

# FCC Test Report

**FCC ID** : QIS-B2338-168ODU  
**Equipment** : LTE Outdoor CPE  
**Model No.** : B2338-168ODU  
**Brand Name** : Huawei  
**Applicant** : Huawei Technologies Co., Ltd.  
**Address** : Administration Building, Headquarters of  
Huawei Technologies Co., Ltd., Bantian,  
Longgang District, Shenzhen, 518129, China.  
**Standard** : 47 CFR FCC Part 90 Subpart Z  
**Received Date** : Jan. 10, 2017  
**Tested Date** : Jan. 12 ~ Jan. 17, 2017

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.

Reviewed by:

  
\_\_\_\_\_  
Along Chen / Assistant Manager

Approved by:

  
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Gary Chang / Manager



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## Release Record

Report No.	Version	Description	Issued Date
FW682701-02-1	Rev. 01	Initial issue	Mar. 01, 2017

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 90.1321	Equivalent Isotropically Radiated Power	Maximum EIRP: 1.064 W / 10MHz 1.164 W / 20MHz	Pass
2.1046 / 90.1321	Peak EIRP Power Density	Meet the requirement of limit	Pass
2.1053 / 90.1323	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 90.1323	Conducted Emissions	Meet the requirement of limit	Pass
90.210	Emission Mask	Meet the requirement of limit	Pass
2.1049(h) / 90.1323	26dBc Bandwidth	Meet the requirement of limit	Pass
2.1055 / 90.213	Frequency Stability	Meet the requirement of limit	Pass

# 1 General Description

## 1.1 Information

### 1.1.1 Product Details

The device B2338-168 / LTE Outdoor CPE = (B2338-168ODU) + (B2338-168IDU) is a product family consists of LTE Outdoor CPE + Indoor Dual Band Wi-Fi Router.

Brand name	Product name	Model name	FCC ID
Huawei	LTE Outdoor CPE	B2338-168ODU	QIS-B2338-168ODU
	Indoor Dual Band Wi-Fi Router	B2338-168IDU	QIS-B2338-168IDU

### 1.1.2 Specification of the Equipment under Test (EUT)

<b>Operating Frequency (MHz)</b>	Channel Bandwidth: 10MHz: 3655.0~3695.0 Channel Bandwidth: 20MHz: 3660.0~3690.0
<b>Modulation Type</b>	QPSK, 16QAM, 64QAM (Uplink)
<b>Duplex Mode</b>	TDD
<b>Category</b>	Cat. 12
<b>Release Version</b>	12
<b>H/W Version</b>	V02A
<b>S/W Version</b>	B2338-168 V100R001C00B29 (10/18/2016)

### 1.1.3 Maximum EIRP & Emission Designator

Channel Bandwidth	Modulation	Maximum EIRP (W)	Emission Designator
10MHz	QPSK	1.064	8M92G7D
10MHz	16QAM	0.828	8M94W7D
10MHz	64QAM	0.809	8M95W7D
20MHz	QPSK	1.164	17M9G7D
20MHz	16QAM	0.968	17M9W7D
20MHz	64QAM	0.953	17M8W7D

### 1.1.4 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	
			2496 ~ 2690 MHz	3600 ~ 3800 MHz
1	PCB+Metal	IPEX-Plug	7.7	8.1

### 1.1.5 EUT Operational Condition

<b>Power Supply Type</b>	56 Vdc from Wi-Fi router listed in section 1.1.1		
<b>Operational Voltage</b>	<input checked="" type="checkbox"/> Vnom (120 V)	<input checked="" type="checkbox"/> Vmax (138 V)	<input checked="" type="checkbox"/> Vmin (102 V)
<b>Operational Climatic</b>	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (60°C)	<input checked="" type="checkbox"/> Tmin (-40°C)

### 1.1.6 Duty cycle and duty factor

Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	QPSK	41.27	3.84
	16QAM	41.27	3.84
	64QAM	41.27	3.84

### 1.1.7 Operating Channel List

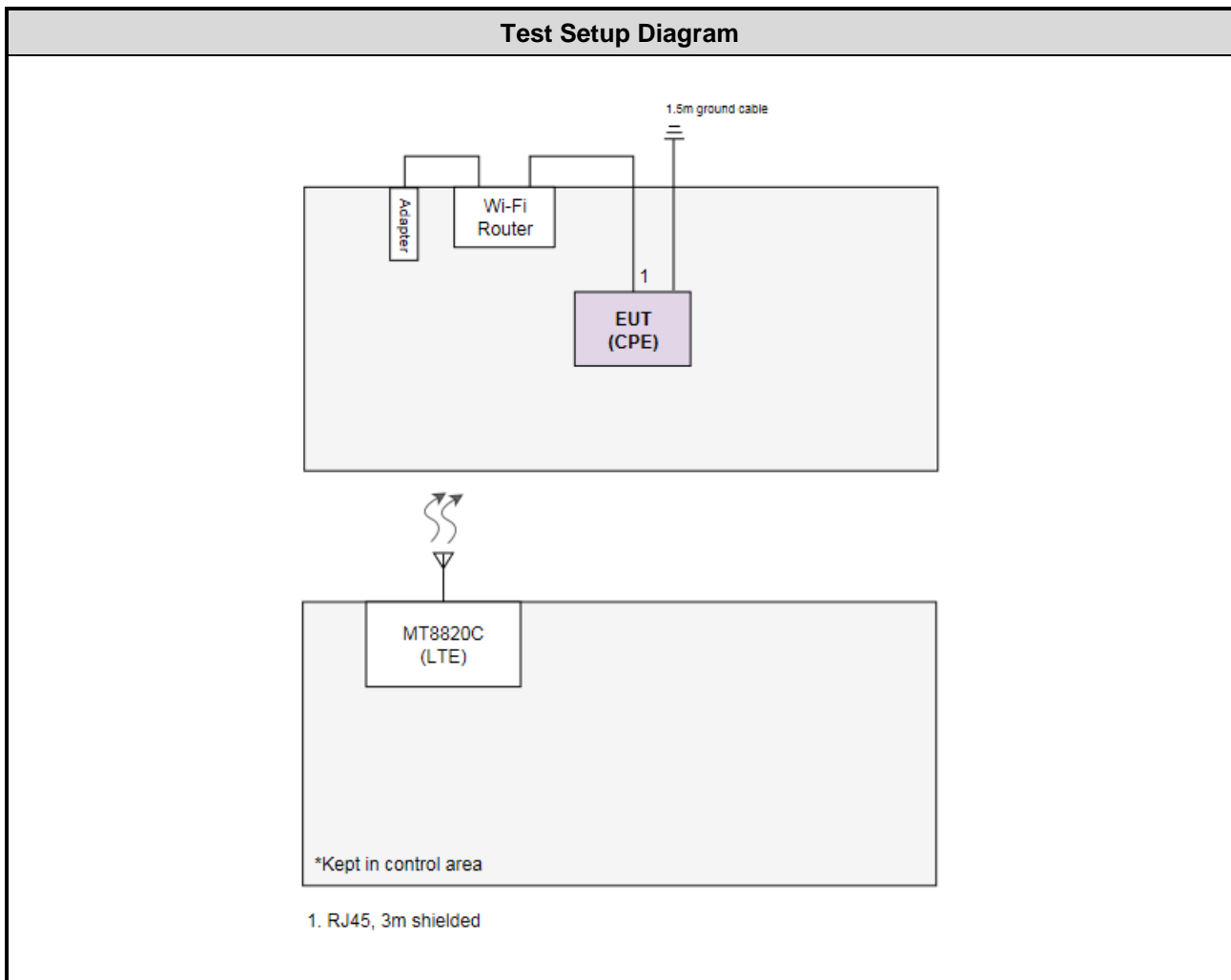
Channel Bandwidth (MHz)	Channel	Frequency (MHz)
10	44140	3655.0
10	44340	3675.0
10	44540	3695.0
20	44190	3660.0
20	44340	3675.0
20	44490	3690.0

## 1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6430	C0GB4X1	DoC	RJ45, 10m non-shielded
2	Indoor Dual Band Wi-Fi Router	Huawei	B2338-168 IDU	---	QIS-B2338-168IDU	---

Note: Wi-Fi Router is provided by applicant.

## 1.3 Test Setup Chart



## 1.4 The Equipment List

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	Nov. 25, 2016	Nov. 24, 2017
Receiver	R&S	ESR3	101658	Nov. 24, 2016	Nov. 23, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 04, 2016	Aug. 03, 2017
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 21, 2016	Dec. 20, 2017
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017
Preamplifier	EMC	EMC02325	980225	Aug. 05, 2016	Aug. 04, 2017
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2016	Oct. 05, 2017
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 28, 2016	Mar. 27, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 09, 2016	Dec. 08, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 09, 2016	Dec. 08, 2017
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	16052	Dec. 09, 2016	Dec. 08, 2017
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 09, 2016	Dec. 08, 2017
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 09, 2016	Dec. 08, 2017
Measurement Software	AUDIX	e3	6.120210g	NA	NA

Note: Calibration Interval of instruments listed above is one year.

