.88		
6842.80	H	-44.34		
8553.50	H	-46.86		
10264.20	H	---		
Test mode:	**LTE Band 4(1.4MHz)**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3465.00	Vertical	-32.56	-13.00	Pass
5197.50	V	-35.11		
6930.00	V	-37.25		
8662.50	V	-39.26		
10395.00	V	---		
3465.00	Horizontal	-37.46	-13.00	Pass
5197.50	H	-41.07		
6930.00	H	-42.58		
8662.50	H	-45.17		
10395.00	H	---		
Test mode:	**LTE Band 4(1.4MHz)**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3508.60	Vertical	-33.61	-13.00	Pass
5262.90	V	-36.09		
7017.20	V	-38.18		
8771.50	V	-40.12		
10525.80	V	---		
3508.60	Horizontal	-38.37	-13.00	Pass
5262.90	H	-41.89		
7017.20	H	-43.35		
8771.50	H	-45.87		
10525.80	H	---		

Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 7(5MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5005.00	Vertical	-37.19	-25.00	Pass
7507.50	V	-40.35		
10010.00	V	-42.97		
12512.50	V	-45.45		
15015.00	V	---		
5005.00	Horizontal	-43.23	-25.00	Pass
7507.50	H	-47.68		
10010.00	H	-49.51		
12512.50	H	-52.68		
15015.00	H	---		
Test mode:	**LTE Band 7(5MHz)**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5070.00	Vertical	-37.77	-25.00	Pass
7605.00	V	-40.78		
10140.00	V	-43.27		
12675.00	V	-45.63		
15210.00	V	---		
5070.00	Horizontal	-43.52	-25.00	Pass
7605.00	H	-47.76		
10140.00	H	-49.50		
12675.00	H	-52.52		
15210.00	H	---		
Test mode:	**LTE Band 7(5MHz)**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5135.00	Vertical	-36.88	-25.00	Pass
7702.50	V	-39.70		
10270.00	V	-42.03		
12837.50	V	-44.24		
15405.00	V	---		
5135.00	Horizontal	-42.26	-25.00	Pass
7702.50	H	-46.23		
10270.00	H	-47.86		
12837.50	H	-50.69		
15405.00	H	---		

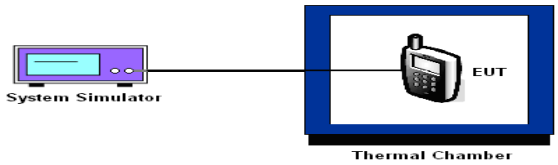
Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark”---“ means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

6.6. Frequency Stability Measurement

6.6.1. Test Specification

Test Requirement:	FCC part 27.54, FCC part 24.235
Test Method:	FCC Part 2.1055
Limit:	±2.5 ppm
Test Setup:	
Test Procedure:	**Test Procedures for Temperature Variation** 1. The testing follows FCC KDB 971168 v02r02 Section 9.0. 2. The EUT was set up in the thermal chamber and connected with the system simulator. 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute. 4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute. **Test Procedures for Voltage Variation** 1. The testing follows FCC KDB 971168 v02r02 Section 9.0. 2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator. 3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT. 4. The variation in frequency was measured for the worst case.
Test Result:	PASS

6.6.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jun. 12, 2018
Programable tempratuce and humidity chamber	JQ	JQ-2000	N/A	Sep. 27, 2018
DC power supply	Kingrang	KR3005K 30V/5A	N/A	Sep. 27, 2018
RF cable (9kHz-40GHz)	TCT	RE-04	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.6.3. Test Data

