FCC Test Report

FCC ID	:	**VQK-F04G**
Equipment	:	**Mobile Phone**
Model No.	:	**F-04G**
Brand Name	:	**FUJITSU**
Applicant	:	**FUJITSU LIMITED**
Address	:	**1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan**
Standard	:	**47 CFR FCC Part 27**
Frequency band	:	**704 ~ 716 MHz**
Received Date	:	**Dec. 17, 2014**
Tested Date	:	**Feb. 11 ~ Feb. 16, 2015**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Along Chen / Assistant Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FG4D1701P27	Rev. 01	Initial issue	Apr. 01, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 27.50(b)(10) 27.50(c)(10)	Effective Radiated Power	Power[dBm]: 18.19	Pass
2.1053 27.53(c) 27.53(g)	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 27.53(c) 27.53(g)	Conducted Emissions	Meet the requirement of limit	Pass
2.1051 27.53(c) 27.53(g)	Band Edge	Meet the requirement of limit	Pass
2.1049	Occupied Bandwidth	Meet the requirement of limit	Pass
2.1055 / 27.54	Frequency Stability	Meet the requirement of limit	Pass
27.50(d)(5)	Peak to Average Ratio	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Product Details

Product Name	Mobile Phone
Brand Name	FUJITSU
Model Name	F-04G
IMEI Code	357241060025094 / 357241060025250
H/W Version	v2.1.0
S/W Version	R21.5e

1.1.2 Specification of the Equipment under Test (EUT)

Operating Frequency (MHz)	**LTE Band 17** Channel Bandwidth: 5MHz: 706.5 ~ 713.5 Channel Bandwidth: 10MHz: 709 ~ 711
Modulation Type	Uplink : QPSK, 16QAM Downlink : QPSK, 16QAM, 64QAM
Duplex Mode	FDD
Release	10
UE category	4

1.1.3 Maximum ERP and Emission Designator

System	Bandwidth	Modulation	Maximum ERP(W)	Emission Designator
LTE band 17	5	QPSK	0.065	4M52G7D
LTE band 17	5	16QAM	0.056	4M50W7D
LTE band 17	10	QPSK	0.066	9M00G7D
LTE band 17	10	16QAM	0.056	8M97W7D

1.1.4 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	λ/4 Monopole	-1.54	---	---

1.1.5 EUT Operational Condition

Supply Voltage	AC adapter: (normal output rating) 5.0Vdc, 1.8A (quick charge output rating) 9.0Vdc, 1.8A Battery: 3.75Vdc		
Operational Voltage	☒ Vnom (3.9 V)	☒ Vmax (4.29 V)	☒ Vmin (3.51 V)
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (55°C)	☒ Tmin (-30°C)

1.1.6 Accessories

No.	Equipment	Description
1	Cradle	Brand Name: Fujitsu Limited Model Name: F50 Input rating: (quick charge) 9.0Vdc, 1.5A Output rating: (quick charge) 9.0Vdc, 1.5A
2	Battery (Unremovable)	Brand Name: NTT Docomo Model Name: CA54310-0061 Power Rating: 3.75Vdc, 3120mAh, 12Wh

1.1.7 Operating Channel List

LTE Band 17		
Channel Bandwidth (MHz)	**Channel**	**Frequency (MHz)**
5	23755	706.5
5	23790	710.0
5	23825	713.5
10	23780	709.0
10	23790	710.0
10	23800	711.0

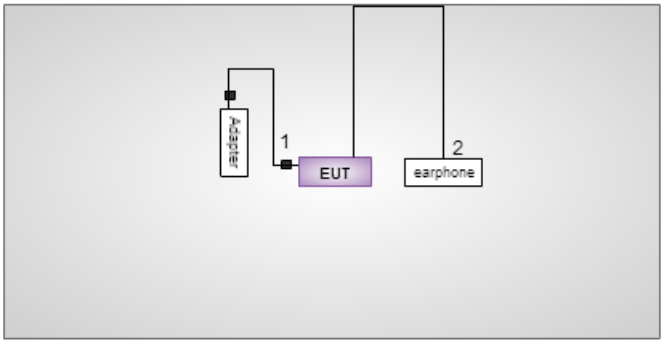
1.2 Local Support Equipment List

Support Equipment List						
No.	**Equipment**	**Brand**	**Model**	**S/N**	**FCC ID**	**Signal cable / Length (m)**
1	Adapter	NTT docomo	AC Adaptor 05	---	---	---
2	Earphone	APPLE	MD827FE/A	6	---	1.2m non-shielded w/o core

Note: Item 1 was provided by client.

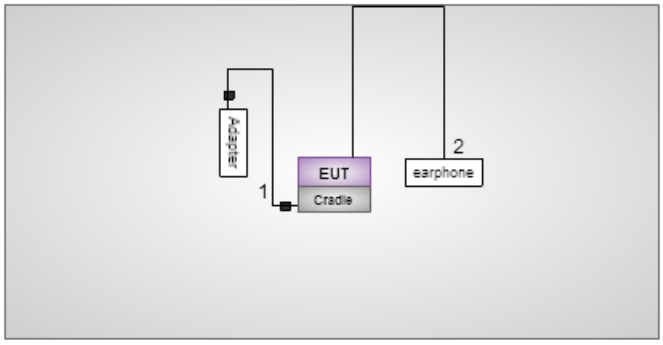
1.3 Test Setup Chart

Test Setup Diagram (Adapter mode)



1. 1.2m non-shielded with 2 cores
2. 1.2m non-shielded w/o core

Test Setup Diagram (Cradle mode)



1. 1.2m non-shielded with 2 cores
2. 1.2m non-shielded w/o core

1.4 The Equipment List

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 03, 2014	Dec. 02, 2015
Power Meter	Anritsu	ML2495A	1241002	Sep. 29, 2014	Sep. 28, 2015
Power Sensor	Anritsu	MA2411B	1207366	Sep. 29, 2014	Sep. 28, 2015
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 18, 2014	Mar. 17, 2015
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Dec. 09, 2014	Dec. 08, 2015
Receiver	R&S	ESR3	101658	Nov. 10, 2014	Nov. 09, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Sep. 05, 2014	Sep. 04, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2014	Dec. 10, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 09, 2014	Sep. 08, 2015
Preamplifier	Agilent	83017A	MY39501308	Oct. 09, 2014	Oct. 08, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 15, 2014	Dec. 14, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 15, 2014	Dec. 14, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 15, 2014	Dec. 14, 2015
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 15, 2014	Dec. 14, 2015
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 15, 2014	Dec. 14, 2015
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 18, 2014	Mar. 17, 2015
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 27
47 CFR FCC Part 2
ANSI C63.4-2003
ANSI / TIA / EIA-603-C -2004
FCC KDB 971168 D01 Power Meas License Digital Systems v02r02
FCC KDB 971168 D02 Misc OOBE License Digital Systems v01
FCC KDB 412172 D01 Determining ERP and EIRP v01

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Frequency error	±34.134 Hz
Conducted emission	±2.670 dB
Radiated emission ≤ 1GHz	±3.72 dB
Radiated emission > 1GHz	±5.65 dB
Temperature	±0.6 ^{o}C

2 Test Configuration

2.1 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
RF Conducted	TH01-WS	22°C / 62%	Felix Sung
Radiated Emissions	03CH01-WS	21°C / 63-64%	Anderson Hung

- FCC site registration No.: 657002
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation	Test Band / Channel Bandwidth / Channel
E.R.P Conducted Emissions Occupied Bandwidth Peak to Average Ratio	QPSK / 16QAM	LTE Band 17 / 5MHz / 23755, 23790, 23825 LTE Band 17 / 10MHz / 23780, 23790, 23800
Radiated Emission ≤ 1GHz	QPSK	LTE Band 17 / 5MHz / 23755 LTE Band 17 / 10MHz / 23800
Radiated Emission > 1GHz	QPSK	LTE Band 17 / 5MHz / 23755, 23790, 23825 LTE Band 17 / 10MHz / 23780, 23790, 23800
Band Edge	QPSK / 16QAM	LTE Band 17 / 5MHz / 23755, 23825 LTE Band 17 / 10MHz / 23780, 23800
Frequency Stability	QPSK	LTE Band 17 / 5MHz / 23790 LTE Band 17 / 10MHz / 23790

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. The EUT had been tested by following test configurations for radiated emission below 1GHz.
   1) Configuration 1 : Adapter mode
   2) Configuration 2 : Cradle mode
3. Adapter and cradle mode had been pretested for radiated emission above 1GHz and found that the adapter mode was the worst case and was selected for final test.

3 Test Results

3.1 Effective Radiated Power

3.1.1 Limit of Effective Radiated Power

Portable stations (hand-held devices) are limited to 3 watts ERP.

3.1.2 Test Procedures

For Conducted power measurement

1. The EUT links up with simulator and is set to maximum output power level at low / middel / high channel.
2. Measure the output power of low / middle / high channel of the EUT

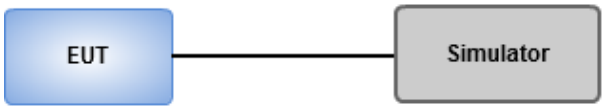
For ERP measurement

EPR can be calculated by below formula from KDB 412172 D01

1. EIRP = $P_T + G_T - L_C$
   P_T = transmitter output power, in dBm
   G_T = gain of the transmitting antenna, in dBi (EIRP)
   L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.
2. ERP = EIRP – 2.15 dB

3.1.3 Test Setup

Conducted Power Measurement



3.1.4 Test Result of Conducted power (dBm)

Band / Channel Bandwidth			LTE Band 17 / 5MHz		
Channel			23755	23790	23825
Frequency (MHz)			706.5	710	713.5
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	**21.81**	21.68	21.80
	1	12	21.67	21.38	21.78
	1	24	21.50	21.67	21.78
	12	0	20.89	20.57	20.81
	12	6	20.87	20.57	20.95
	12	11	20.79	20.50	20.76
	25	0	20.79	20.55	20.86
16QAM	1	0	21.19	20.97	21.10
	1	12	20.89	20.67	21.05
	1	24	20.75	20.95	21.06
	12	0	19.84	19.59	19.86
	12	6	19.80	19.60	19.99
	12	11	19.76	19.54	19.80
	25	0	19.81	19.58	19.91

Band / Channel Bandwidth			LTE Band 17 / 10MHz		
Channel			23780	23790	23800
Frequency (MHz)			709	710	711
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	21.85	**21.88**	21.82
	1	24	21.50	21.44	21.41
	1	49	21.80	21.77	21.73
	25	0	20.90	20.92	20.79
	25	12	20.84	20.85	20.78
	25	24	20.82	20.80	20.71
	50	0	20.91	20.94	20.89
16QAM	1	0	21.10	21.14	21.11
	1	24	20.80	20.72	20.68
	1	49	21.07	21.07	21.00
	25	0	20.03	19.70	19.61
	25	12	19.73	19.64	19.95
	25	24	19.93	19.96	19.95
	50	0	20.04	19.99	19.93

3.1.5 Test Result of Effective Radiated Power (dBm)

Mode	CB: 5MHz, QPSK						
Channel	Frequency (MHz)	Max. Conducted Output Power (dBm)	Max. Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
23755	706.5	21.81	-1.54	20.27	18.12	0.065	3
23790	710.0	21.68	-1.54	20.14	17.99	0.063	3
23825	713.5	21.80	-1.54	20.26	18.11	0.065	3