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. 17, 2016	Feb. 16, 2017
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 09, 2016	Sep. 08, 2017
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 21, 2016	Nov. 20, 2017
Power Meter	Anritsu	ML2495A	1241002	Oct. 06, 2016	Oct. 05, 2017
Power Sensor	Anritsu	MA2411B	1207366	Oct. 06, 2016	Oct. 05, 2017
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 28, 2016	Mar. 27, 2017
Measurement Software	Sporton	Sporton_1	1.3.30	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 90 Subpart Z

ANSI C63.4-2014

ANSI/TIA-603-D 2010

FCC KDB 965270 D01 PwrMeas Part 90 Z Equipment v01

FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

## 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	$\pm 34.134$ Hz
Conducted power	$\pm 0.808$ dB
Frequency error	$\pm 34.134$ Hz
Conducted emission	$\pm 2.670$ dB
Radiated emission $\leq 1$ GHz	$\pm 3.66$ dB
Radiated emission $> 1$ GHz	$\pm 5.63$ dB
Temperature	$\pm 0.6$ °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 / 61%	Alex Huang
Radiated Emissions	03CH01-WS	23-26°C / 60-62%	Kevin Lee

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

### 2.2 The Worst Test Modes and Channel Details

Test item	Channel Bandwidth	Modulation	Test channel (MHz)
Equivalent Isotropically Radiated Power	10 MHz	QPSK / 16QAM / 64QAM	3655.0 / 3675.0 / 3695.0
Peak EIRP Power Density	20 MHz	QPSK / 16QAM / 64QAM	3660.0 / 3675.0 / 3690.0
Radiated Emission ≤ 1GHz	10 MHz	QPSK	3695.0
	20 MHz	QPSK	3690.0
Radiated Emission > 1GHz	10 MHz	QPSK	3655.0 / 3675.0 / 3695.0
	20 MHz	QPSK	3660.0 / 3675.0 / 3690.0
Conducted Emissions			
Emission Mask	10 MHz	QPSK / 16QAM / 64QAM	3655.0 / 3675.0 / 3695.0
26dBc Bandwidth	20 MHz	QPSK / 16QAM / 64QAM	3660.0 / 3675.0 / 3690.0
Frequency Stability	10 MHz	Un-modulation	3675.0
	20 MHz		3675.0

## **3 Test Results**

### **3.1 Equivalent Isotropically Radiated Power and Peak EIRP Power Density**

#### **3.1.1 Limit of Equivalent Isotropically Radiated Power and Peak EIRP Power Density**

Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP), the peak EIRP power density shall not exceed 1 Watt in any one-mega hertz slice of spectrum.

Mobile and portable stations are limited to 1 watt/25 MHz EIRP. The peak EIRP density shall not exceed 40 milli watts in any one-megahertz slice of spectrum.

#### **3.1.2 Test Procedures**

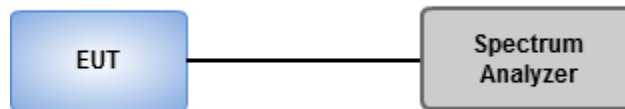
##### **For EIRP**

1. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Tune the analyzer to the nominal center frequency of the emission bandwidth.
3. Set the span to twice the nominal EBW (span = 2 x EBW).
4. Set the resolution bandwidth (RBW) to approximately 1% of EBW.
5. Set the video bandwidth (VBW) to  $\geq 3 \times$  RBW.
6. Select the average power (RMS) display detector.
7. Set the number of measurement points to  $\geq 1001$ .
8. Use auto-coupled sweep time.
9. Perform measurement over an interval of time when the transmission is continuous and at its maximum power level.
10. Utilize trace averaging over 100 traces in the power averaging.
11. Use the Channel Power function to determine the integrated power over the full EBW.
12. Record the band power level.
13. Adjust the recorded level by applying appropriate correction factors for the measurement set-up.
14. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

### For Peak EIRP Power Density

1. Connect the transmitter to the spectrum analyzer via coaxial cable (i.e., conducted measurement) while ensuring proper impedance matching.
2. Tune the analyzer to the nominal center frequency of the emission bandwidth.
3. Set the span to twice the nominal EBW (span = 2 x EBW).
4. Set the resolution bandwidth (RBW) to 1 MHz.
5. Set the video bandwidth (VBW) to 3 MHz
6. Select the average power (RMS) display detector.
7. Set the number of measurement points to  $\geq 1001$ .
8. Use auto-coupled sweep time.
9. Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
10. Utilize trace averaging over 100 traces in the power averaging.
11. Find the maximum trace amplitude (peak search) and record.
12. Adjust the recorded level by applying appropriate correction factors for the measurement set-up.
13. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

### 3.1.3 Test Setup



### 3.1.4 Duty cycle and duty factor

Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	QPSK	41.27	3.84
	16QAM	41.27	3.84
	64QAM	41.27	3.84

### 3.1.5 Test Result of EIRP

Channel Bandwidth: 10MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44140	3655	1	0	21.56	8.1	29.66	0.925	10
		1	24	21.84	8.1	29.94	0.986	10
		1	49	21.43	8.1	29.53	0.897	10
		25	0	20.47	8.1	28.57	0.719	10
		25	12	20.53	8.1	28.63	0.729	10
		25	24	20.43	8.1	28.53	0.713	10
		50	0	20.44	8.1	28.54	0.714	10
44340	3675	1	0	21.91	8.1	30.01	1.002	10
		1	24	22.16	8.1	30.26	1.062	10
		1	49	21.66	8.1	29.76	0.946	10
		25	0	20.83	8.1	28.93	0.782	10
		25	12	20.83	8.1	28.93	0.782	10
		25	24	20.73	8.1	28.83	0.764	10
		50	0	20.80	8.1	28.90	0.776	10
44540	3695	1	0	21.97	8.1	30.07	1.016	10
		1	24	22.17	8.1	30.27	1.064	10
		1	49	21.64	8.1	29.74	0.942	10
		25	0	20.84	8.1	28.94	0.783	10
		25	12	20.83	8.1	28.93	0.782	10
		25	24	20.72	8.1	28.82	0.762	10
		50	0	20.74	8.1	28.84	0.766	10

**Channel Bandwidth: 10MHz- 16QAM**

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44140	3655	1	0	20.45	8.1	28.55	0.716	10
		1	24	20.77	8.1	28.87	0.771	10
		1	49	20.37	8.1	28.47	0.703	10
		25	0	20.53	8.1	28.63	0.729	10
		25	12	20.58	8.1	28.68	0.738	10
		25	24	20.48	8.1	28.58	0.721	10
		50	0	20.38	8.1	28.48	0.705	10
44340	3675	1	0	20.82	8.1	28.92	0.780	10
		1	24	21.05	8.1	29.15	0.822	10
		1	49	20.58	8.1	28.68	0.738	10
		25	0	20.89	8.1	28.99	0.793	10
		25	12	20.88	8.1	28.98	0.791	10
		25	24	20.78	8.1	28.88	0.773	10
		50	0	20.74	8.1	28.84	0.766	10
44540	3695	1	0	20.88	8.1	28.98	0.791	10
		1	24	21.08	8.1	29.18	0.828	10
		1	49	20.57	8.1	28.67	0.736	10
		25	0	20.89	8.1	28.99	0.793	10
		25	12	20.87	8.1	28.97	0.789	10
		25	24	20.77	8.1	28.87	0.771	10
		50	0	20.68	8.1	28.78	0.755	10

**Channel Bandwidth: 10MHz- 64QAM**

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44140	3655	1	0	20.39	8.1	28.49	0.706	10
		1	24	20.73	8.1	28.83	0.764	10
		1	49	20.31	8.1	28.41	0.693	10
		25	0	20.46	8.1	28.56	0.718	10
		25	12	20.49	8.1	28.59	0.723	10
		25	24	20.41	8.1	28.51	0.710	10
		50	0	20.32	8.1	28.42	0.695	10
44340	3675	1	0	20.78	8.1	28.88	0.773	10
		1	24	20.93	8.1	29.03	0.800	10
		1	49	20.46	8.1	28.56	0.718	10
		25	0	20.82	8.1	28.92	0.780	10
		25	12	20.80	8.1	28.90	0.776	10
		25	24	20.71	8.1	28.81	0.760	10
		50	0	20.68	8.1	28.78	0.755	10
44540	3695	1	0	20.81	8.1	28.91	0.778	10
		1	24	20.98	8.1	29.08	0.809	10
		1	49	20.49	8.1	28.59	0.723	10
		25	0	20.81	8.1	28.91	0.778	10
		25	12	20.81	8.1	28.91	0.778	10
		25	24	20.71	8.1	28.81	0.760	10
		50	0	20.62	8.1	28.72	0.745	10

