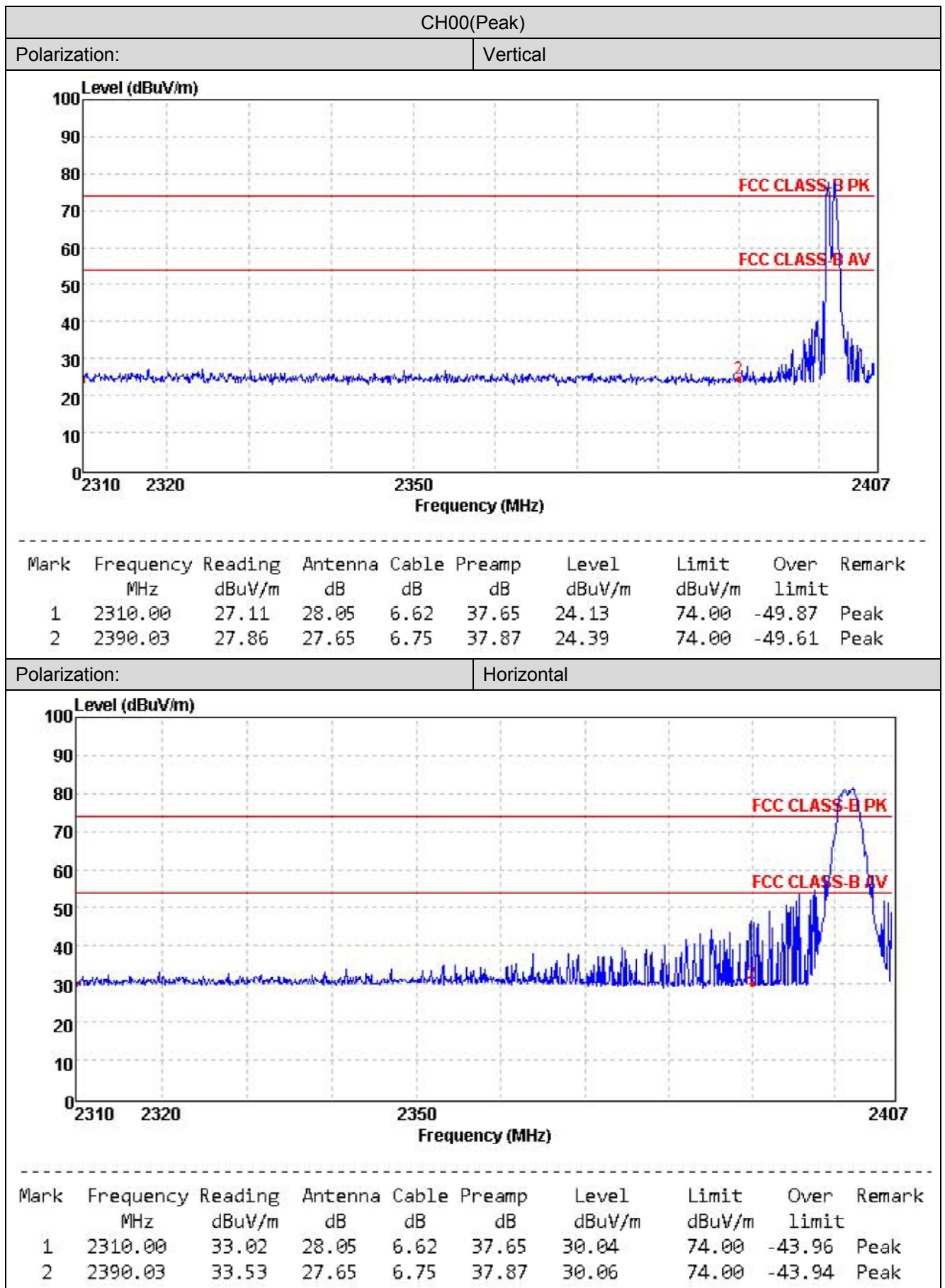