Mode	CB: 5MHz, 16QAM						
Channel	Frequency (MHz)	Max. Conducted Output Power (dBm)	Max. Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
23755	706.5	21.19	-1.54	19.65	17.5	0.056	3
23790	710.0	20.97	-1.54	19.43	17.28	0.053	3
23825	713.5	21.10	-1.54	19.56	17.41	0.055	3

Mode	CB: 10MHz, QPSK						
Channel	Frequency (MHz)	Max. Conducted Output Power (dBm)	Max. Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
23780	709.0	21.85	-1.54	20.31	18.16	0.065	3
23790	710.0	21.88	-1.54	20.34	18.19	0.066	3
23800	711.0	21.82	-1.54	20.28	18.13	0.065	3

Mode	CB: 10MHz, 16QAM						
Channel	Frequency (MHz)	Max. Conducted Output Power (dBm)	Max. Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
23780	709.0	21.10	-1.54	19.56	17.41	0.055	3
23790	710.0	21.14	-1.54	19.6	17.45	0.056	3
23800	711.0	21.11	-1.54	19.57	17.42	0.055	3

3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

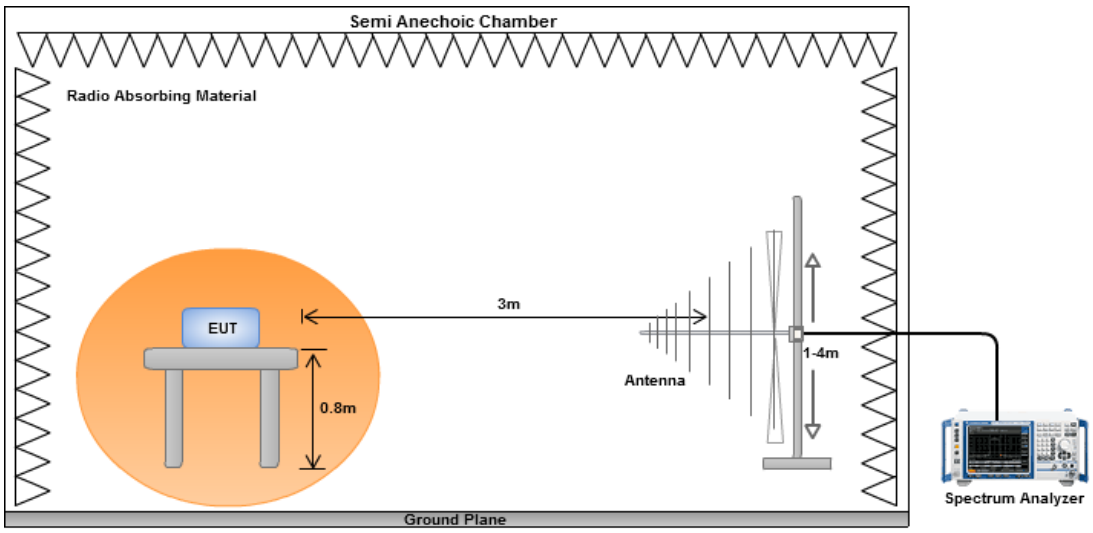
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB equal to -13dBm.

3.2.2 Test Procedures

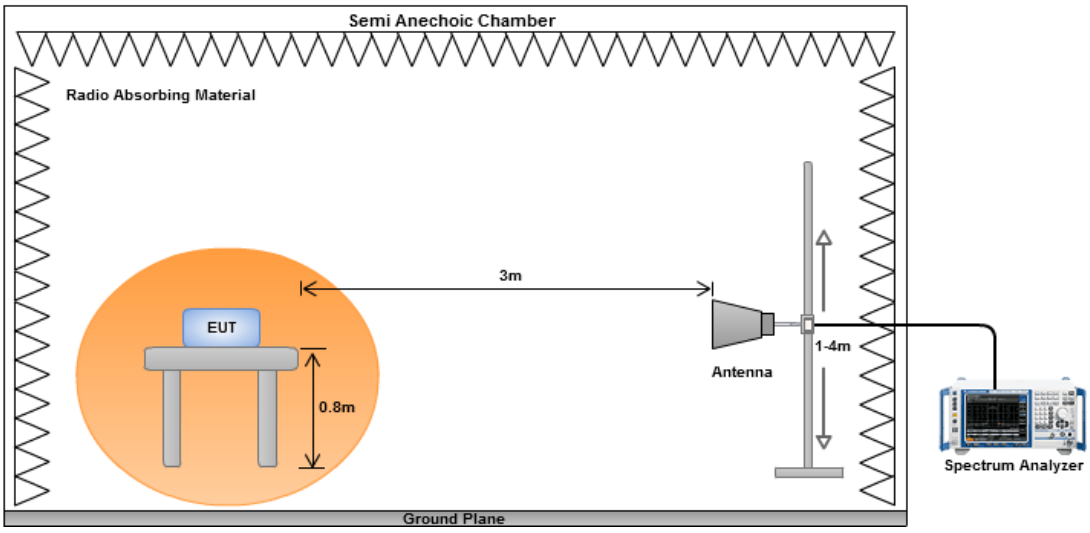
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable. ERP can be calculated by below formula:
   E.R.P= E.I.R.P –2.15dB

3.2.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.2.4 Test Result of Radiated Emissions below 1GHz

Mode	LTE Band 17, CB: 5MHz, 1RB, Offset 0, Channel:23790, adapter mode						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
44.55	H	-60.23	-13.00	-47.23	-56.75	-46.44	-11.64
58.13	H	-57.42	-13.00	-44.42	-48.19	-46.10	-9.17
68.80	H	-53.90	-13.00	-40.90	-42.16	-45.94	-5.81
87.23	H	-62.83	-13.00	-49.83	-49.85	-60.43	-0.25
114.39	H	-65.43	-13.00	-52.43	-53.17	-62.84	-0.44
208.48	H	-66.65	-13.00	-53.65	-52.26	-68.89	4.39
44.55	V	-56.02	-13.00	-43.02	-44.75	-42.23	-11.64
75.59	V	-63.21	-13.00	-50.21	-50.65	-57.49	-3.57
91.11	V	-65.29	-13.00	-52.29	-53.62	-63.58	0.44
101.78	V	-65.84	-13.00	-52.84	-54.66	-63.87	0.18
230.79	V	-62.69	-13.00	-49.69	-54.07	-64.92	4.38
240.49	V	-64.39	-13.00	-51.39	-56.16	-66.61	4.37

Mode	LTE Band 17, CB: 5MHz, 1RB, Offset 0, Channel:23790, cradle mode						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
44.55	H	-54.12	-13.00	-41.12	-50.67	-40.33	-11.64
75.59	H	-63.71	-13.00	-50.71	-50.62	-57.99	-3.57
89.17	H	-64.03	-13.00	-51.03	-51.27	-62.13	0.25
101.78	H	-66.08	-13.00	-53.08	-53.86	-64.11	0.18
229.82	H	-62.69	-13.00	-49.69	-48.91	-64.92	4.38
238.55	H	-63.56	-13.00	-50.56	-50.04	-65.78	4.37
44.55	V	-59.37	-13.00	-46.37	-48.10	-45.58	-11.64
102.75	V	-66.31	-13.00	-53.31	-55.11	-64.30	0.14
111.48	V	-65.60	-13.00	-52.60	-54.30	-63.16	-0.29
206.54	V	-68.04	-13.00	-55.04	-58.44	-70.28	4.39
217.21	V	-66.44	-13.00	-53.44	-57.27	-68.67	4.38
224.97	V	-69.40	-13.00	-56.40	-60.55	-71.63	4.38

NOTE: ERP = S.G power value + correction factor - 2.15.

Mode	LTE Band 17, CB: 10MHz, 1RB, Offset 0, Channel:23790, adapter mode						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
44.55	H	-61.11	-13.00	-48.11	-57.66	-47.32	-11.64
83.35	H	-60.99	-13.00	-47.99	-47.92	-57.59	-1.25
101.78	H	-64.52	-13.00	-51.52	-52.30	-62.55	0.18
112.45	H	-63.22	-13.00	-50.22	-50.96	-60.73	-0.34
180.35	H	-69.80	-13.00	-56.80	-57.34	-69.81	2.16
216.24	H	-68.70	-13.00	-55.70	-54.53	-70.93	4.38
44.55	V	-54.23	-13.00	-41.23	-42.96	-40.44	-11.64
87.23	V	-63.67	-13.00	-50.67	-51.53	-61.27	-0.25
100.81	V	-65.20	-13.00	-52.20	-54.03	-63.28	0.23
217.21	V	-66.63	-13.00	-53.63	-57.46	-68.86	4.38
227.88	V	-64.45	-13.00	-51.45	-55.71	-66.68	4.38
238.88	V	-65.54	-13.00	-52.54	-57.24	-67.76	4.37

Mode	LTE Band 17, CB: 10MHz, 1RB, Offset 0, Channel:23790, cradle mode						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
44.55	H	-59.23	-13.00	-46.23	-55.78	-45.44	-11.64
110.51	H	-65.36	-13.00	-52.36	-53.11	-62.97	-0.24
143.49	H	-65.27	-13.00	-52.27	-54.40	-61.86	-1.26
188.11	H	-69.49	-13.00	-56.49	-56.17	-70.38	3.04
206.54	H	-68.65	-13.00	-55.65	-54.19	-70.89	4.39
218.18	H	-67.85	-13.00	-54.85	-53.73	-70.08	4.38
44.55	V	-53.83	-13.00	-40.83	-42.56	-40.04	-11.64
74.62	V	-64.64	-13.00	-51.64	-52.05	-58.60	-3.89
101.78	V	-64.62	-13.00	-51.62	-53.44	-62.65	0.18
227.88	V	-62.16	-13.00	-49.16	-53.42	-64.39	4.38
237.58	V	-63.74	-13.00	-50.74	-55.40	-65.96	4.37
284.14	V	-64.52	-13.00	-51.52	-56.36	-66.62	4.25

NOTE: ERP = S.G power value + correction factor - 2.15.

3.2.5 Test Result of Radiated Emissions above 1GHz

Mode	LTE Band 17, CB: 5MHz, 1RB, Offset 24, Channel : 23755						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1408.70	H	-63.94	-13.00	-50.94	-65.46	-66.03	4.24
2113.05	H	-66.48	-13.00	-53.48	-72.09	-70.46	6.13
2817.40	H	-67.29	-13.00	-54.29	-74.84	-71.14	6.00
1408.70	V	-71.41	-13.00	-58.41	-71.92	-73.50	4.24
2113.05	V	-66.88	-13.00	-53.88	-72.82	-70.86	6.13
2817.40	V	-65.62	-13.00	-52.62	-73.86	-69.47	6.00

Mode	LTE Band 17, CB: 5MHz, 1RB, Offset 24, Channel : 23790						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1415.70	H	-64.36	-13.00	-51.36	-65.87	-66.47	4.26
2123.55	H	-66.95	-13.00	-53.95	-72.62	-70.93	6.13
2831.40	H	-67.57	-13.00	-54.57	-75.22	-71.42	6.00
1415.70	V	-71.79	-13.00	-58.79	-72.31	-73.90	4.26
2123.55	V	-66.64	-13.00	-53.64	-72.83	-70.62	6.13
2831.40	V	-66.13	-13.00	-53.13	-74.33	-69.98	6.00

Mode	LTE Band 17, CB: 5MHz, 1RB, Offset 24, Channel : 23825						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1422.60	H	-63.73	-13.00	-50.73	-65.24	-65.87	4.29
2133.90	H	-66.54	-13.00	-53.54	-72.27	-70.52	6.13
2845.20	H	-67.24	-13.00	-54.24	-74.99	-71.09	6.00
1422.60	V	-71.40	-13.00	-58.40	-71.93	-73.54	4.29
2133.90	V	-66.37	-13.00	-53.37	-72.79	-70.35	6.13
2845.20	V	-66.17	-13.00	-53.17	-74.33	-70.02	6.00

NOTE: ERP = S.G power value + correction factor - 2.15.