**Channel Bandwidth: 20MHz- QPSK**

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44190	3660	1	0	21.39	8.1	29.49	0.889	20
		1	49	21.87	8.1	29.97	0.993	20
		1	99	21.56	8.1	29.66	0.925	20
		50	0	20.90	8.1	29.00	0.794	20
		50	24	21.02	8.1	29.12	0.817	20
		50	49	21.00	8.1	29.10	0.813	20
		100	0	21.00	8.1	29.10	0.813	20
44340	3675	1	0	21.95	8.1	30.05	1.012	20
		1	49	22.32	8.1	30.42	1.102	20
		1	99	21.86	8.1	29.96	0.991	20
		50	0	21.47	8.1	29.57	0.906	20
		50	24	21.42	8.1	29.52	0.895	20
		50	49	21.28	8.1	29.38	0.867	20
		100	0	21.52	8.1	29.62	0.916	20
44490	3690	1	0	22.26	8.1	30.36	1.086	20
		1	49	22.56	8.1	30.66	1.164	20
		1	99	22.03	8.1	30.13	1.030	20
		50	0	21.62	8.1	29.72	0.938	20
		50	24	21.55	8.1	29.65	0.923	20
		50	49	21.34	8.1	29.44	0.879	20
		100	0	21.48	8.1	29.58	0.908	20



**Channel Bandwidth: 20MHz- 16QAM**

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44190	3660	1	0	20.90	8.1	29.00	0.794	20
		1	49	21.23	8.1	29.33	0.857	20
		1	99	20.95	8.1	29.05	0.804	20
		50	0	20.84	8.1	28.94	0.783	20
		50	24	20.96	8.1	29.06	0.805	20
		50	49	20.82	8.1	28.92	0.780	20
		100	0	20.95	8.1	29.05	0.804	20
44340	3675	1	0	21.56	8.1	29.66	0.925	20
		1	49	21.63	8.1	29.73	0.940	20
		1	99	21.09	8.1	29.19	0.830	20
		50	0	21.42	8.1	29.52	0.895	20
		50	24	21.36	8.1	29.46	0.883	20
		50	49	21.33	8.1	29.43	0.877	20
		100	0	21.46	8.1	29.56	0.904	20
44490	3690	1	0	21.66	8.1	29.76	0.946	20
		1	49	21.76	8.1	29.86	0.968	20
		1	99	21.21	8.1	29.31	0.853	20
		50	0	21.56	8.1	29.66	0.925	20
		50	24	21.49	8.1	29.59	0.910	20
		50	49	21.28	8.1	29.38	0.867	20
		100	0	21.42	8.1	29.52	0.895	20

**Channel Bandwidth: 20MHz- 64QAM**

Channel	Channel Frequency (MHz)	RB	RB Offset	Conducted Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44190	3660	1	0	20.80	8.1	28.90	0.776	20
		1	49	21.16	8.1	29.26	0.843	20
		1	99	20.83	8.1	28.93	0.782	20
		50	0	20.76	8.1	28.86	0.769	20
		50	24	20.88	8.1	28.98	0.791	20
		50	49	20.75	8.1	28.85	0.767	20
		100	0	20.89	8.1	28.99	0.793	20
44340	3675	1	0	21.49	8.1	29.59	0.910	20
		1	49	21.55	8.1	29.65	0.923	20
		1	99	21.01	8.1	29.11	0.815	20
		50	0	21.36	8.1	29.46	0.883	20
		50	24	21.30	8.1	29.40	0.871	20
		50	49	21.24	8.1	29.34	0.859	20
		100	0	21.39	8.1	29.49	0.889	20
44490	3690	1	0	21.59	8.1	29.69	0.931	20
		1	49	21.69	8.1	29.79	0.953	20
		1	99	21.09	8.1	29.19	0.830	20
		50	0	21.46	8.1	29.56	0.904	20
		50	24	21.42	8.1	29.52	0.895	20
		50	49	21.23	8.1	29.33	0.857	20
		100	0	21.33	8.1	29.43	0.877	20

### 3.1.6 Test Result of Peak EIRP Density

#### Channel Bandwidth: 10MHz- QPSK, 1RB offset 24

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	19.292	8.1	27.392	0.549	1.00
44340	3675	19.606	8.1	27.706	0.590	1.00
44540	3695	19.598	8.1	27.698	0.589	1.00

#### Channel Bandwidth: 10MHz- QPSK, 100%RB offset 0

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	9.083	8.1	17.183	0.052	1.00
44340	3675	9.393	8.1	17.493	0.056	1.00
44540	3695	9.451	8.1	17.551	0.057	1.00

#### Channel Bandwidth: 10MHz- 16QAM, 1RB offset 24

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	19.295	8.1	27.395	0.549	1.00
44340	3675	19.611	8.1	27.711	0.590	1.00
44540	3695	19.421	8.1	27.521	0.565	1.00

#### Channel Bandwidth: 10MHz- 16QAM, 100%RB offset 0

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	9.032	8.1	17.132	0.052	1.00
44340	3675	9.312	8.1	17.412	0.055	1.00
44540	3695	9.386	8.1	17.486	0.056	1.00

**Channel Bandwidth: 10MHz- 64QAM, 1RB offset 24**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	19.156	8.1	27.256	0.532	1.00
44340	3675	19.411	8.1	27.511	0.564	1.00
44540	3695	19.519	8.1	27.619	0.578	1.00

**Channel Bandwidth: 10MHz- 64QAM, 100%RB offset 0**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44140	3655	9.669	8.1	17.769	0.060	1.00
44340	3675	10.035	8.1	18.135	0.065	1.00
44540	3695	10.053	8.1	18.153	0.065	1.00

**Channel Bandwidth: 20MHz- QPSK, 1RB offset 49**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	20.060	8.1	28.160	0.655	1.00
44340	3675	20.236	8.1	28.336	0.682	1.00
44490	3690	20.316	8.1	28.416	0.694	1.00

**Channel Bandwidth: 20MHz- QPSK, 100%RB offset 0**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	6.978	8.1	15.078	0.032	1.00
44340	3675	7.100	8.1	15.200	0.033	1.00
44490	3690	7.168	8.1	15.268	0.034	1.00

**Channel Bandwidth: 20MHz- 16QAM, 1RB offset 49**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	19.403	8.1	27.503	0.563	1.00
44340	3675	19.567	8.1	27.667	0.584	1.00
44490	3690	19.622	8.1	27.722	0.592	1.00

**Channel Bandwidth: 20MHz- 16QAM, 100%RB offset 0**

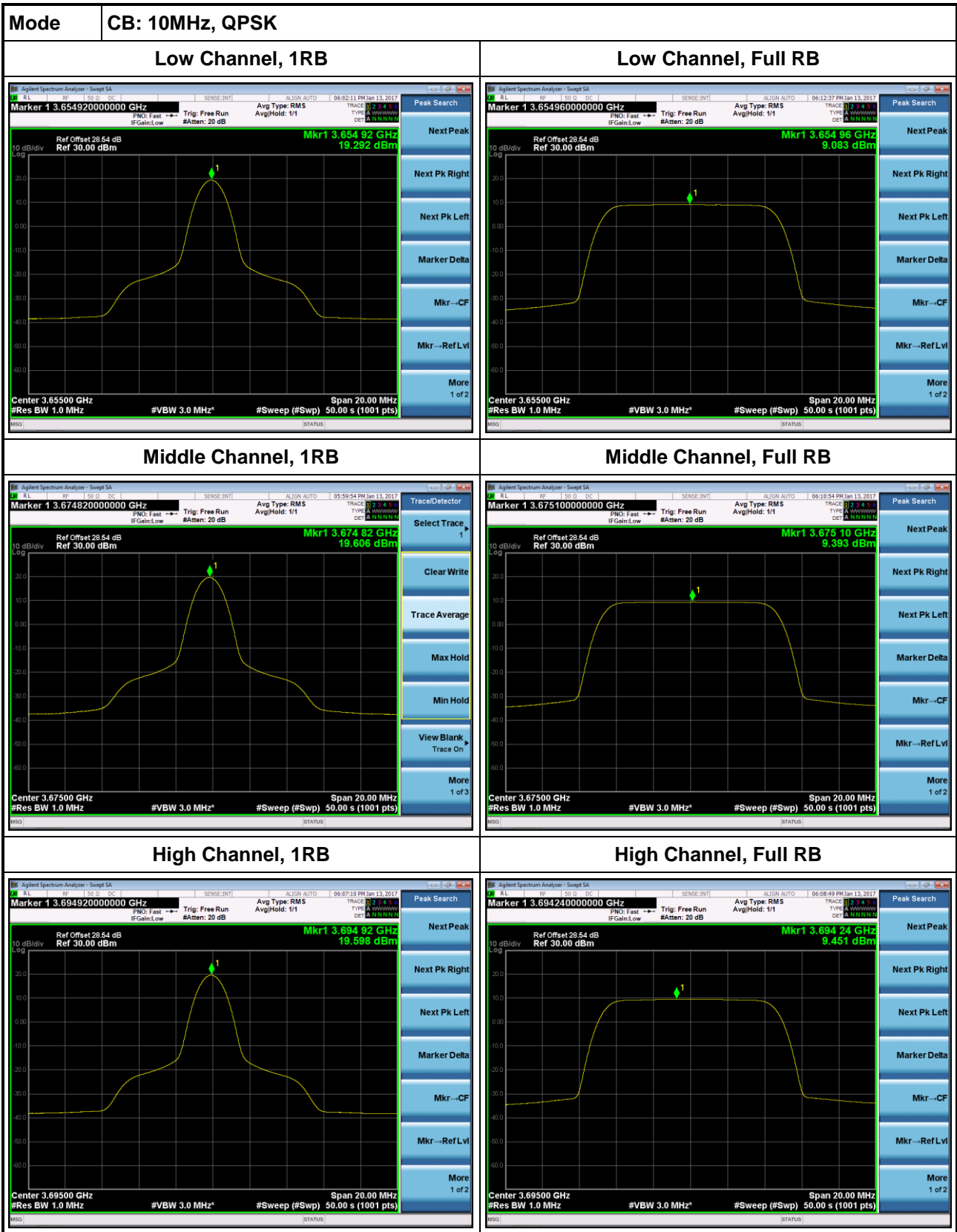
Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	6.938	8.1	15.038	0.032	1.00
44340	3675	7.077	8.1	15.177	0.033	1.00
44490	3690	7.128	8.1	15.228	0.033	1.00