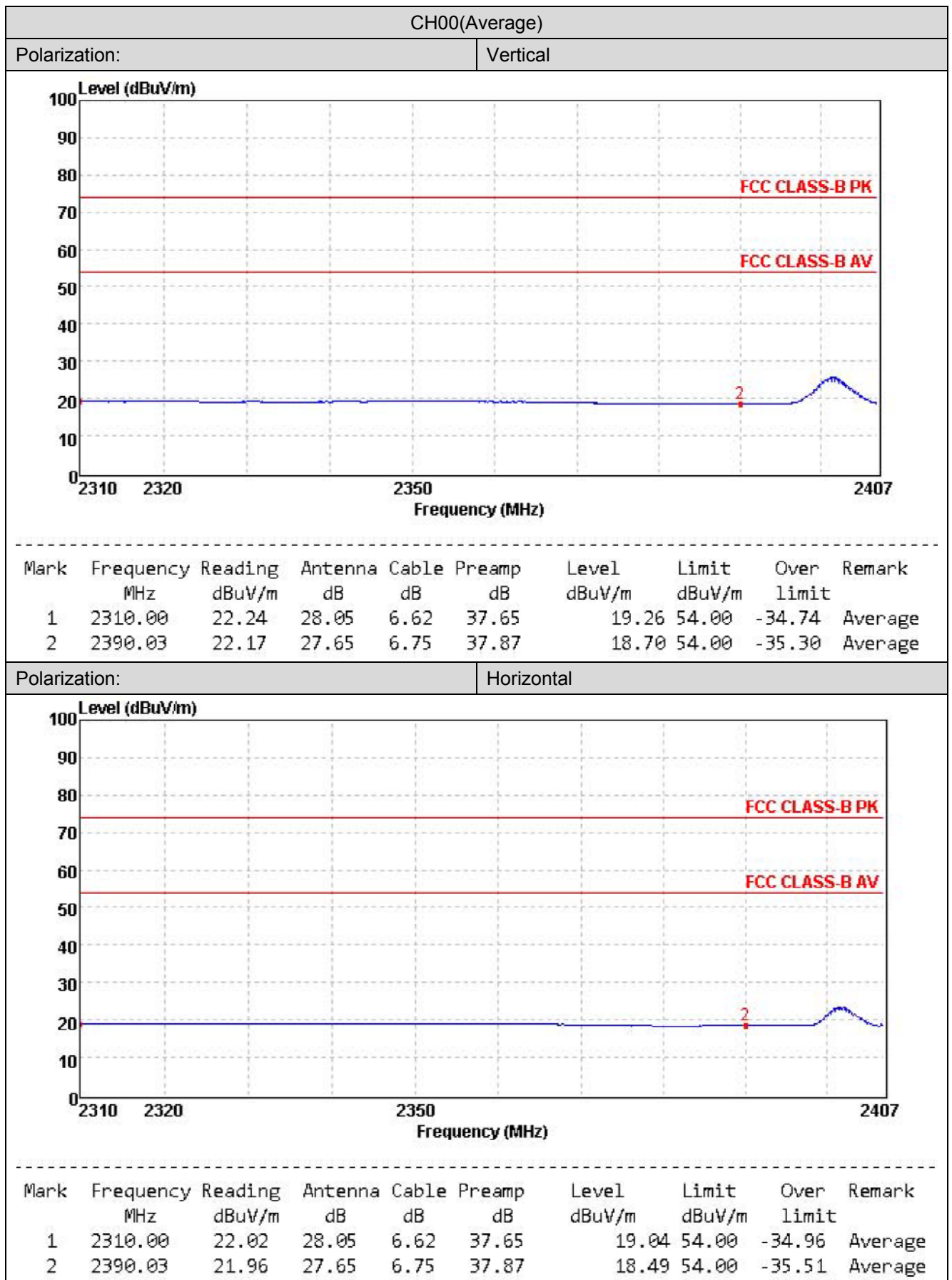