Mode	LTE Band 17, CB: 10MHz, 1RB, Offset 49, Channel : 23780						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1409.20	H	-64.52	-13.00	-51.52	-66.04	-66.61	4.24
2113.80	H	-66.54	-13.00	-53.54	-72.15	-70.52	6.13
2818.40	H	-67.86	-13.00	-54.86	-75.42	-71.71	6.00
1409.20	V	-70.32	-13.00	-57.32	-70.84	-72.41	4.24
2113.80	V	-66.84	-13.00	-53.84	-72.80	-70.82	6.13
2818.40	V	-66.42	-13.00	-53.42	-74.66	-70.27	6.00

Mode	LTE Band 17, CB: 10MHz, 1RB, Offset 49, Channel : 23790						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1411.20	H	-64.75	-13.00	-51.75	-66.26	-66.85	4.25
2116.80	H	-66.88	-13.00	-53.88	-72.51	-70.86	6.13
2822.40	H	-67.66	-13.00	-54.66	-75.25	-71.51	6.00
1411.20	V	-70.68	-13.00	-57.68	-71.19	-72.78	4.25
2116.80	V	-67.13	-13.00	-54.13	-73.16	-71.11	6.13
2822.40	V	-66.66	-13.00	-53.66	-74.89	-70.51	6.00

Mode	LTE Band 17, CB: 10MHz, 1RB, Offset 49, Channel : 23800						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1413.20	H	-64.23	-13.00	-51.23	-65.74	-66.33	4.25
2119.80	H	-66.44	-13.00	-53.44	-72.08	-70.42	6.13
2826.40	H	-67.54	-13.00	-54.54	-75.15	-71.39	6.00
1413.20	V	-70.94	-13.00	-57.94	-71.46	-73.04	4.25
2119.80	V	-66.71	-13.00	-53.71	-72.80	-70.69	6.13
2826.40	V	-66.52	-13.00	-53.52	-74.73	-70.37	6.00

NOTE: ERP = S.G power value + correction factor - 2.15.

3.3 Conducted Emissions

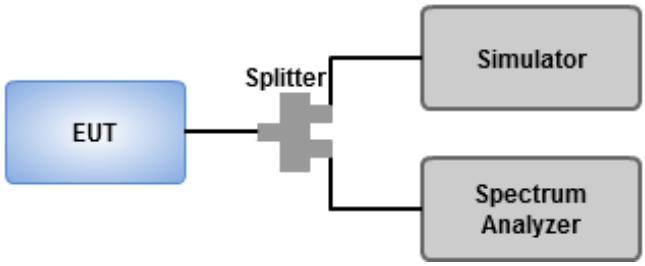
3.3.1 Limit of Conducted Emissions

On any frequency outside the the licensed band, the power of any emission shall be attenuatedoutside the band below the transmitter power (P) by at least 43 + 10 log (P) dB equal to -13dBm.

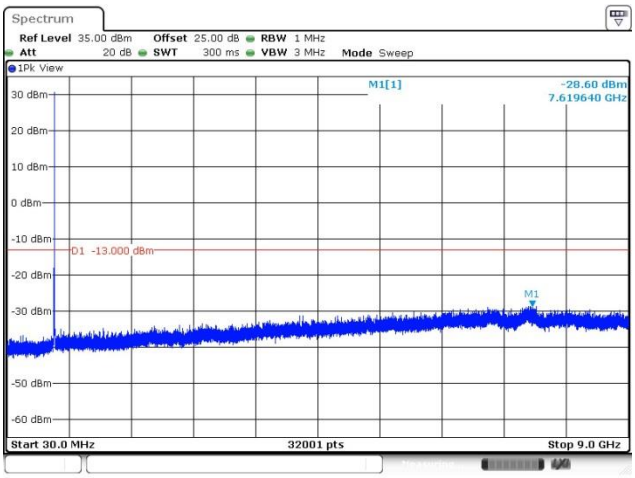
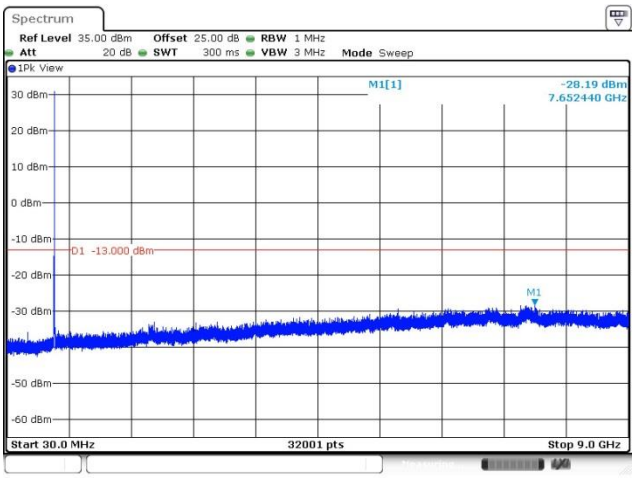
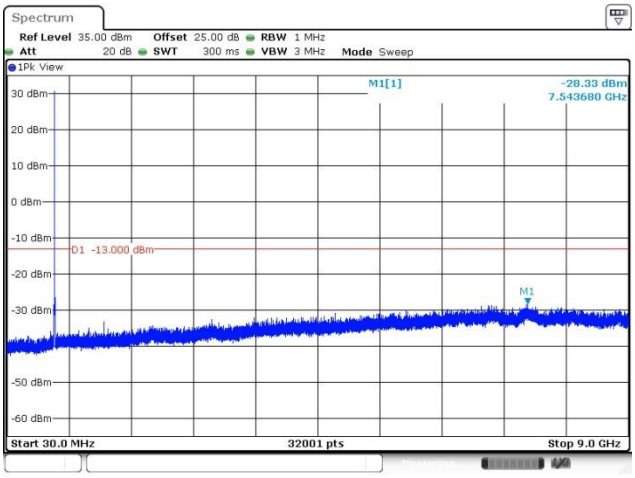
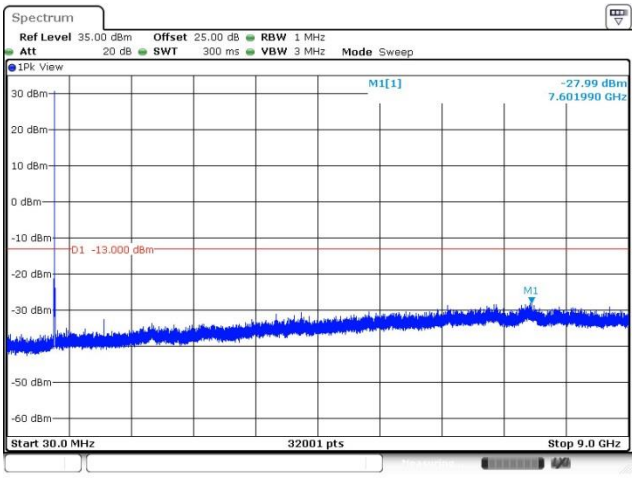
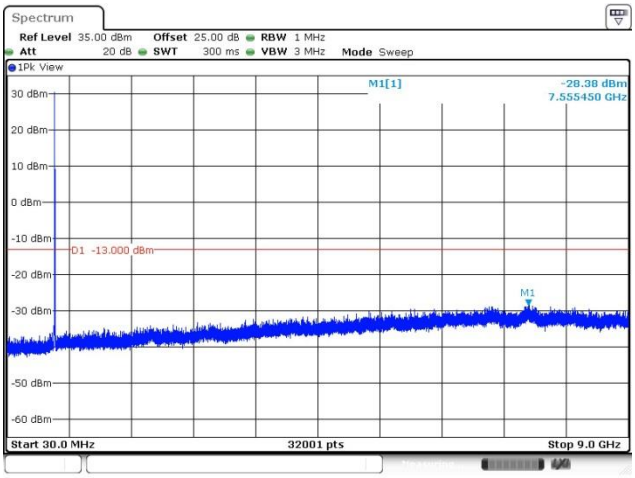
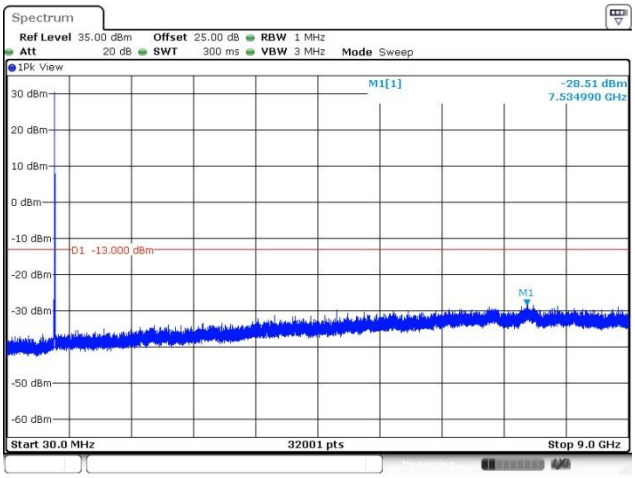
3.3.2 Test Procedures