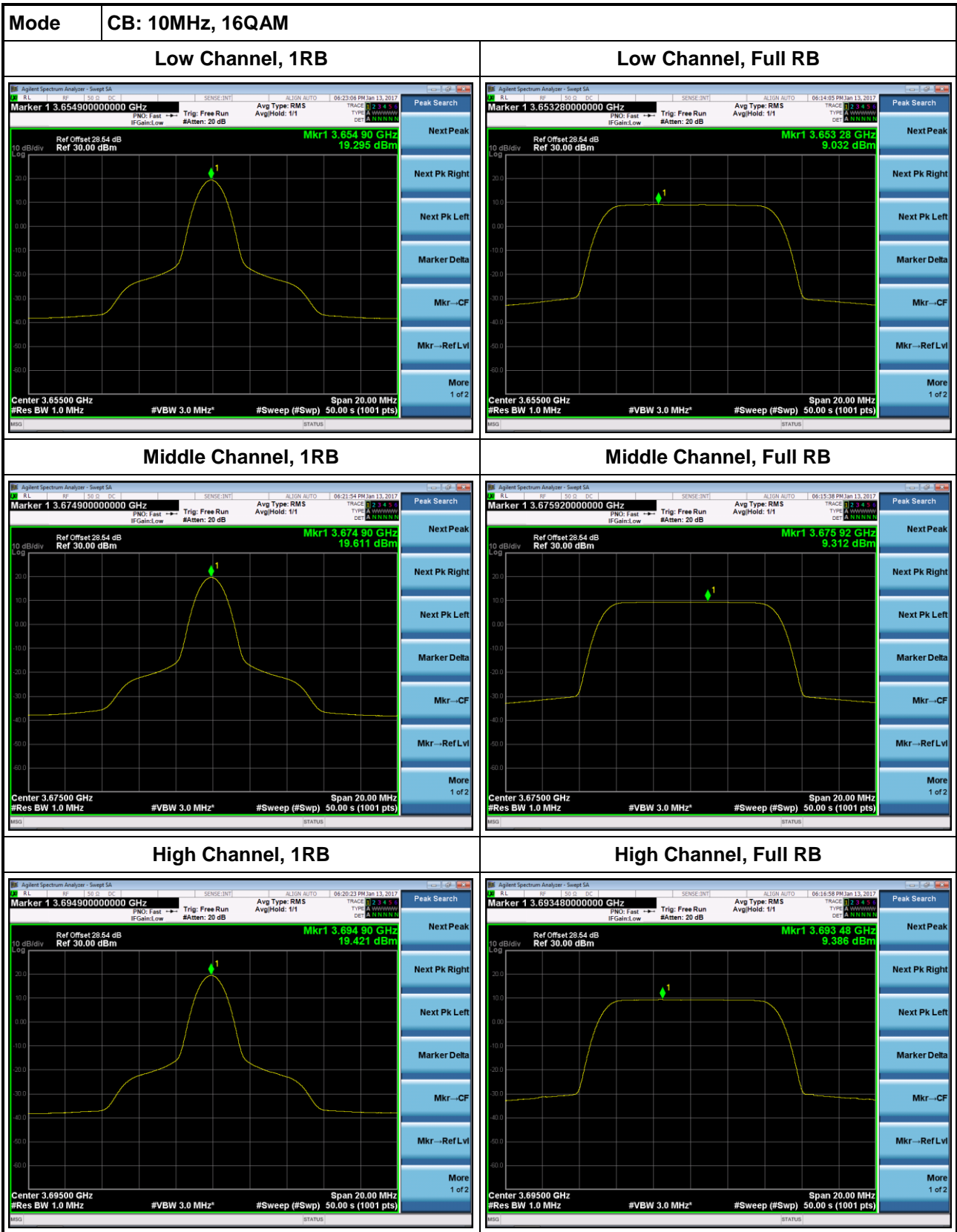
**Channel Bandwidth: 20MHz- 64QAM, 1RB offset 49**

Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	19.313	8.1	27.413	0.551	1.00
44340	3675	19.454	8.1	27.554	0.569	1.00
44490	3690	19.499	8.1	27.599	0.575	1.00

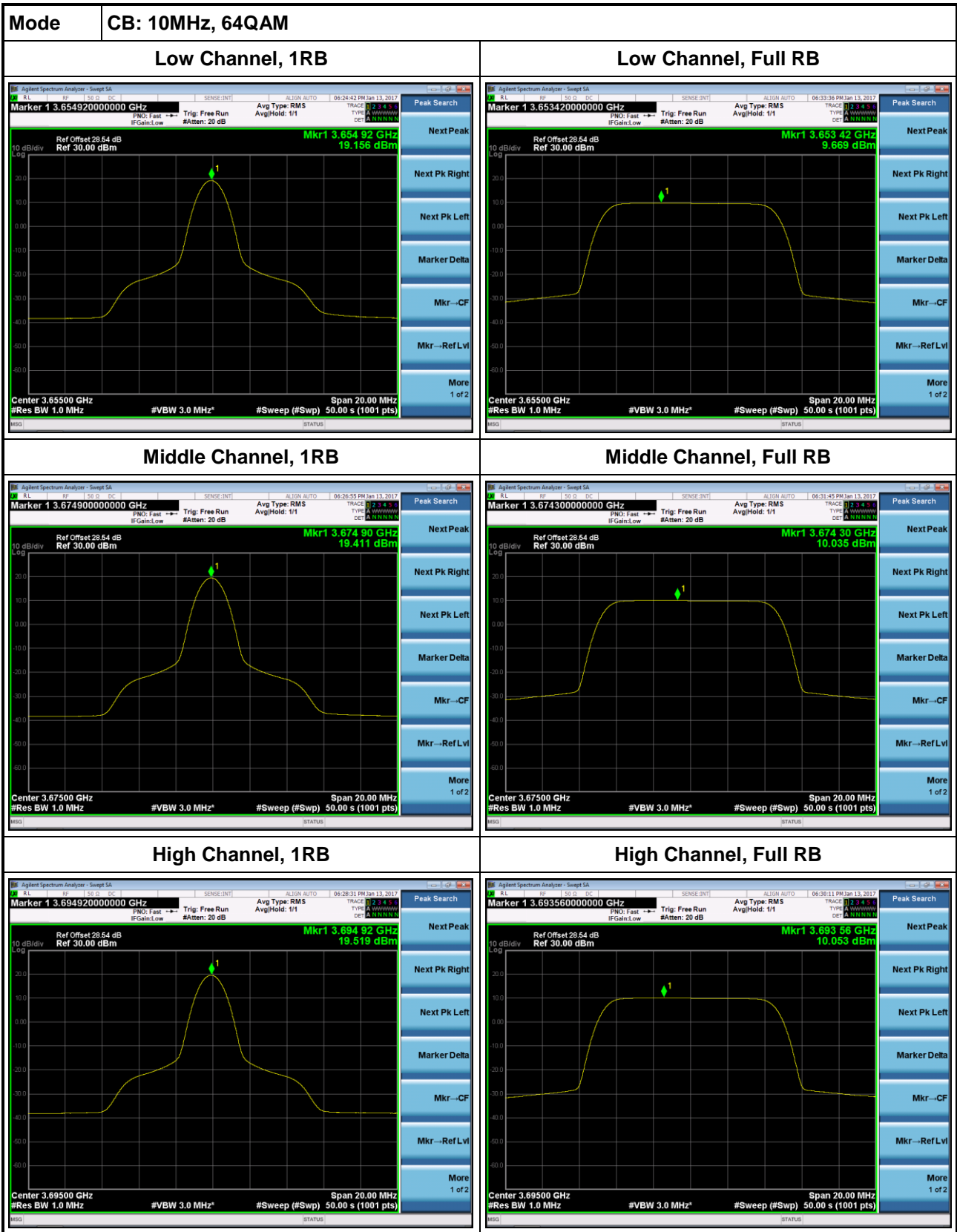
**Channel Bandwidth: 20MHz- 64QAM, 100%RB offset 0**