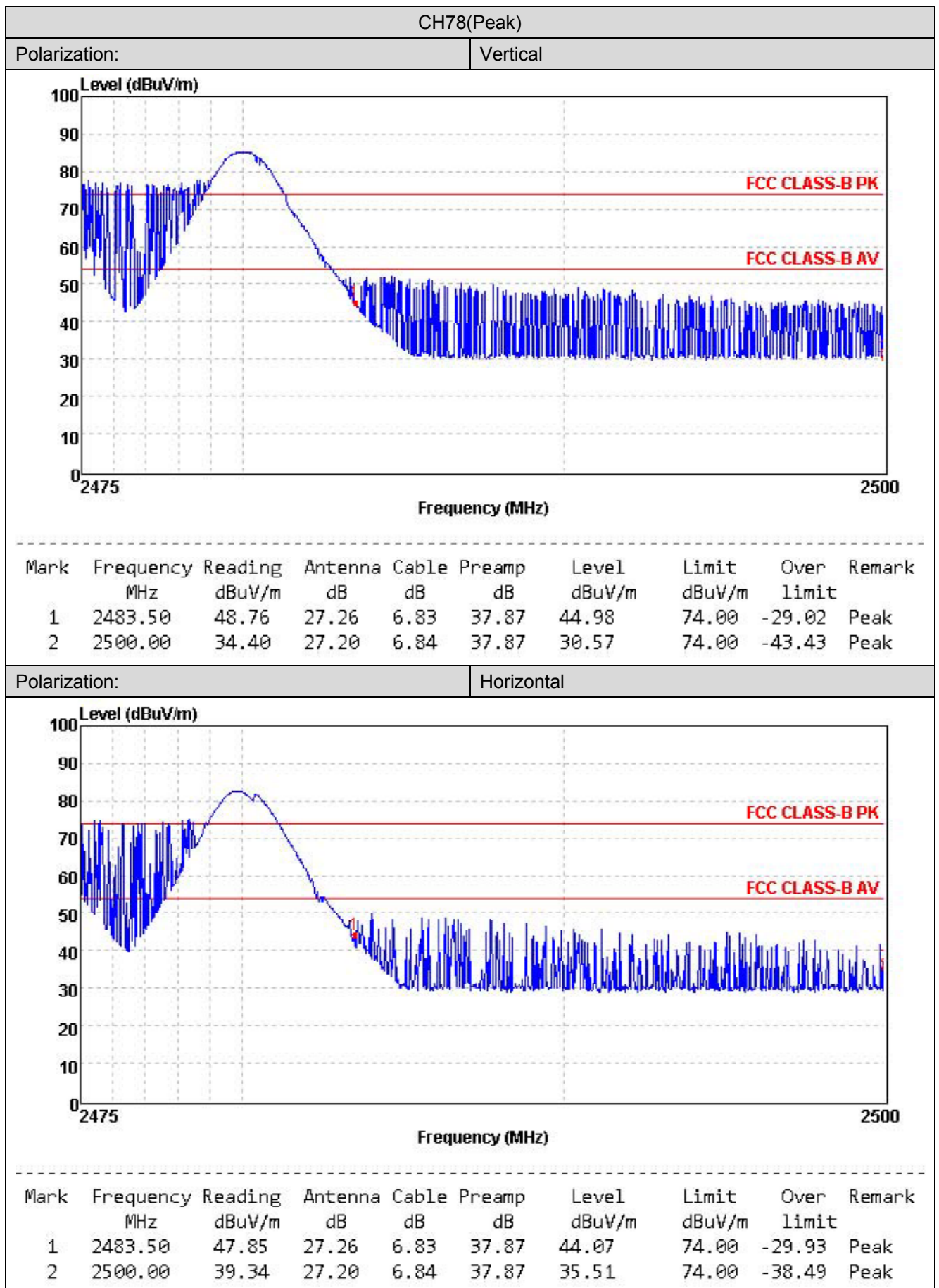