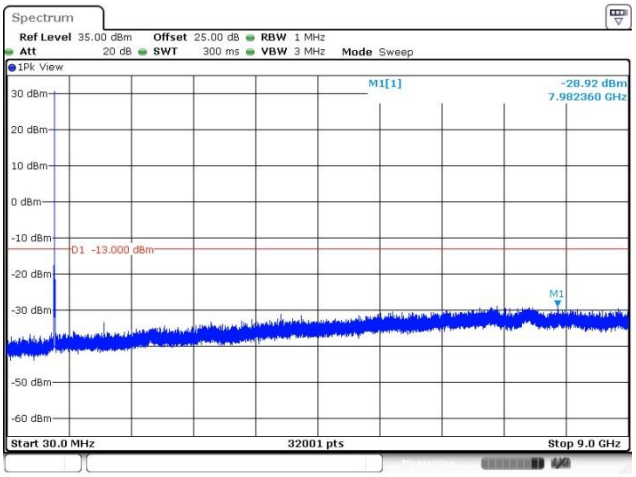
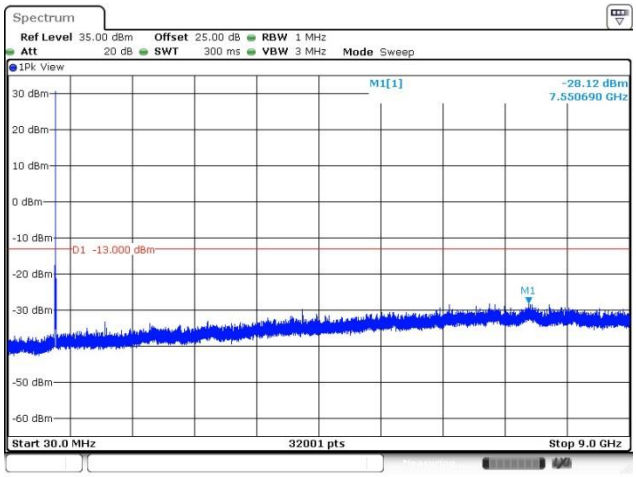
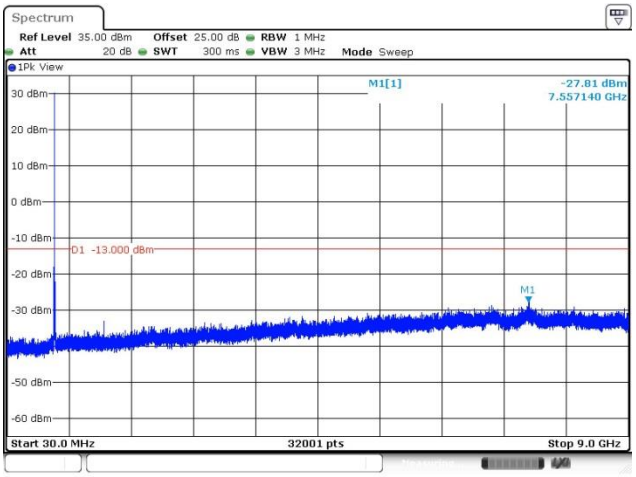
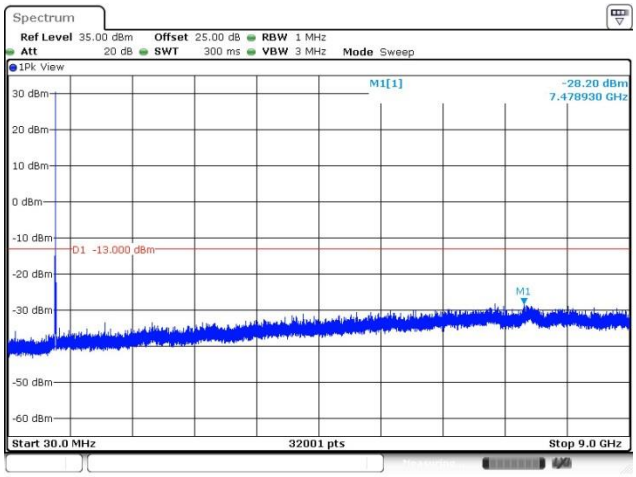
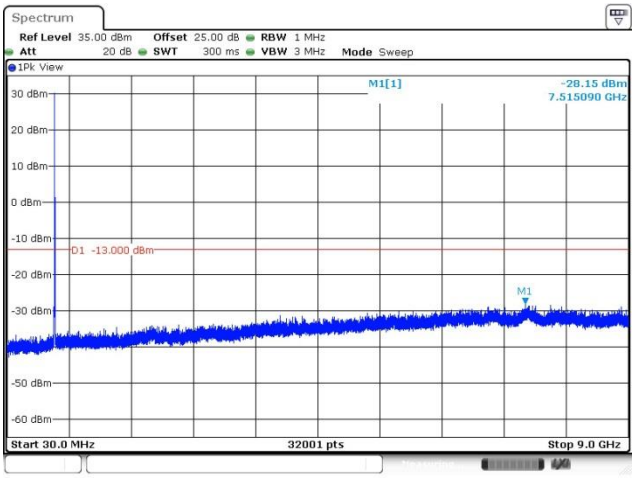
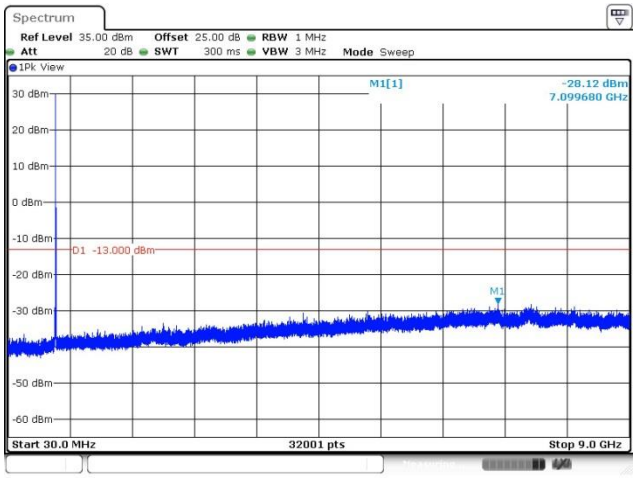
1. Lowestand highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~8GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

3.3.3 Test Setup



3.3.4 Test Result of Conducted Emissions

Mode	CB: 5MHz, QPSK	Mode	CB: 5MHz, 16QAM
Channel	23755	Channel	23755
			
Channel	23790	Channel	23790
			
Channel	23825	Channel	23825
			

Mode	CB: 10MHz, QPSK	Mode	CB: 10MHz, 16QAM
Channel	23780	Channel	23780
			
Channel	23790	Channel	23790
			
Channel	23800	Channel	23800
			

3.4 Band Edge

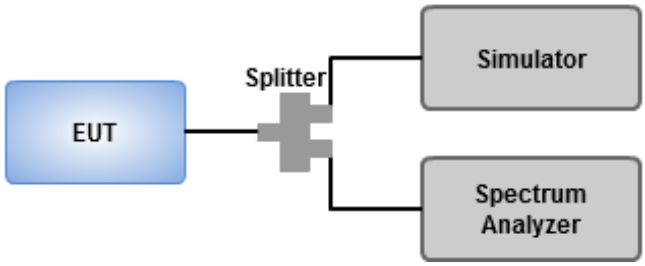
3.4.1 Limit of Band Edge

On any frequency outside the licensed band, the power of any emission shall be attenuatedoutside the band below the transmitter power (P) by at least 43 + 10 log (P) dB equal to -13dBm.

3.4.2 Test Procedures

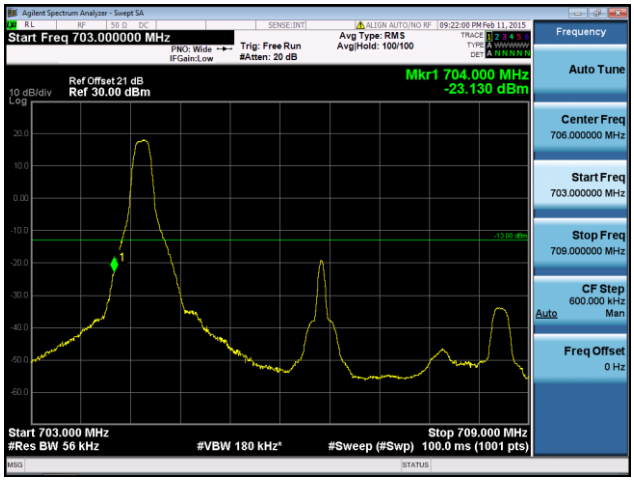
1. Set RBW = 56kHz, VBW = 180kHz, detector = RMS, sweep time = auto for 5MHz channel BW
   Set RBW = 110kHz, VBW = 330kHz, detector = RMS, sweep time = auto for 10 MHz channel BW
2. Record the max trace value and capture the test plot.

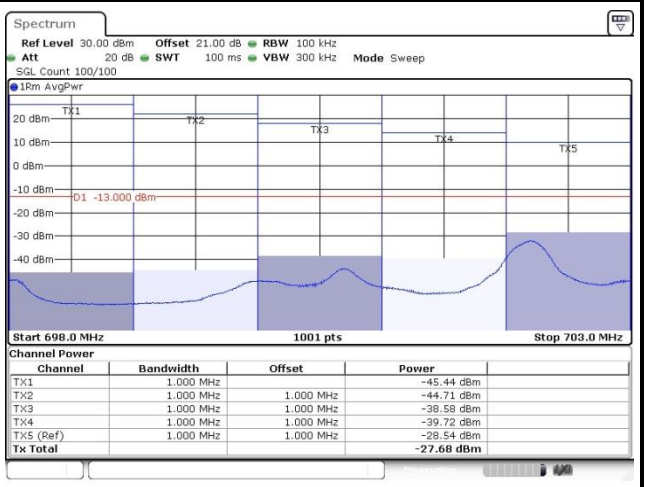
3.4.3 Test Setup



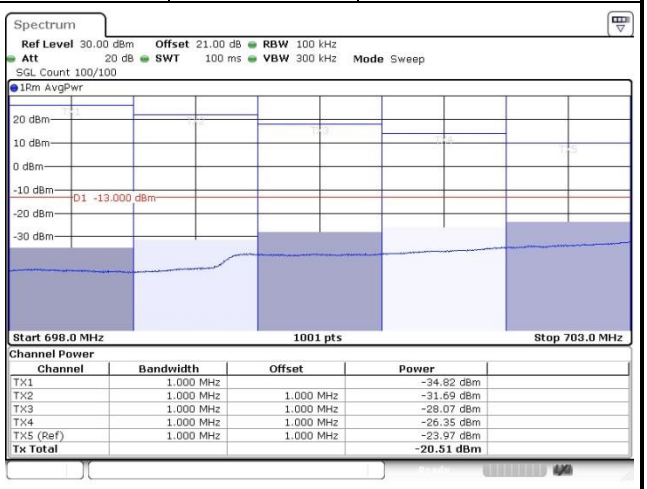
3.4.4 Test Results

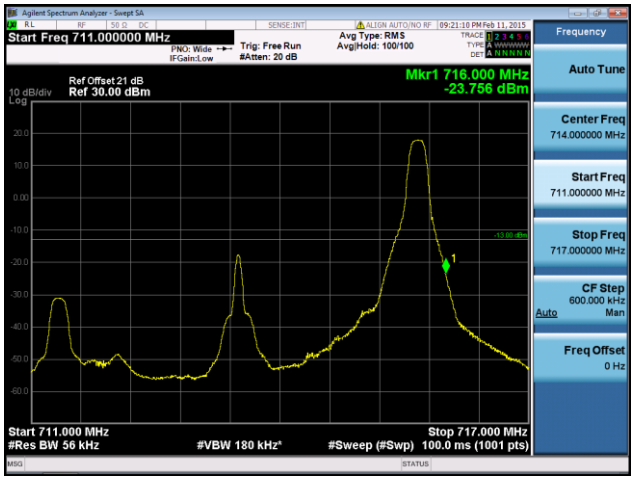
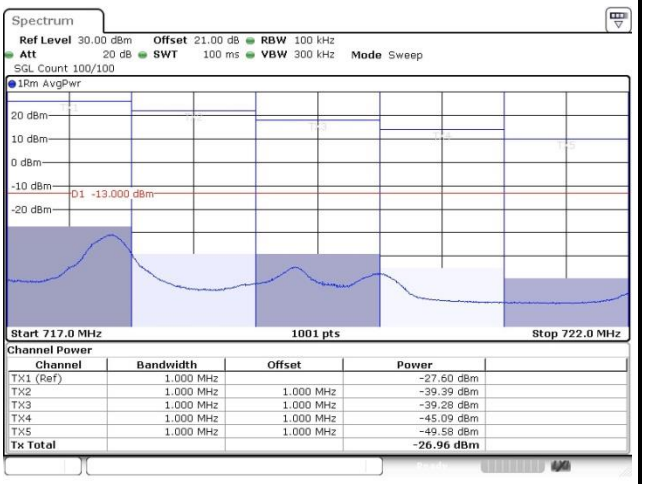
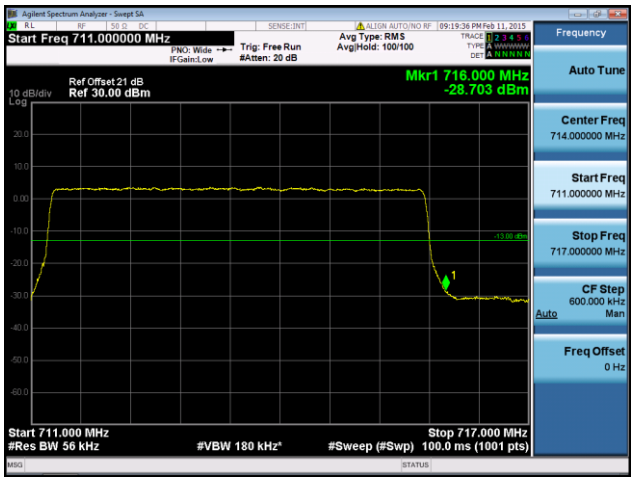
Mode	CB: 5 MHz / QPSK				
Channel	23755	1 RB Lower / Offset 0	**Channel**	23755	1 RB Lower / Offset 0