Test Result of Temperature Variation

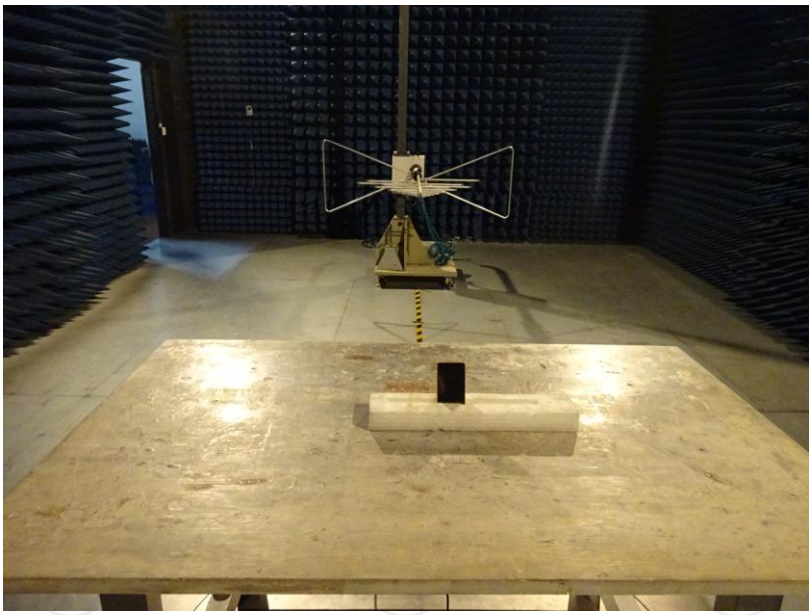
Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	52	0.0277	2.5	Pass
	-20	59	0.0314		
	-10	50	0.0265		
	0	41	0.0216		
	10	47	0.0252		
	20	41	0.0216		
	30	68	0.0362		
	40	61	0.0326		
	50	59	0.0314		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	43	0.0247	2.5	Pass
	-20	47	0.0274		
	-10	41	0.0234		
	0	36	0.0207		
	10	38	0.0221		
	20	34	0.0194		
	30	59	0.0340		
	40	50	0.0287		
	50	47	0.0274		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	100	0.0396	2.5	Pass
	-20	116	0.0458		
	-10	97	0.0383		
	0	84	0.0333		
	10	95	0.0373		
	20	82	0.0325		
	30	139	0.0548		
	40	121	0.0477		
	50	115	0.0452		

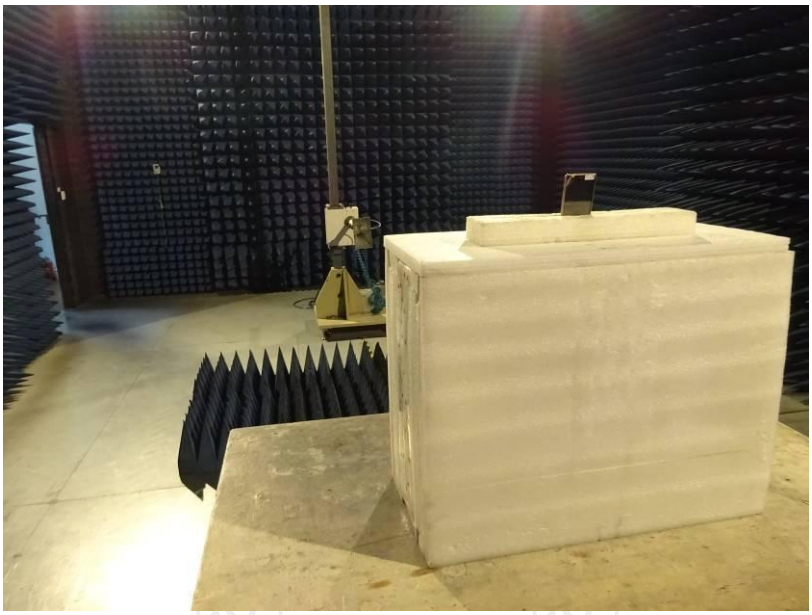
Test Result of Voltage Variation

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	18	0.0098	2.5	Pass
	3.70	21	0.0112		
	3.40	24	0.0126		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	30	0.0175	2.5	Pass
	3.70	22	0.0129		
	3.40	25	0.0145		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	36	0.0143	2.5	Pass
	3.70	41	0.0163		
	3.40	46	0.0182		

Appendix A: Photographs of Test Setup

Radiated Emission





Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Appendix B: Photographs of EUT

Refer to test report TCT171019E005-1

********END OF REPORT********