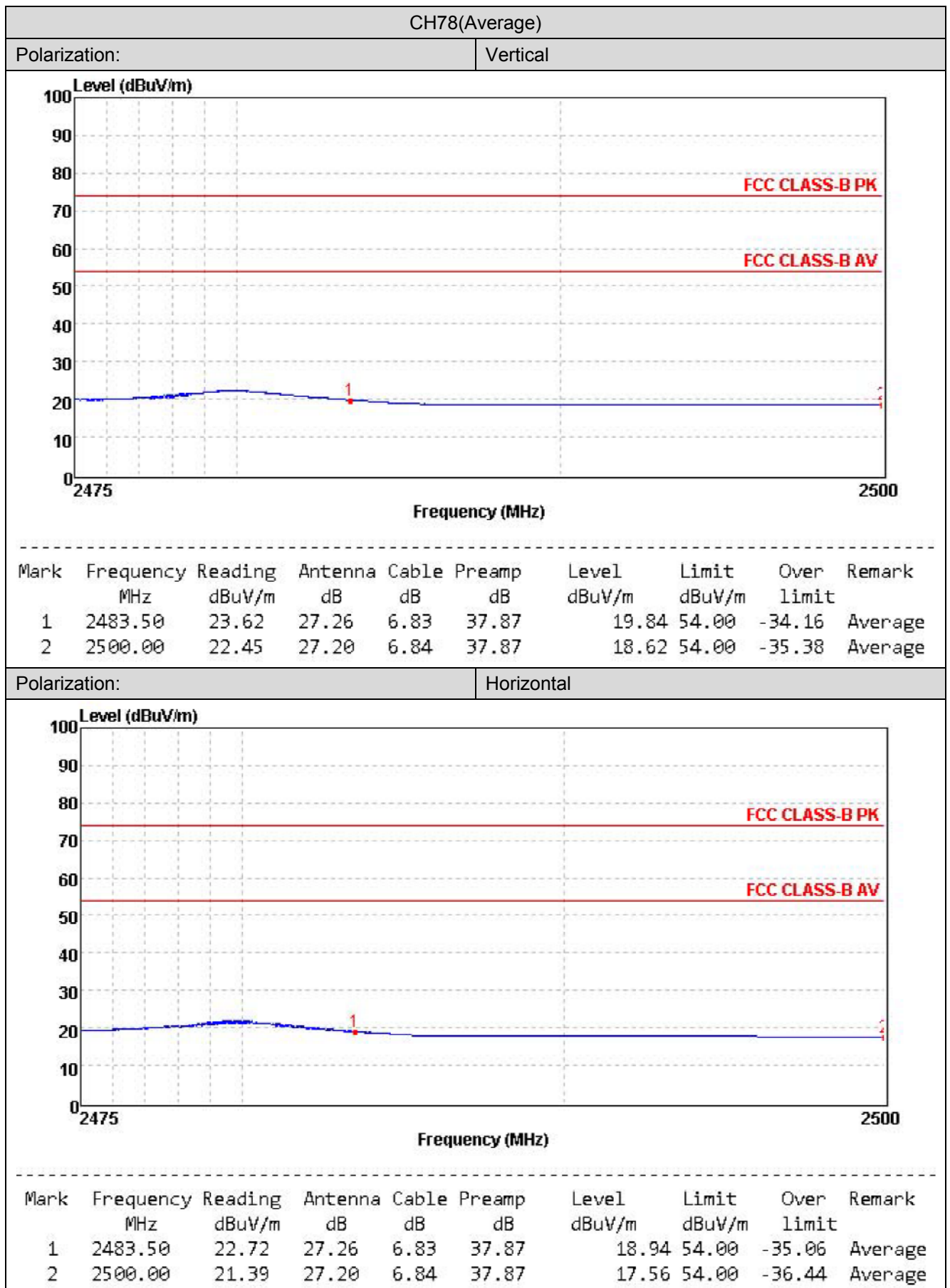
CH00									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	27.11	28.05	6.62	37.65	24.13	74.00	-49.87	Vertical	Peak
2390.03	27.86	27.65	6.75	37.87	24.39	74.00	-49.61	Vertical	Peak
2310.00	33.02	28.05	6.62	37.65	30.04	74.00	-43.96	Horizontal	Peak
2390.03	33.53	27.65	6.75	37.87	30.06	74.00	-43.94	Horizontal	Peak
2310.00	22.24	28.05	6.62	37.65	19.26	54.00	-34.74	Vertical	Average
2390.03	22.17	27.65	6.75	37.87	18.70	54.00	-35.30	Vertical	Average
2310.00	22.02	28.05	6.62	37.65	19.04	54.00	-34.96	Horizontal	Average
2390.03	21.96	27.65	6.75	37.87	18.49	54.00	-35.51	Horizontal	Average