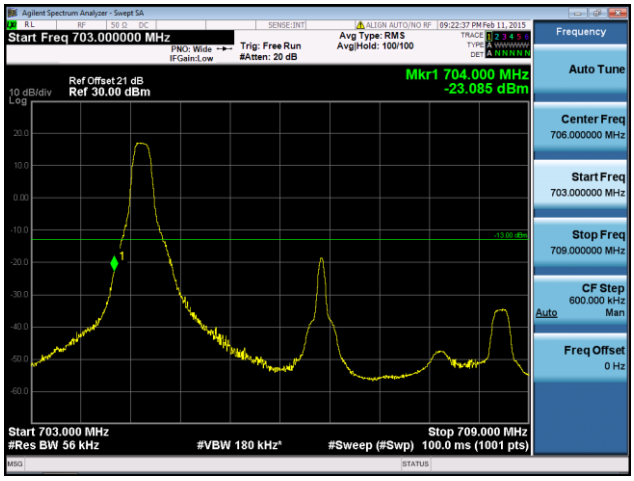
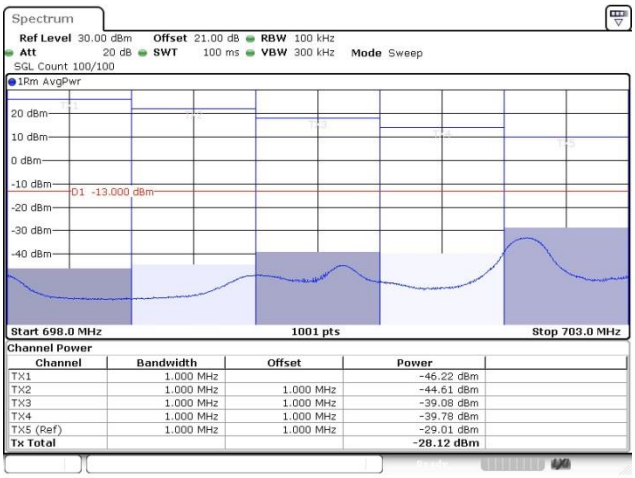
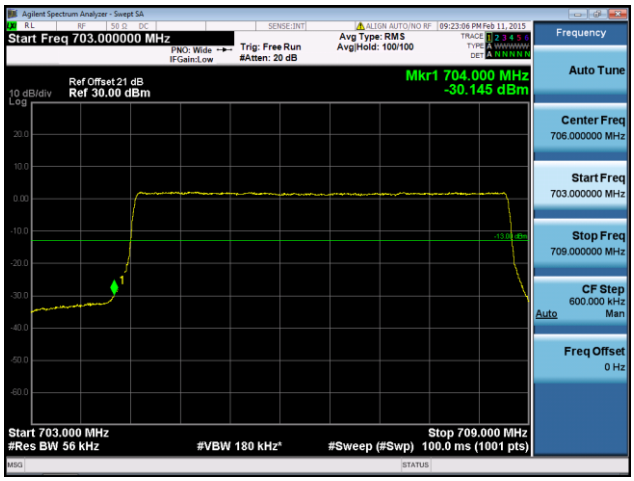
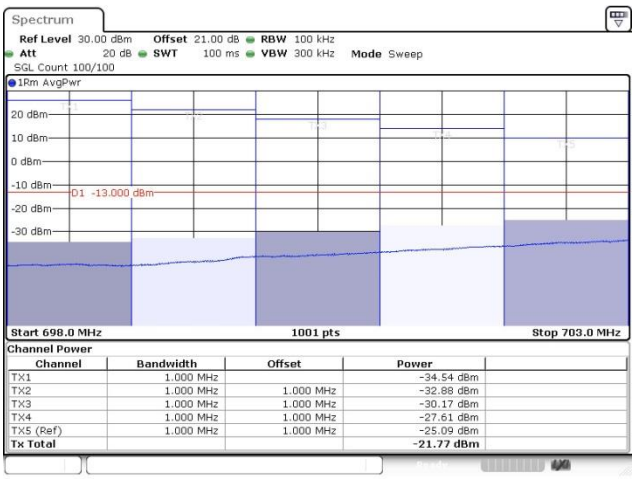




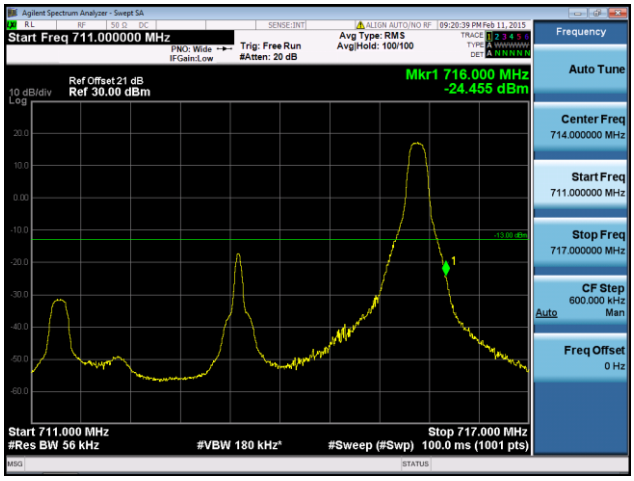
Channel	23755	100% RB / Offset 0	**Channel**	23755	100% RB / Offset 0

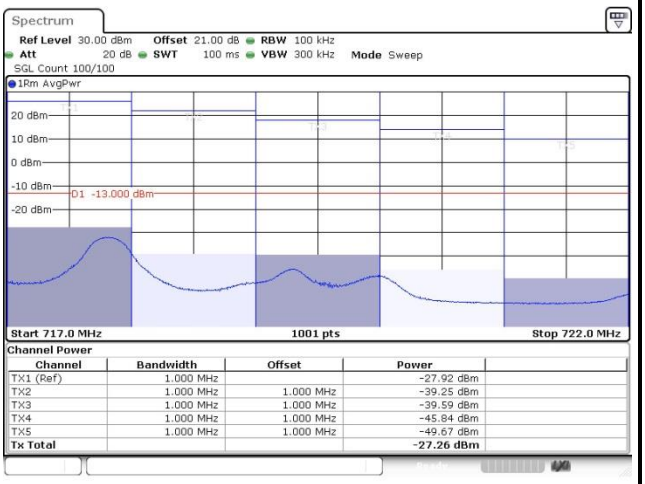


Mode	CB: 5 MHz / QPSK				
Channel	23825	1 RB Upper / Offset 0	**Channel**	23825	1 RB Upper / Offset 0
					
Channel	23825	100% RB / Offset 0	**Channel**	23825	100% RB / Offset 0
					

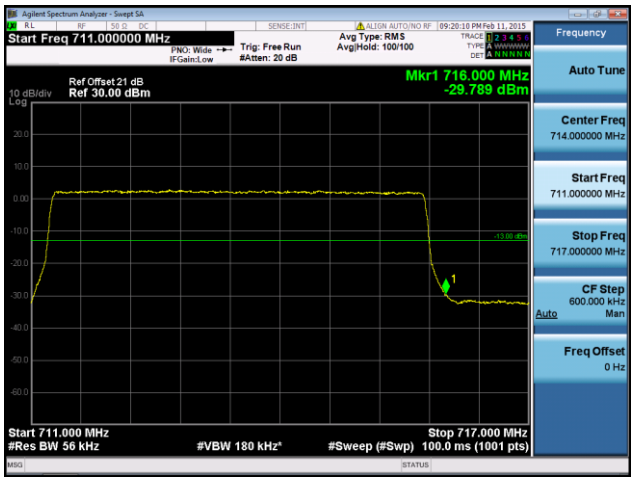
Mode	CB: 5 MHz / 16QAM				
Channel	23755	1 RB Lower / Offset 0	**Channel**	23755	1 RB Lower / Offset 0
					
Channel	23755	100% RB / Offset 0	**Channel**	23755	100% RB / Offset 0
					

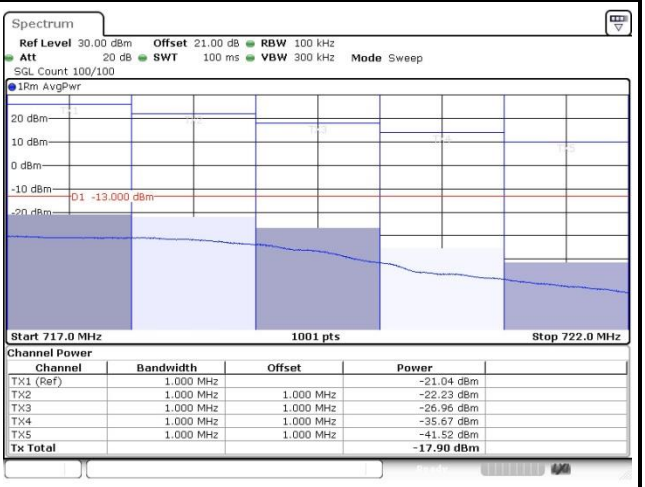
Mode	CB: 5 MHz / 16QAM				
Channel	23825	1 RB Upper / Offset 0	**Channel**	23825	1 RB Upper / Offset 0