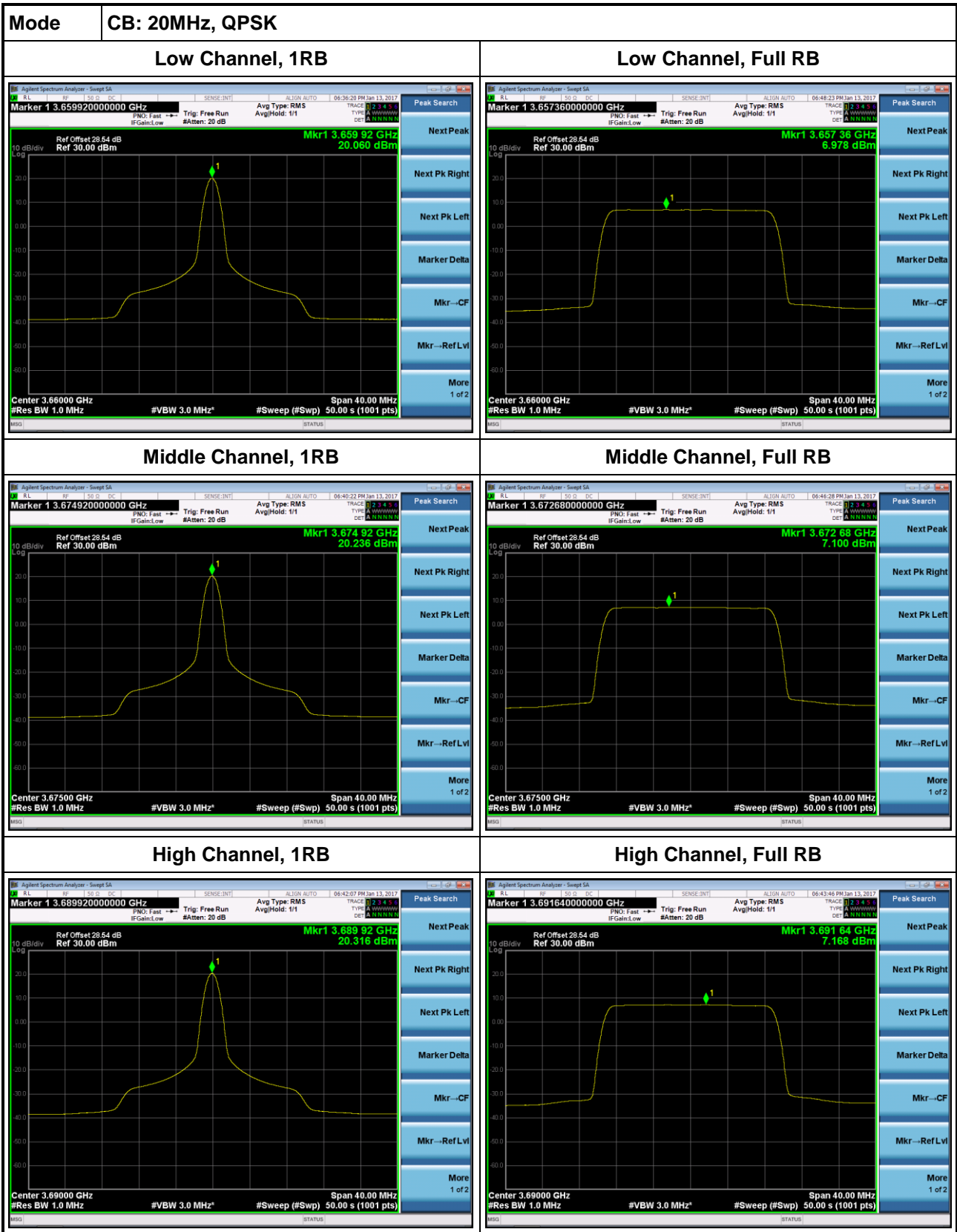
Channel	Channel Frequency (MHz)	Conducted Power Density (dBm/MHz)	Max. Ant. Gain (dBi)	EIRP Power Density (dBm/MHz)	EIRP Power Density (W/MHz)	LIMIT (W/MHz)
44190	3660	6.919	8.1	15.019	0.032	1.00
44340	3675	7.096	8.1	15.196	0.033	1.00
44490	3690	7.129	8.1	15.229	0.033	1.00