CH78									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.50	48.76	27.26	6.83	37.87	44.98	74.00	-29.02	Vertical	Peak
2500.00	34.40	27.20	6.84	37.87	30.57	74.00	-43.43	Vertical	Peak
2483.50	47.85	27.26	6.83	37.87	44.07	74.00	-29.93	Horizontal	Peak
2500.00	39.34	27.20	6.84	37.87	35.51	74.00	-38.49	Horizontal	Peak
2483.50	23.62	27.26	6.83	37.87	19.84	54.00	-34.16	Vertical	Average
2500.00	22.45	27.20	6.84	37.87	18.62	54.00	-35.38	Vertical	Average
2483.50	22.72	27.26	6.83	37.87	18.94	54.00	-35.06	Horizontal	Average
2500.00	21.39	27.20	6.84	37.87	17.56	54.00	-36.44	Horizontal	Average







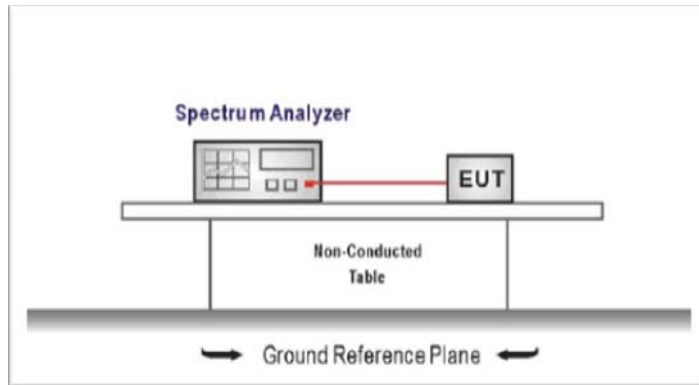


5.10. Band edge and Spurious Emissions (conducted)

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

TEST CONFIGURATION



TEST PROCEDURE

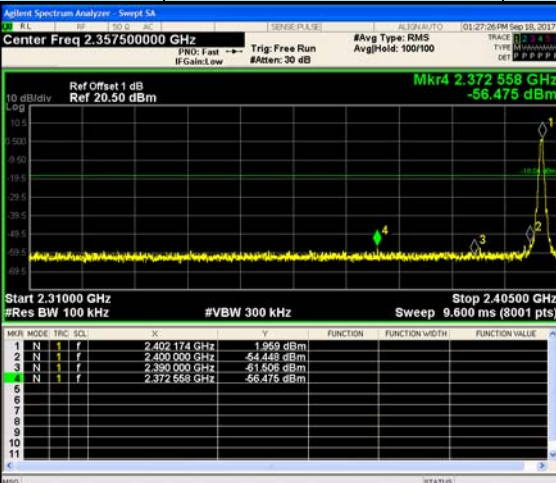
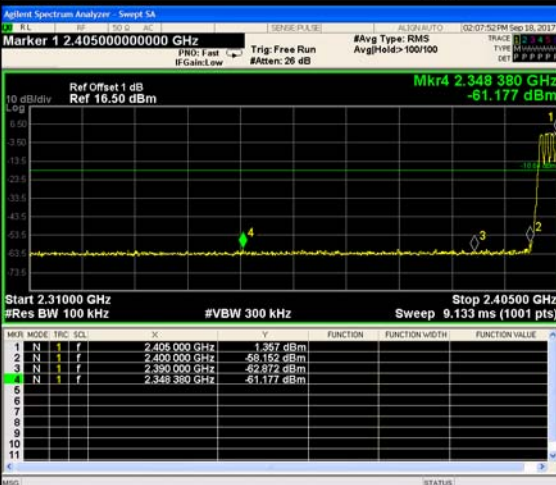
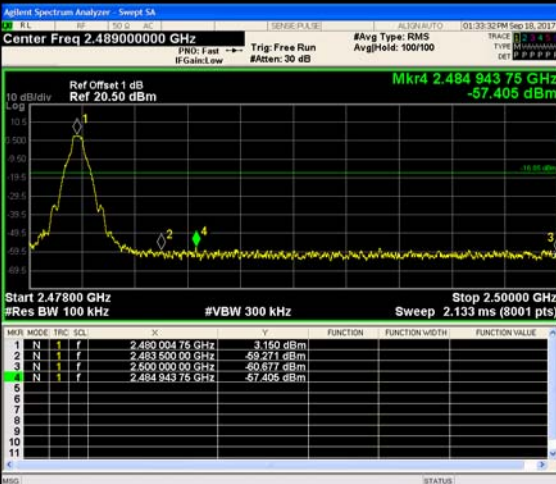
1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
RBW = 100 kHz, VBW $\geq$ RBW
Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

TEST MODE:

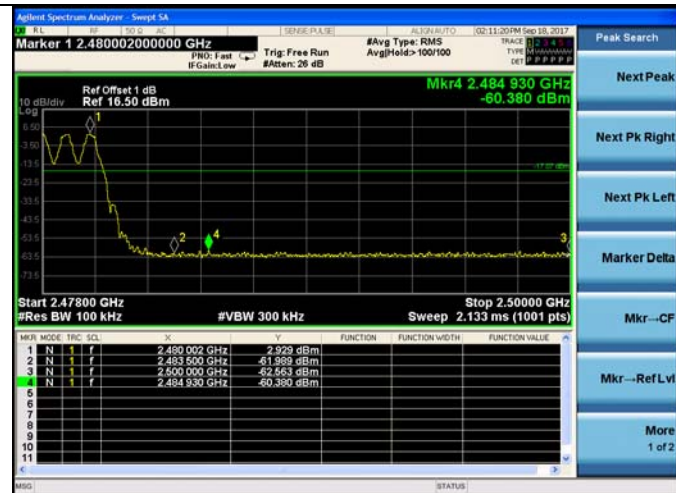
Please refer to the clause 3.3

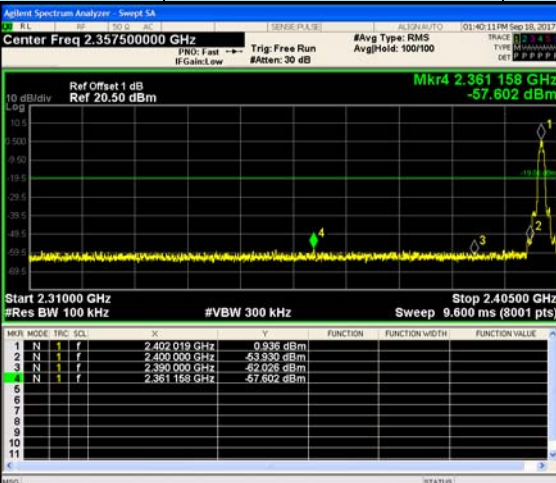
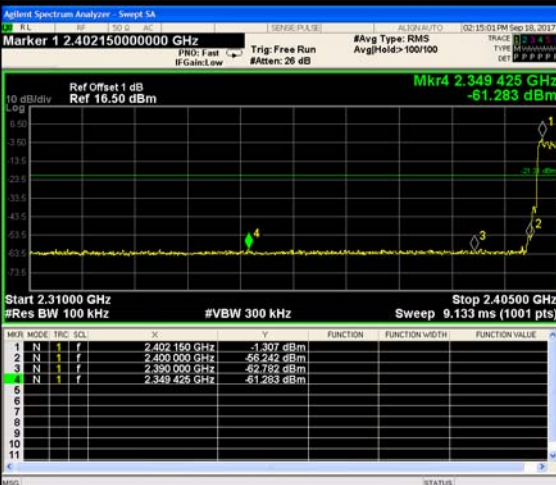
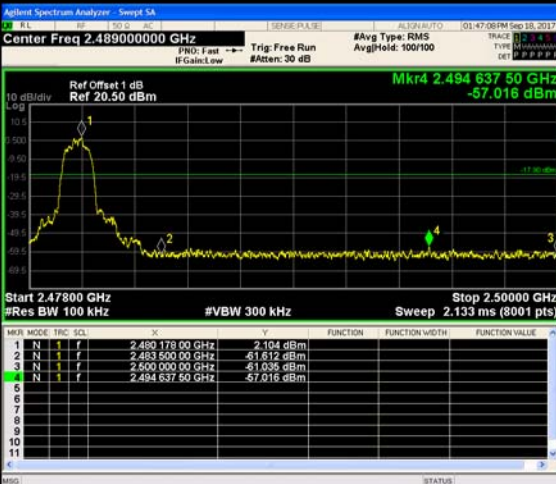
TEST RESULTS

☒ Passed ☐ Not Applicable

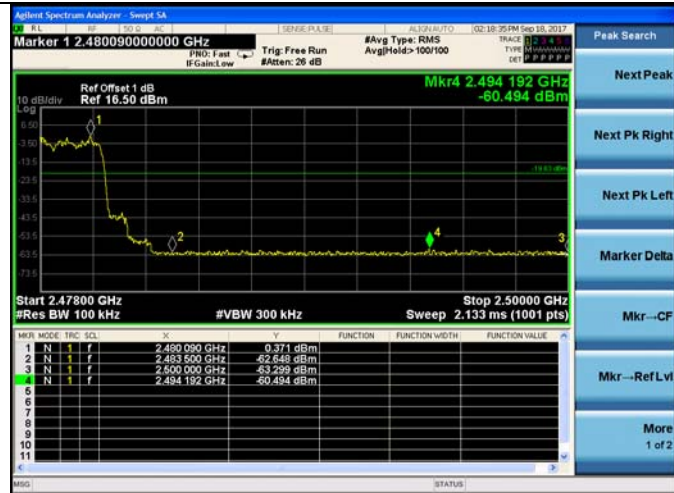
Test Item:	Band edge	Modulation type:	GFSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