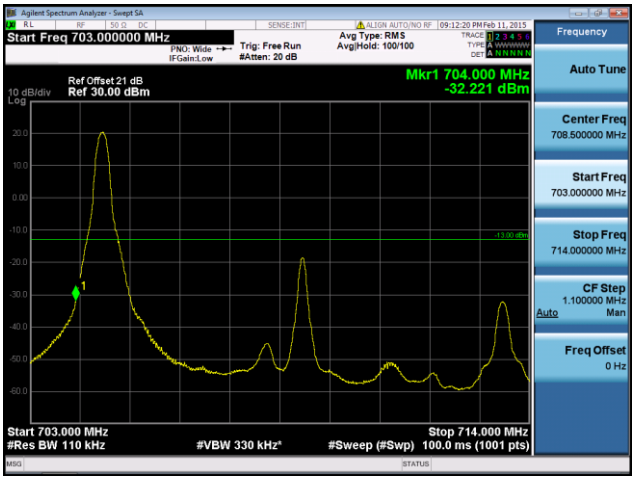
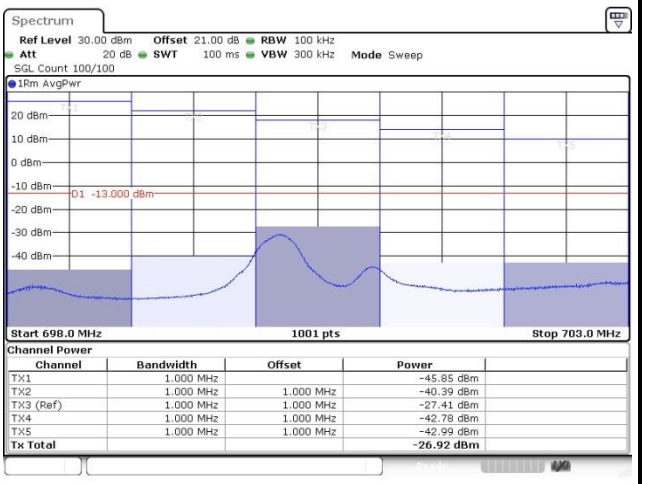
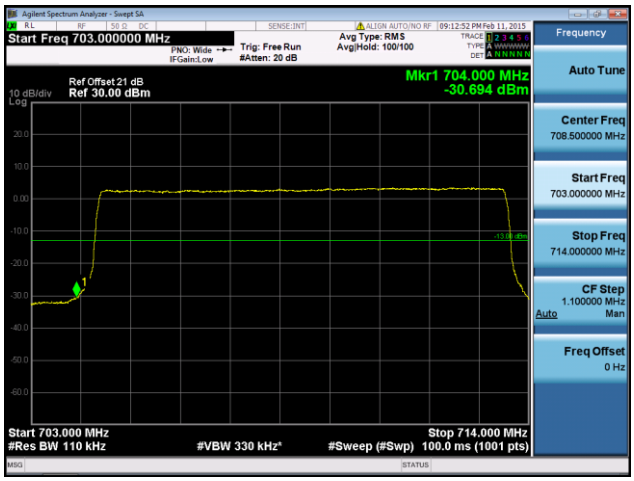
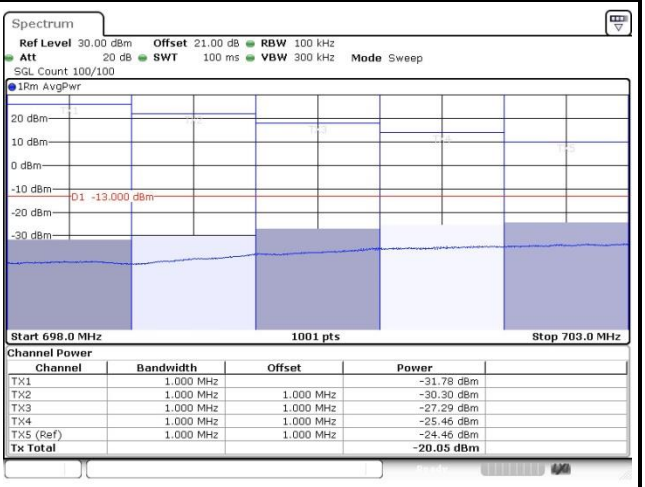


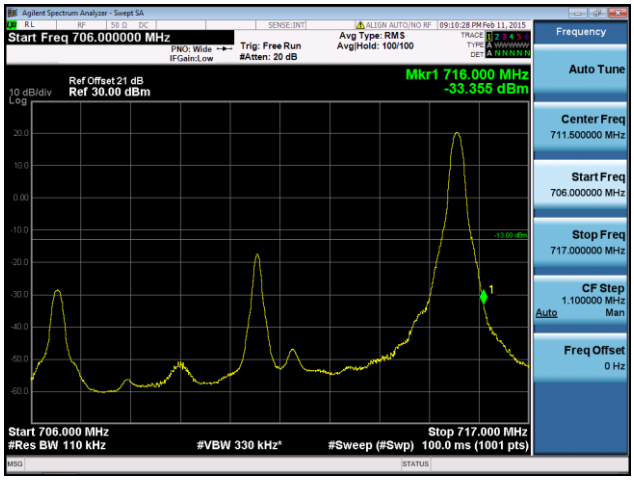
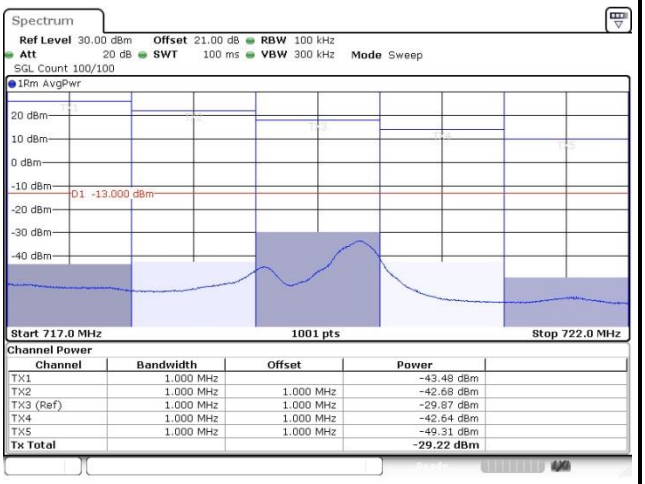
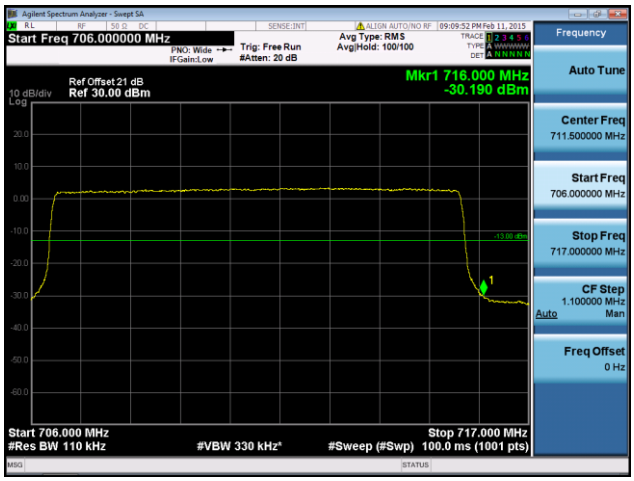
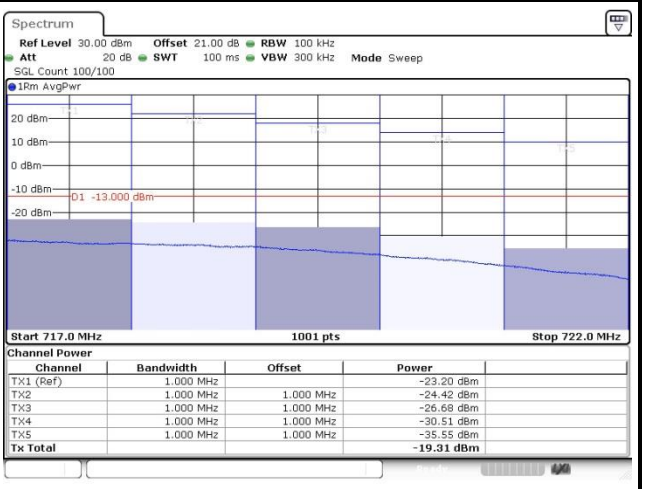


Channel	23825	100% RB / Offset 0	Channel	23825	100% RB / Offset 0

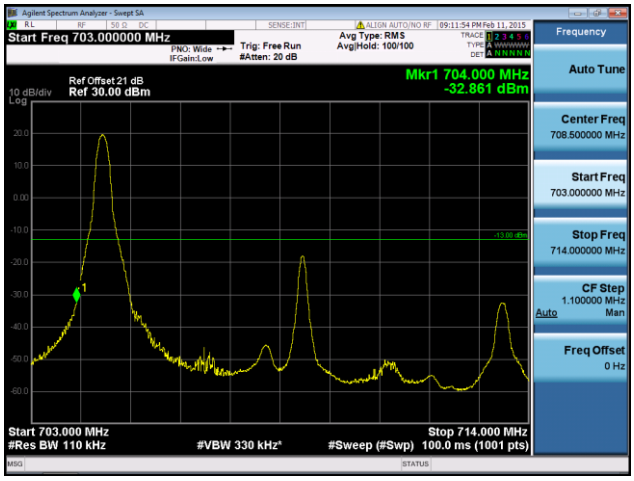


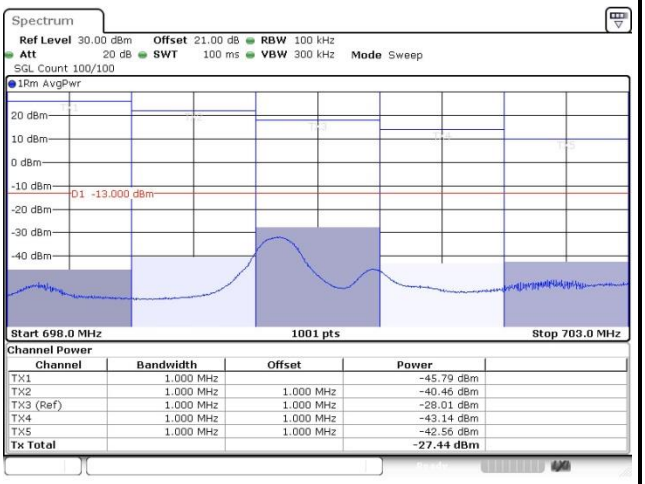


Mode	CB: 10 MHz / QPSK				
Channel	23780	1 RB Lower / Offset 0	**Channel**	23780	1 RB Lower / Offset 0
				
Channel	23780	100% RB / Offset 0	**Channel**	23780	100% RB / Offset 0
				

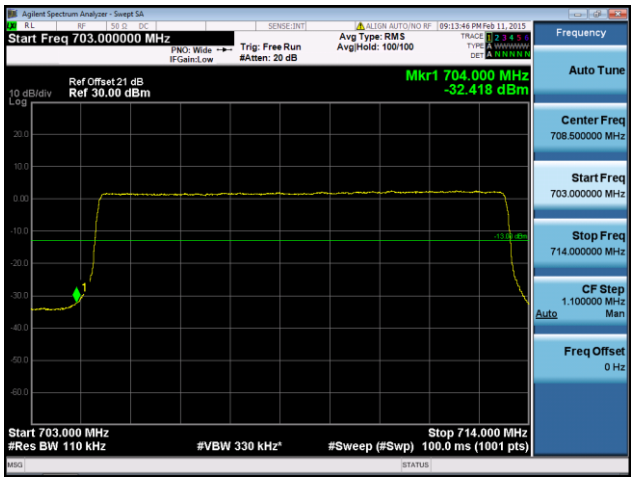
Mode	CB: 10 MHz / QPSK				
Channel	23800	1 RB Upper / Offset 0	**Channel**	23800	1 RB Upper / Offset 0
					
Channel	23800	100% RB / Offset 0	**Channel**	23800	100% RB / Offset 0
					

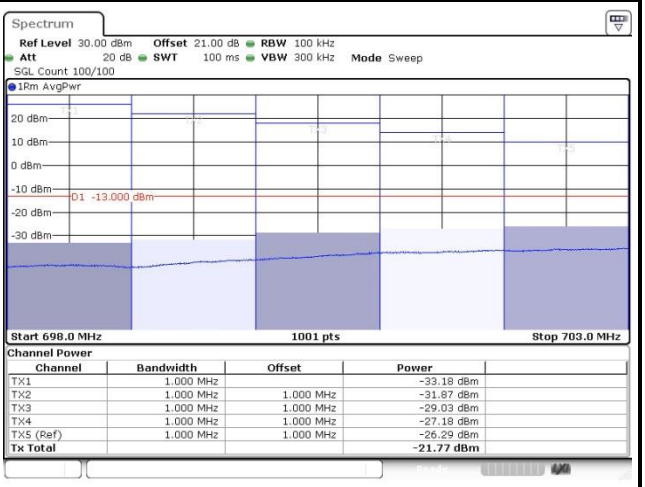
Mode	CB: 10 MHz / 16QAM				
Channel	23780	1 RB Lower / Offset 0	**Channel**	23780	1 RB Lower / Offset 0