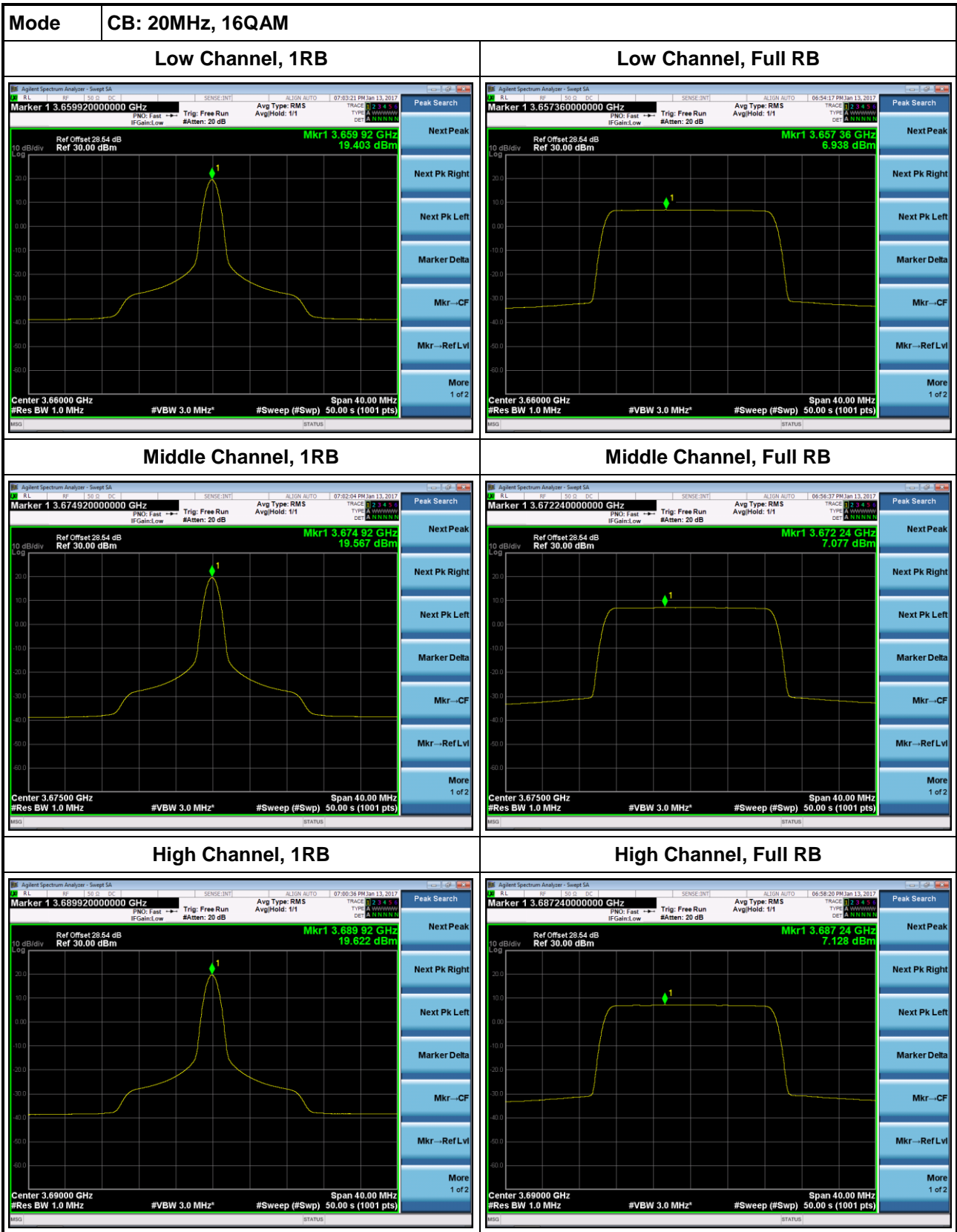


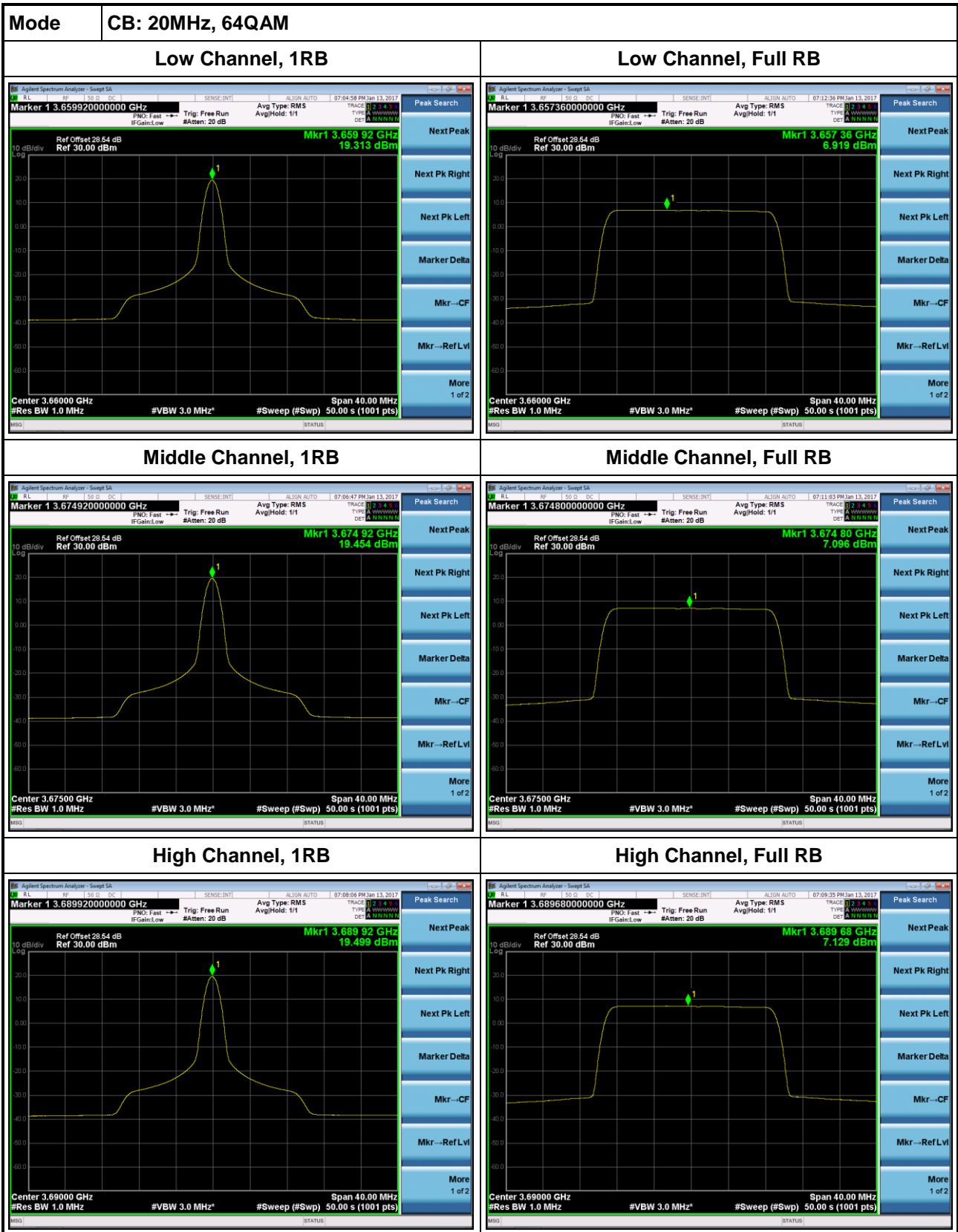












## 3.2 Radiated Emissions

### 3.2.1 Limit of Radiated Emissions

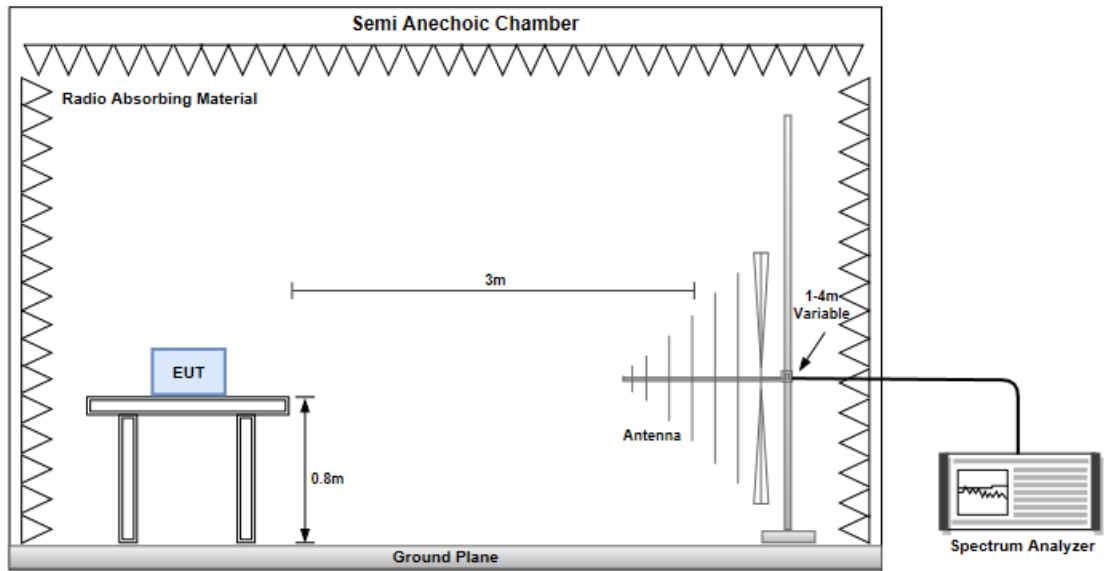
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB equal to -13dBm.

### 3.2.2 Test Procedures

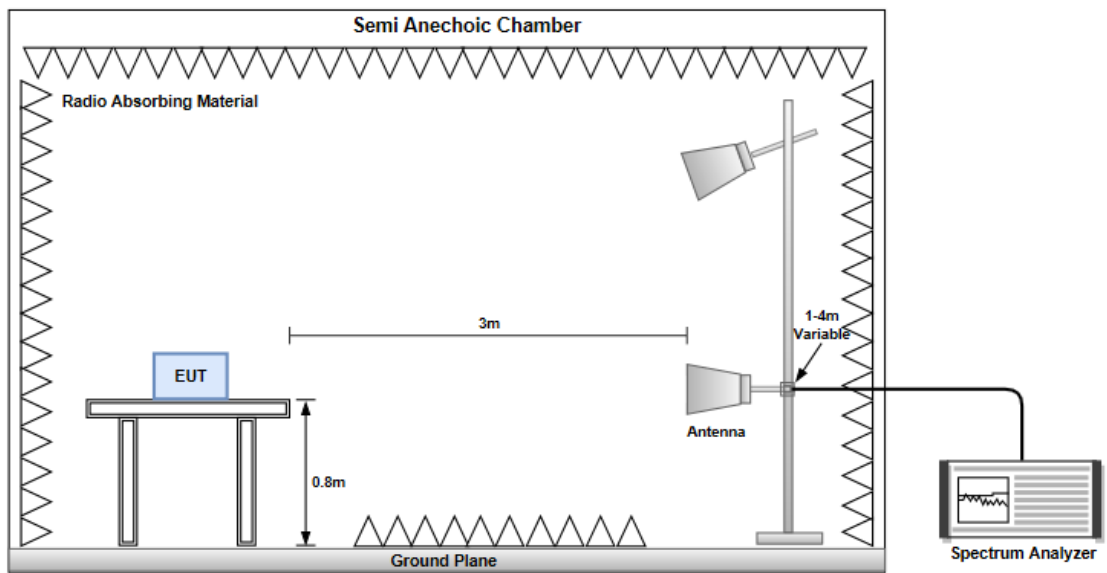
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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 and 4 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.

### 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	CB:10MHz, 1RB, Offset 24, Channel: 44540						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
32.28	H	-63.84	-13.00	-50.84	-71.73	-50.19	-13.65
162.37	H	-66.05	-13.00	-53.05	-65.61	-66.09	0.04
251.35	H	-47.58	-13.00	-34.58	-45.11	-52.04	4.46
497.53	H	-59.57	-13.00	-46.57	-63.96	-63.70	4.13
625.31	H	-52.03	-13.00	-39.03	-58.15	-55.73	3.70
805.42	H	-69.24	-13.00	-56.24	-78.88	-72.74	3.50
35.42	V	-42.27	-13.00	-29.27	-52.91	-29.33	-12.94
213.25	V	-52.37	-13.00	-39.37	-67.34	-56.73	4.36
247.43	V	-34.45	-13.00	-21.45	-49.93	-38.90	4.45
497.26	V	-30.94	-13.00	-17.94	-49.04	-35.07	4.13
621.73	V	-31.47	-13.00	-18.47	-53.85	-35.14	3.67
751.35	V	-40.30	-13.00	-27.30	-63.11	-43.74	3.44

Note: EIRP = S.G Power value + Correction factor.

Mode	CB:20MHz, 1RB, Offset 49, Channel: 44490						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
32.24	H	-63.58	-13.00	-50.58	-71.48	-49.92	-13.66
163.57	H	-65.94	-13.00	-52.94	-65.46	-66.14	0.20
253.47	H	-46.84	-13.00	-33.84	-44.44	-51.29	4.45
497.84	H	-59.57	-13.00	-46.57	-63.96	-63.70	4.13
628.47	H	-53.21	-13.00	-40.21	-59.37	-56.93	3.72
802.41	H	-63.04	-13.00	-50.04	-72.66	-66.55	3.51
30.42	V	-54.97	-13.00	-41.97	-52.48	-40.87	-14.10
212.47	V	-65.89	-13.00	-52.89	-67.85	-70.25	4.36
251.84	V	-50.08	-13.00	-37.08	-52.57	-54.53	4.45
502.64	V	-49.69	-13.00	-36.69	-54.98	-53.82	4.13
625.81	V	-53.93	-13.00	-40.93	-63.29	-57.63	3.70
751.48	V	-63.42	-13.00	-50.42	-73.23	-66.86	3.44

Note: EIRP = S.G Power value + Correction factor.