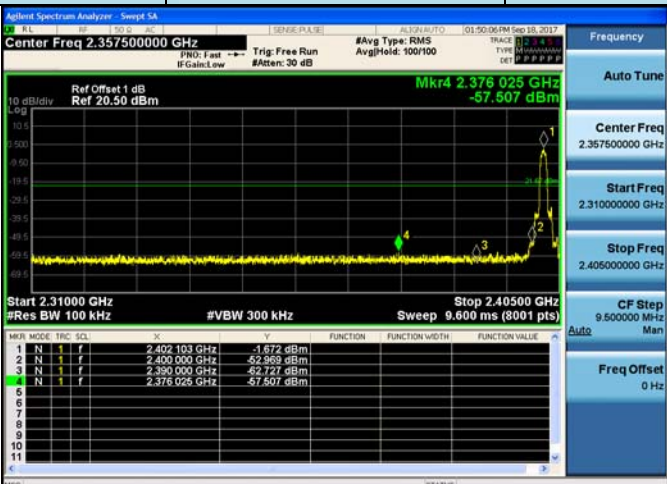
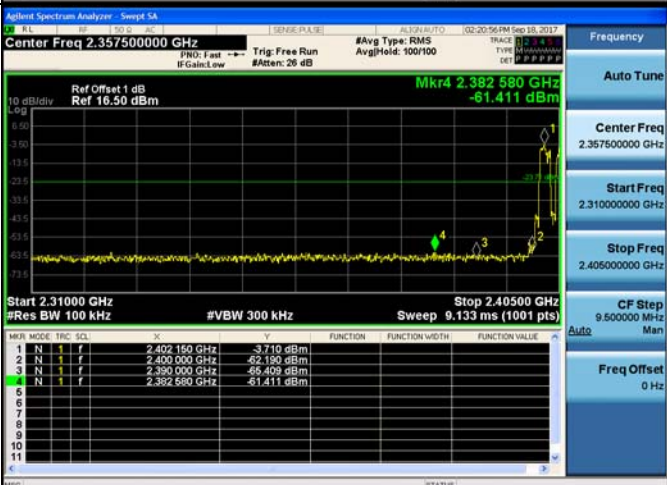
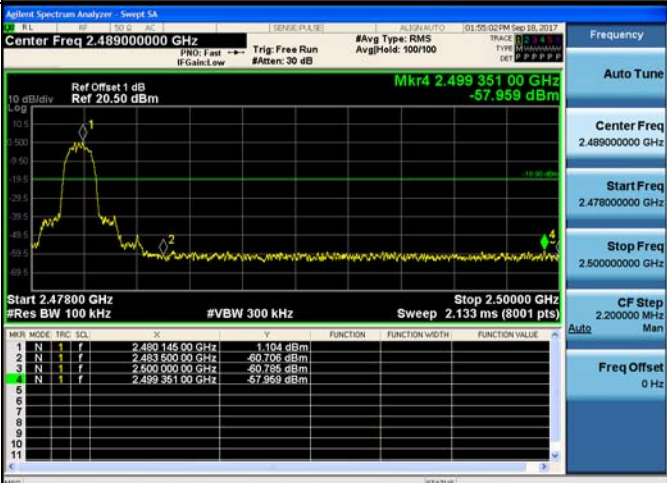
CH78
Hopping mode



Test Item:	Band edge	Modulation type:	$\pi/4$ DQPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

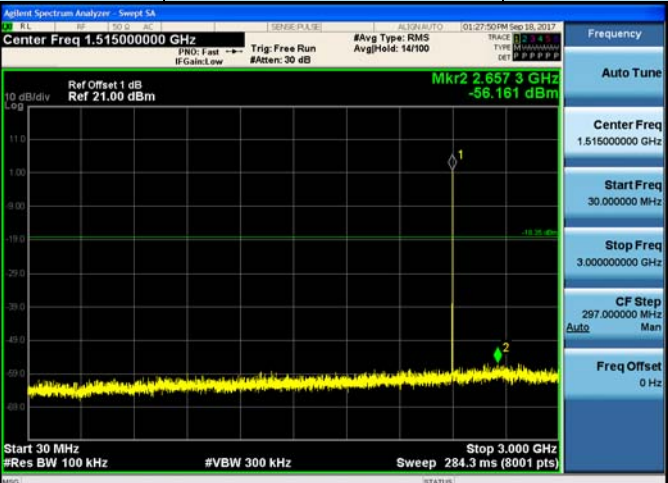
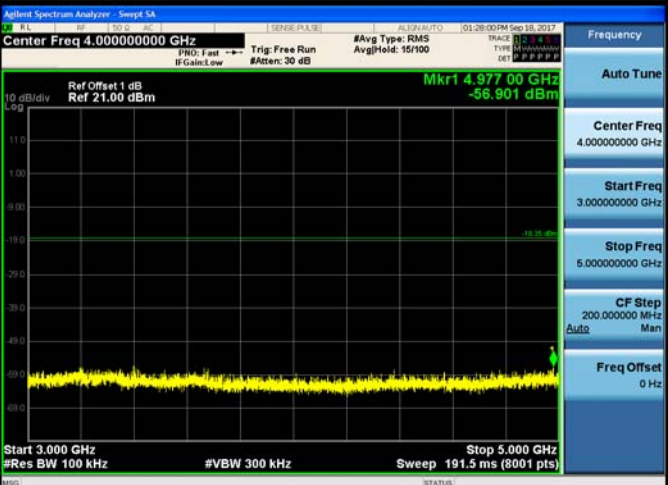
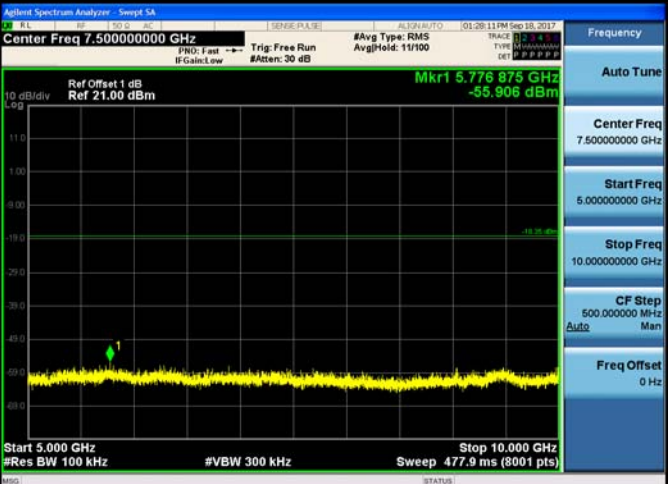
CH78
Hopping mode