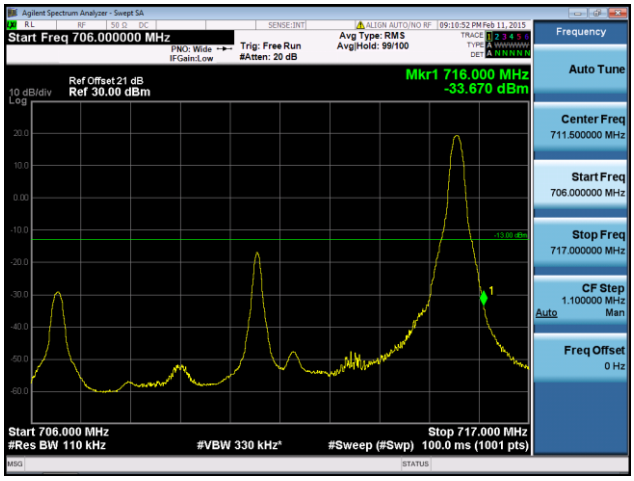
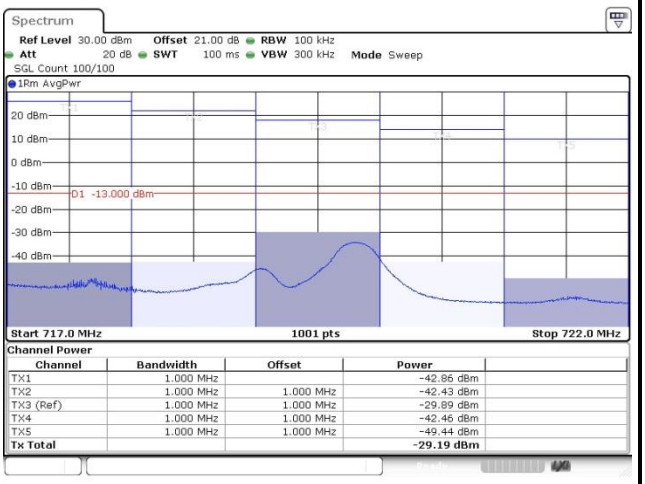
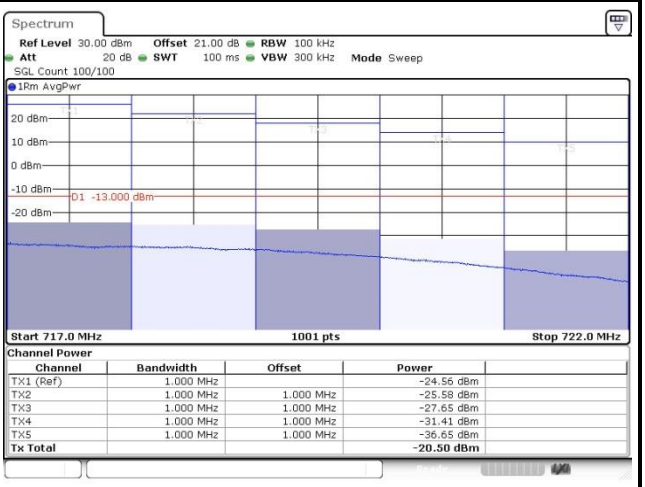




Channel	23780	100% RB / Offset 0	Channel	23780	100% RB / Offset 0





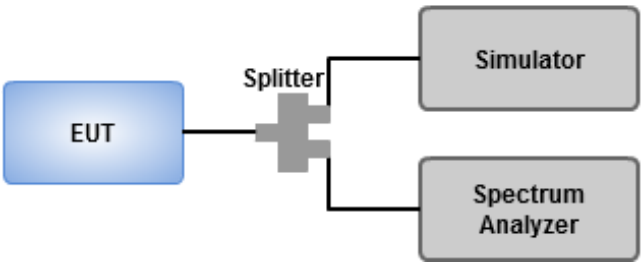
Mode	CB: 10 MHz / 16QAM				
Channel	23800	1 RB Upper / Offset 0	**Channel**	23800	1 RB Upper / Offset 0
					
Channel	23800	100% RB / Offset 0	**Channel**	23800	100% RB / Offset 0
					

3.5 Occupied Bandwidth and 26dB Bandwidth

3.5.1 Test Procedures

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth=300kHz for 5 MHz Channel BW
   Set resolution bandwidth (RBW) = 200 kHz, Video bandwidth=1MHz for 10 MHz Channel BW
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26dB relative to the maximum level measured in the fundamental emission.

3.5.2 Test Setup

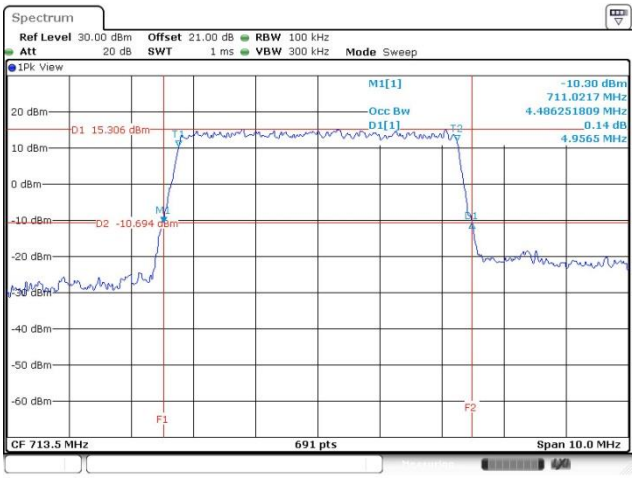


3.5.3 Test Result of Occupied Bandwidth

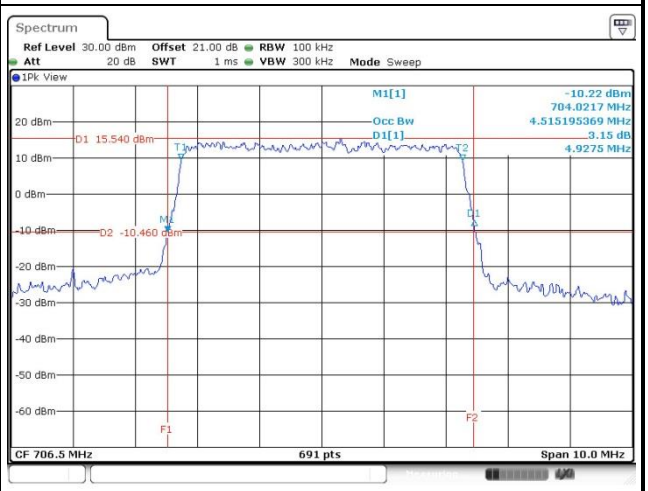
Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
5	QPSK	23755	706.5	4.9275	4.52
5	QPSK	23790	710.0	4.9275	4.50
5	QPSK	23825	713.5	4.9565	4.49
5	16QAM	23755	706.5	4.9420	4.50
5	16QAM	23790	710.0	4.9565	4.50
5	16QAM	23825	713.5	4.9275	4.49

Worst plots for QPSK

26dB bandwidth

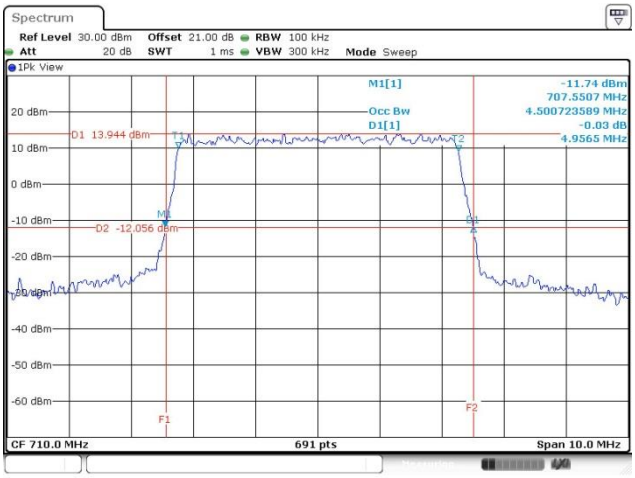


OBW

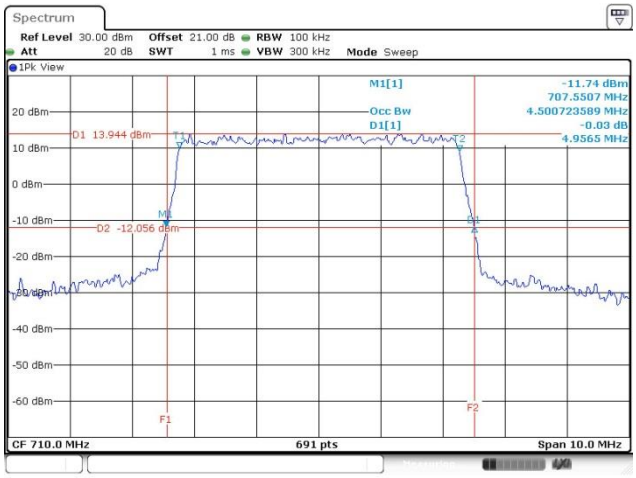


Worst plots for 16QAM

26dB bandwidth



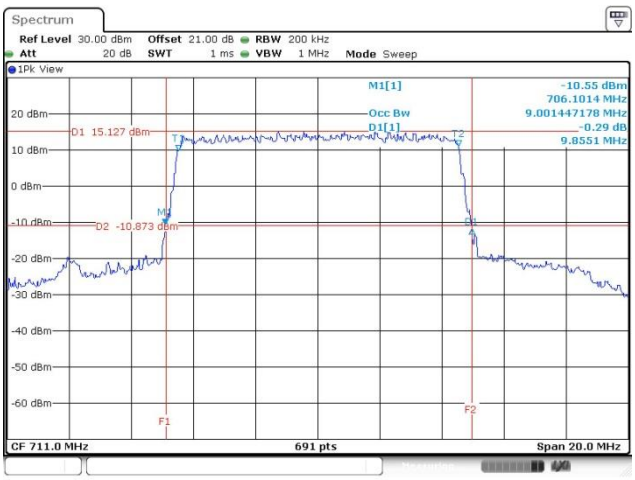
OBW



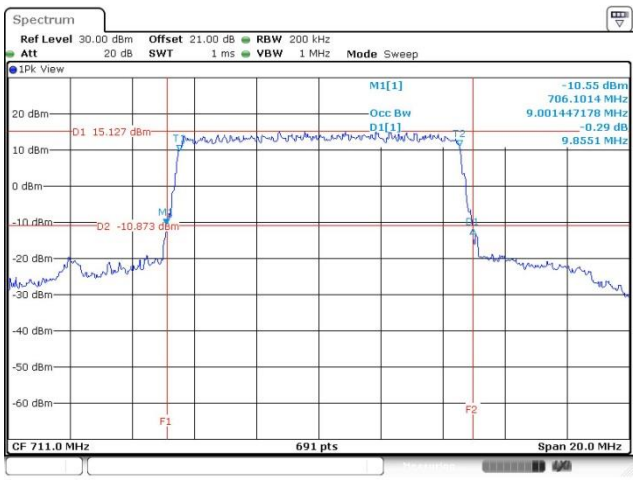
Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	26dB BW (MHz)	99% OBW (MHz)
10	QPSK	23780	709.0	9.7971	9.00
10	QPSK	23790	710.0	9.8551	8.97
10	QPSK	23800	711.0	9.8551	9.00
10	16QAM	23780	709.0	9.7101	8.97
10	16QAM	23790	710.0	9.7681	8.97
10	16QAM	23800	711.0	9.7101	8.97