### 3.2.5 Test Result of Radiated Emissions above 1GHz

Mode							
CB:10MHz, 1RB, Offset 24, Channel: 44140							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7310.00	H	-37.56	-13.00	-24.56	-58.37	-40.79	3.23
10965.00	H	-31.23	-13.00	-18.23	-54.86	-31.84	0.61
14620.00	H	-34.58	-13.00	-21.58	-58.74	-34.71	0.13
7310.00	V	-34.61	-13.00	-21.61	-56.91	-37.84	3.23
10965.00	V	-37.59	-13.00	-24.59	-61.73	-38.20	0.61
14620.00	V	-35.84	-13.00	-22.84	-62.96	-35.97	0.13
Mode							
CB:10MHz, 1RB, Offset 24, Channel: 44340							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7350.00	H	-37.53	-13.00	-24.53	-58.47	-40.62	3.09
11025.00	H	-31.43	-13.00	-18.43	-55.07	-32.01	0.58
14700.00	H	-34.75	-13.00	-21.75	-59.11	-34.99	0.24
7350.00	V	-36.84	-13.00	-23.84	-59.12	-39.93	3.09
11025.00	V	-37.51	-13.00	-24.51	-61.75	-38.09	0.58
14700.00	V	-35.41	-13.00	-22.41	-62.85	-35.65	0.24
Mode							
CB:10MHz, 1RB, Offset 24, Channel: 44540							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7390.00	H	-36.47	-13.00	-23.47	-57.55	-39.42	2.95
11085.00	H	-32.21	-13.00	-19.21	-55.98	-32.83	0.62
14780.00	H	-33.58	-13.00	-20.58	-58.14	-33.93	0.35
7390.00	V	-35.52	-13.00	-22.52	-57.77	-38.47	2.95
11085.00	V	-36.63	-13.00	-23.63	-61.05	-37.25	0.62
14780.00	V	-34.84	-13.00	-21.84	-62.60	-35.19	0.35

Note: EIRP = S.G Power value + Correction factor.



Mode							
CB:20MHz, 1RB, Offset 49, Channel: 44190							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7320.00	H	-36.68	-13.00	-23.68	-57.53	-39.87	3.19
10980.00	H	-32.27	-13.00	-19.27	-55.88	-32.86	0.59
14640.00	H	-32.61	-13.00	-19.61	-56.83	-32.77	0.16
7320.00	V	-34.48	-13.00	-21.48	-56.77	-37.67	3.19
10980.00	V	-37.42	-13.00	-24.42	-61.57	-38.01	0.59
14640.00	V	-35.61	-13.00	-22.61	-62.81	-35.77	0.16
Mode							
CB:20MHz, 1RB, Offset 49, Channel: 44340							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7350.00	H	-37.21	-13.00	-24.21	-58.15	-40.30	3.09
11025.00	H	-32.53	-13.00	-19.53	-56.17	-33.11	0.58
14700.00	H	-34.65	-13.00	-21.65	-59.01	-34.89	0.24
7350.00	V	-34.91	-13.00	-21.91	-57.19	-38.00	3.09
11025.00	V	-36.62	-13.00	-23.62	-60.86	-37.20	0.58
14700.00	V	-34.81	-13.00	-21.81	-62.25	-35.05	0.24
Mode							
CB:20MHz, 1RB, Offset 49, Channel: 44490							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
7380.00	H	-37.34	-13.00	-24.34	-58.38	-40.32	2.98
11070.00	H	-31.22	-13.00	-18.22	-54.95	-31.83	0.61
14760.00	H	-33.67	-13.00	-20.67	-58.18	-33.99	0.32
7380.00	V	-35.48	-13.00	-22.48	-57.74	-38.46	2.98
11070.00	V	-37.21	-13.00	-24.21	-61.58	-37.82	0.61
14760.00	V	-34.93	-13.00	-21.93	-62.61	-35.25	0.32

Note: EIRP = S.G Power value + Correction factor.

### 3.3 Conducted Emissions

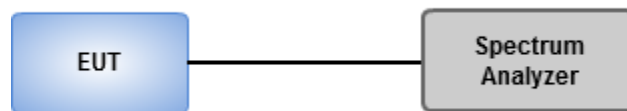
#### 3.3.1 Limit of Conducted Emissions

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.