Worst plots for QPSK

26dB bandwidth

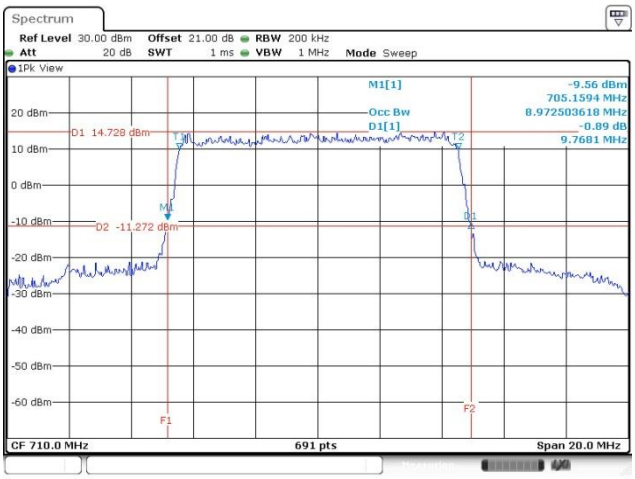


OBW

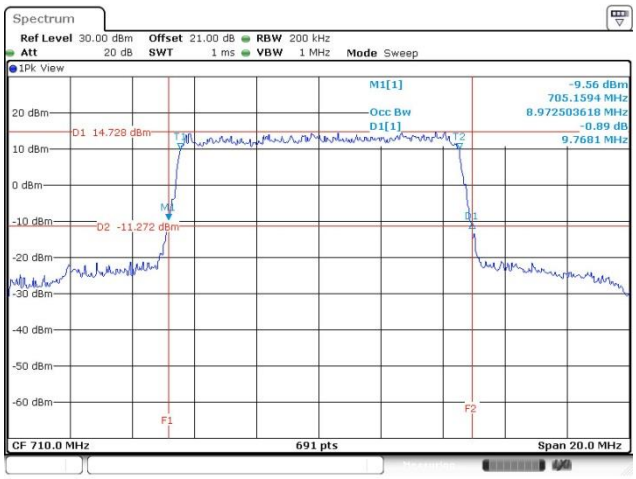


Worst plots for 16QAM

26dB bandwidth



OBW



3.6 Frequency Stability

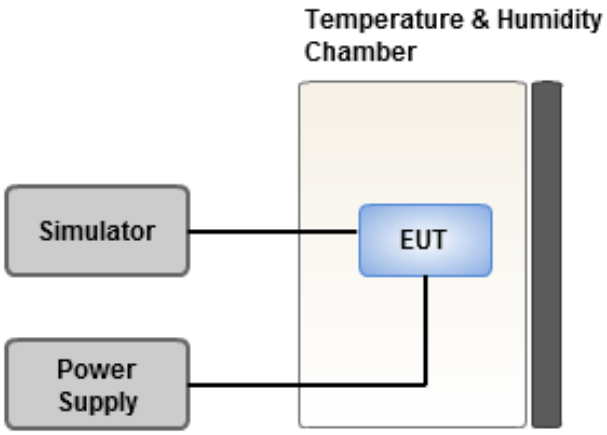
3.6.1 Limit of Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.6.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. Temperature range is from -30~55°C and voltage range is from lowest to highest working voltage.
4. Tem Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

CB: 5MHz			
Temperature (°C)	**Voltage (Vdc)**	**Frequency Drift (ppm)**	**Limit (ppm)**
55	3.9	0.024	2.5
50	3.9	0.023	2.5
40	3.9	0.021	2.5
30	3.9	0.018	2.5
20	3.9	0.015	2.5
10	3.9	0.011	2.5
0	3.9	0.014	2.5
-10	3.9	0.013	2.5
-20	3.9	0.010	2.5
-30	3.9	0.007	2.5
20	4.29	0.027	2.5
20	3.51	0.023	2.5

CB: 10MHz			
Temperature (°C)	**Voltage (Vdc)**	**Frequency Drift (ppm)**	**Limit (ppm)**
55	3.9	0.030	2.5
50	3.9	0.028	2.5
40	3.9	0.025	2.5
30	3.9	0.021	2.5
20	3.9	0.020	2.5
10	3.9	0.015	2.5
0	3.9	0.013	2.5
-10	3.9	0.011	2.5
-20	3.9	0.010	2.5
-30	3.9	0.008	2.5
20	4.29	0.031	2.5
20	3.51	0.027	2.5

3.7 Peak to Average Ratio

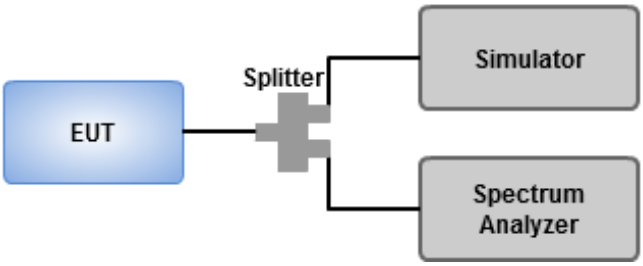
3.7.1 Limit of Peak to Average Ratio

The Peakto-average ratio (PAR) of the transmiss ion may not exceed 13 dB.

3.7.2 Test Procedures

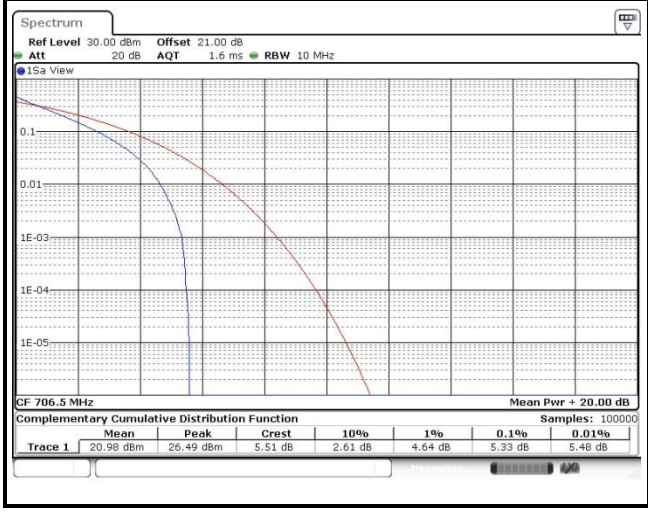
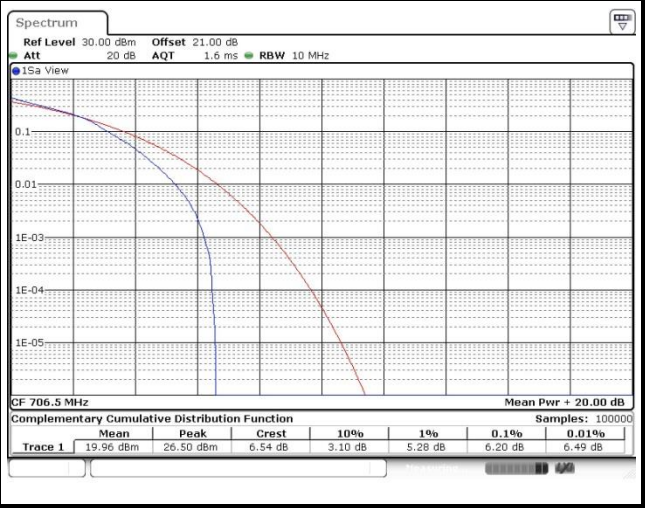
1. Set the number of counts to a value that stabilizes the measured CCDF curve.
2. Set the measurement interval to 1 ms.
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.3 Test Setup

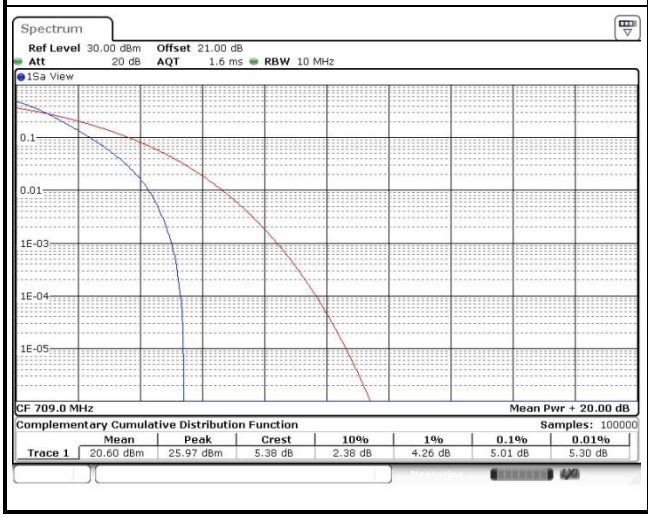
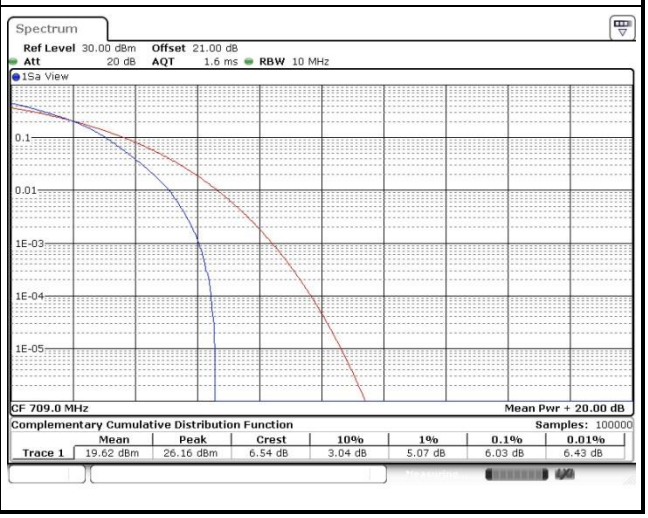


3.7.4 Test Result of Peak to Average Ratio

Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
5	QPSK	23755	706.5	5.33
5	QPSK	23790	710.0	5.22
5	QPSK	23825	713.5	5.16
5	16QAM	23755	706.5	6.20
5	16QAM	23790	710.0	6.09
5	16QAM	23825	713.5	5.97

Worst plots	
QPSK	16QAM
	

Channel Bandwidth (MHz)	Modulation	Channel	Frequency (MHz)	Peak to Average Ratio (dB)
10	QPSK	23780	709.0	5.01
10	QPSK	23790	710.0	5.01
10	QPSK	23800	711.0	4.99
10	16QAM	23780	709.0	6.03
10	16QAM	23790	710.0	6.03
10	16QAM	23800	711.0	6.03

Worst plots	
QPSK	16QAM
	

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666
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Email: ICC_Service@icertifi.com.tw

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