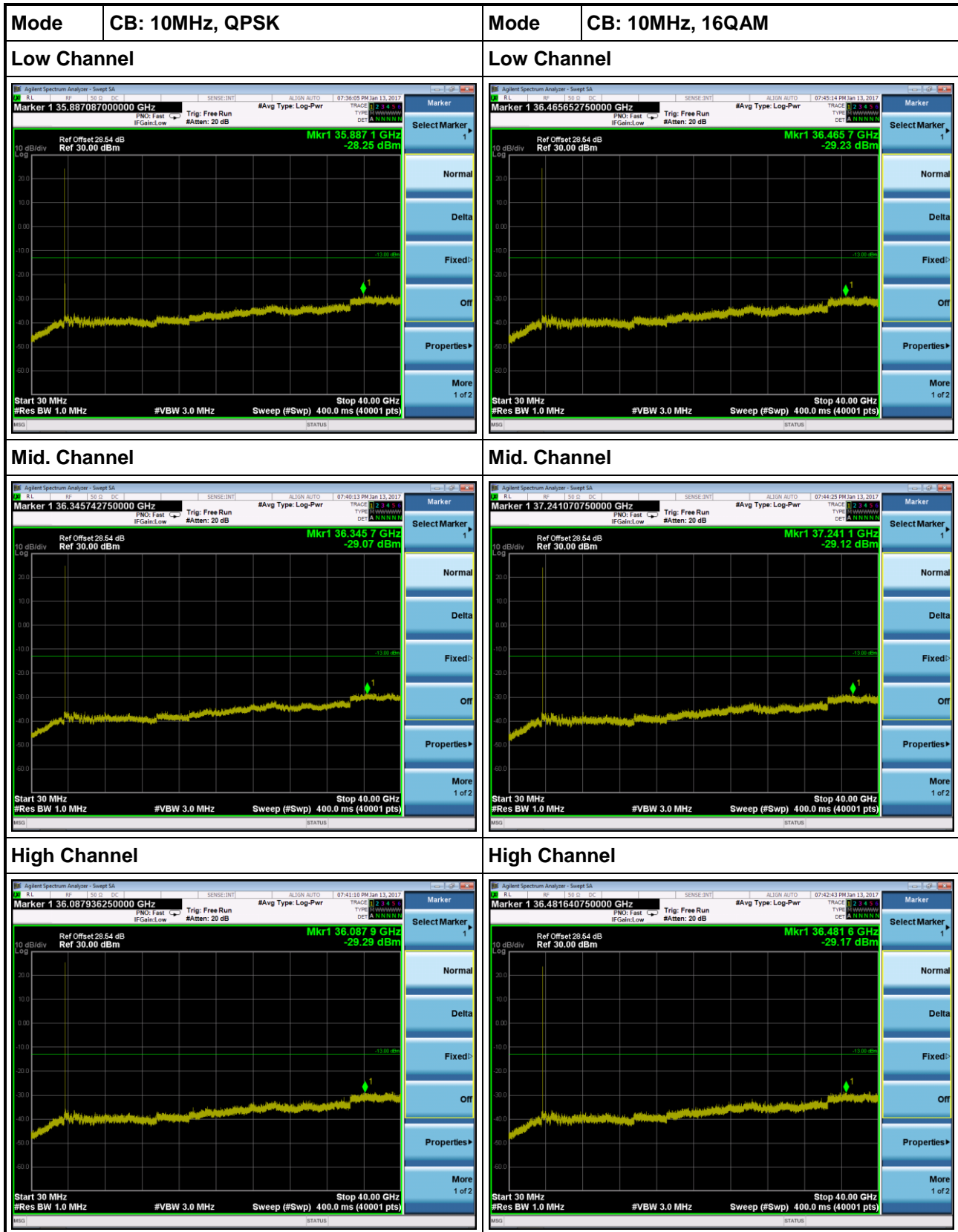
#### 3.3.2 Test Procedures

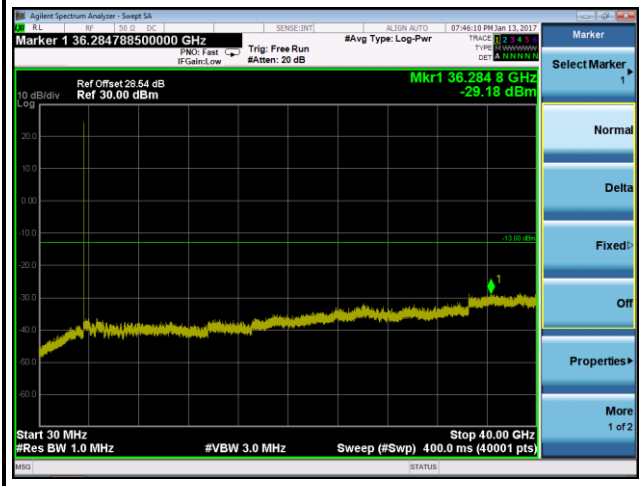
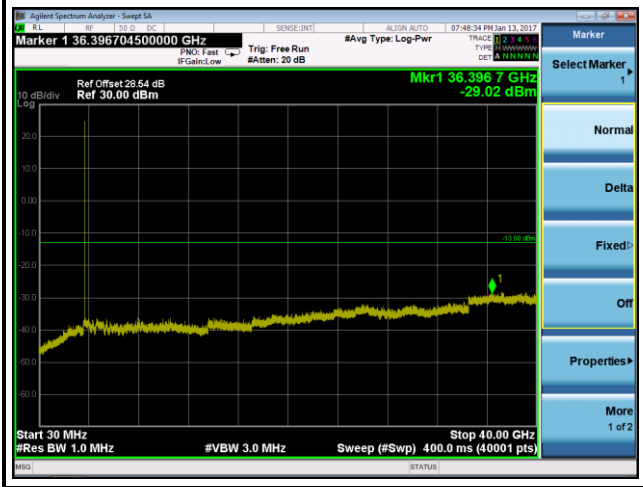
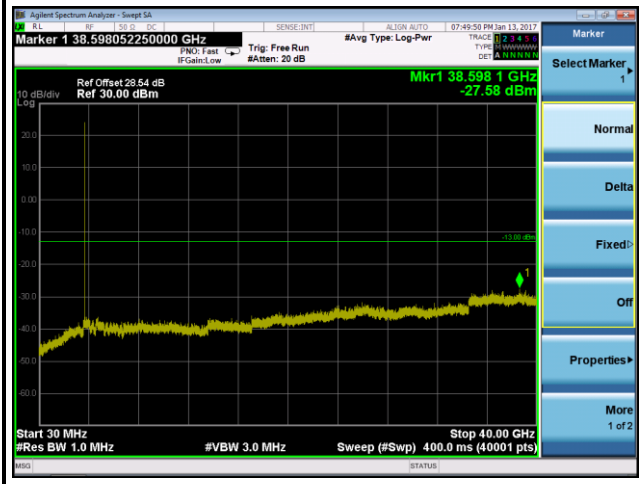
1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~40GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

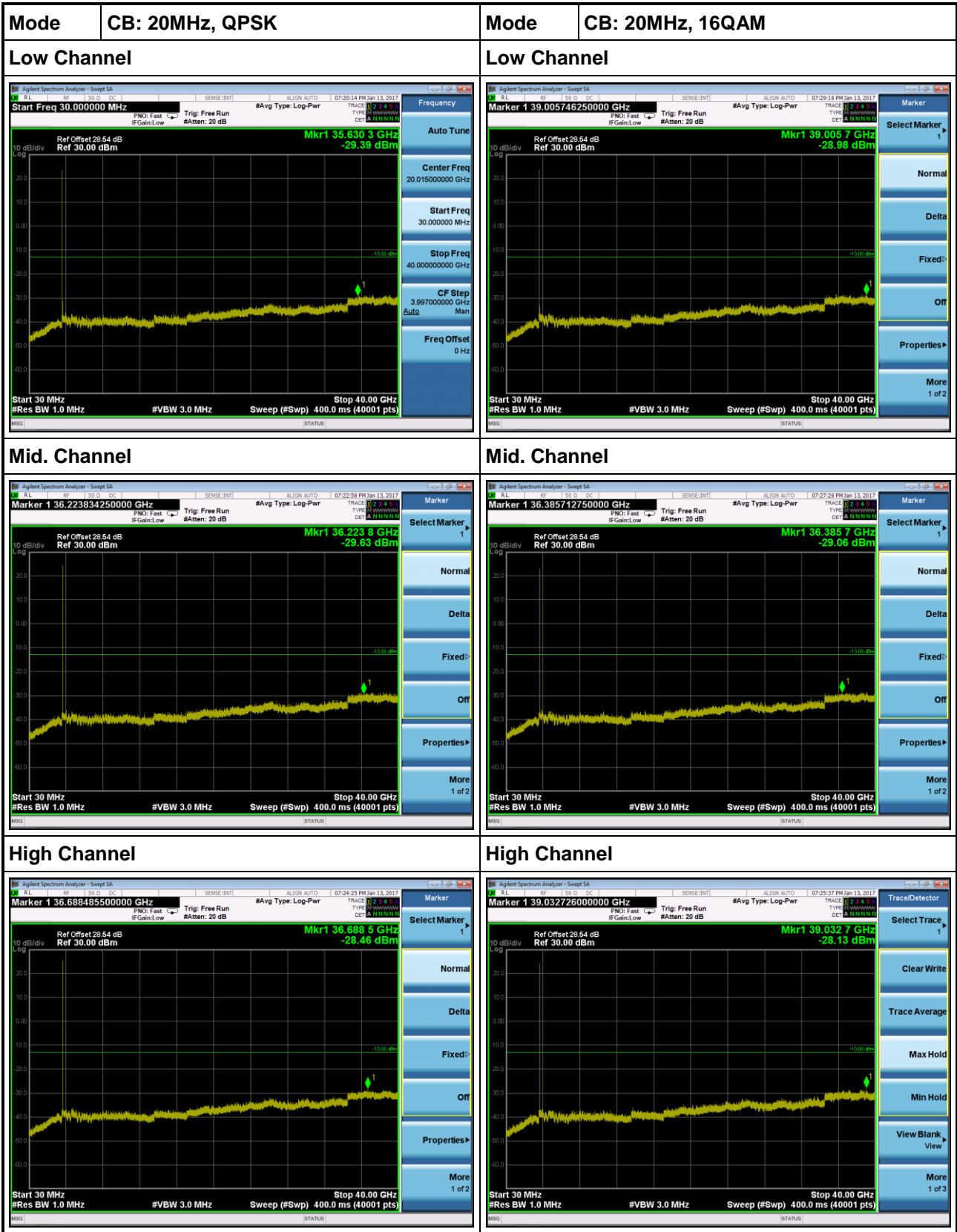
#### 3.3.3 Test Setup

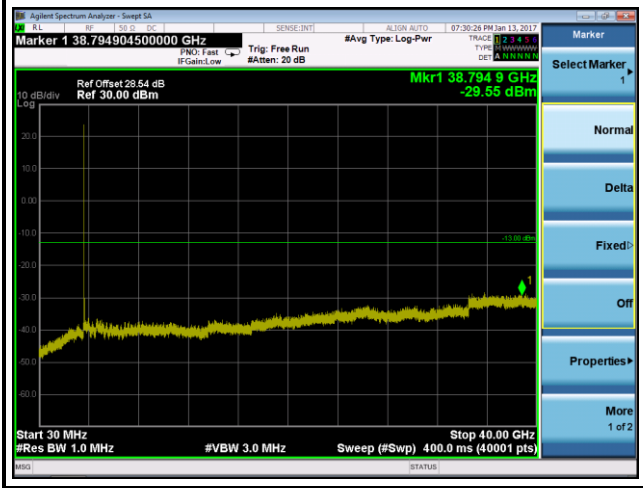
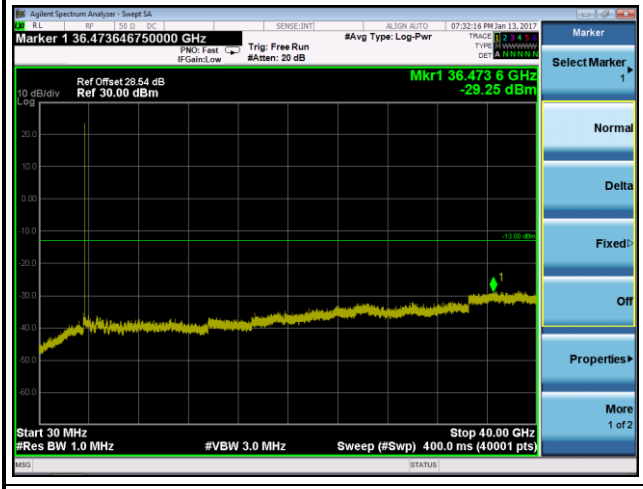
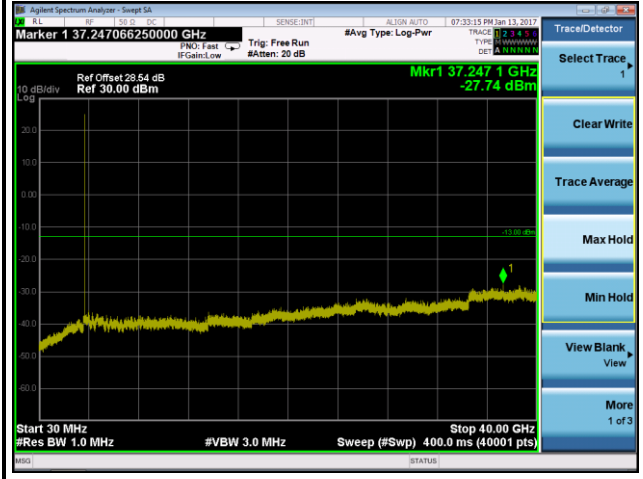


### 3.3.4 Test Result of Conducted Emissions



Mode	CB: 10MHz, 64QAM	---
Low Channel		---
		---
Mid. Channel		---
		---
High Channel		---
		---



<b>Mode</b>	<b>CB: 20MHz, 64QAM</b>	<p style="text-align: center;">---</p>
<b>Low Channel</b>		<p style="text-align: center;">---</p>
		<p style="text-align: center;">---</p>
<b>Mid. Channel</b>		<p style="text-align: center;">---</p>
		<p style="text-align: center;">---</p>
<b>High Channel</b>		<p style="text-align: center;">---</p>
		<p style="text-align: center;">---</p>