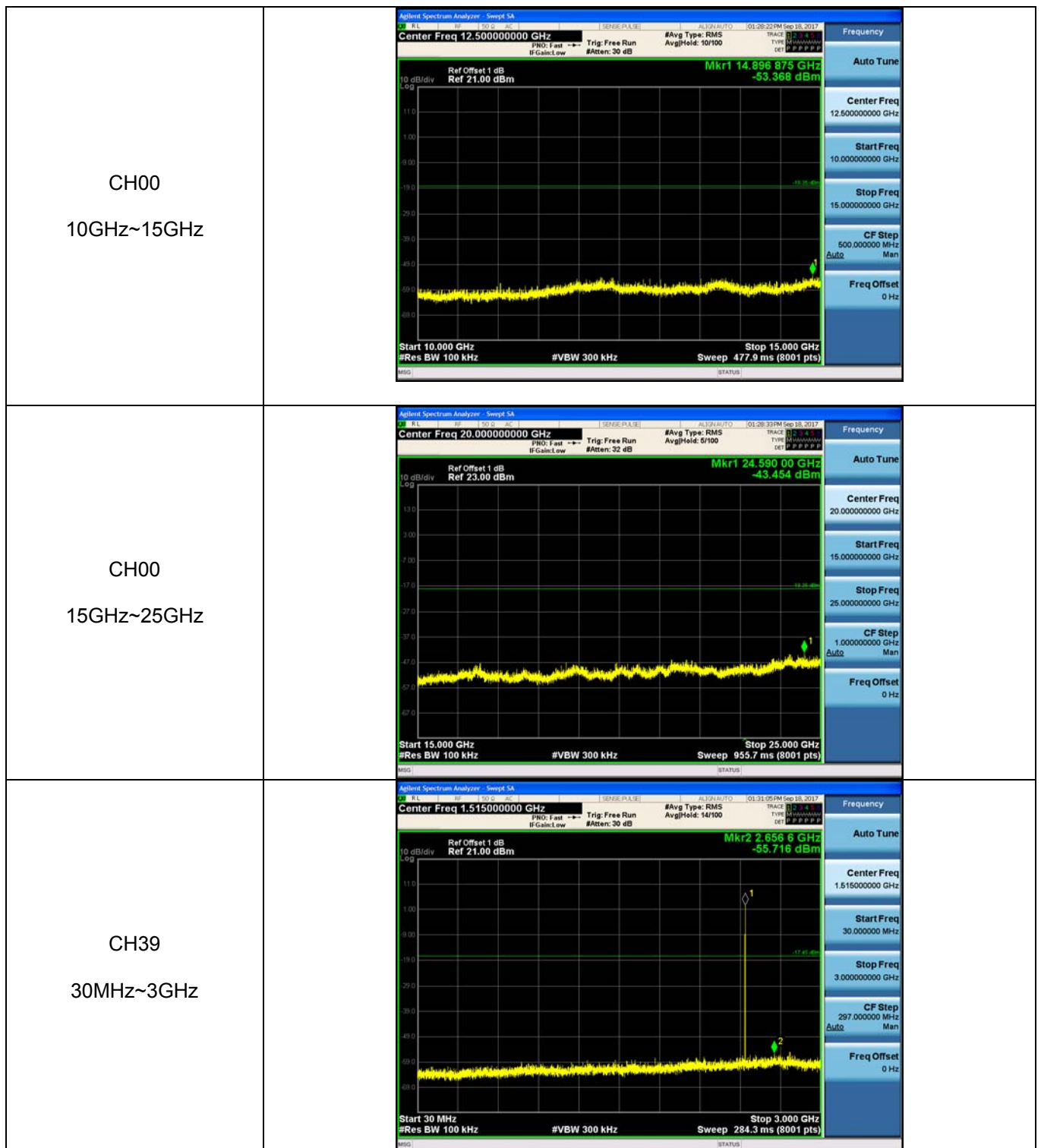


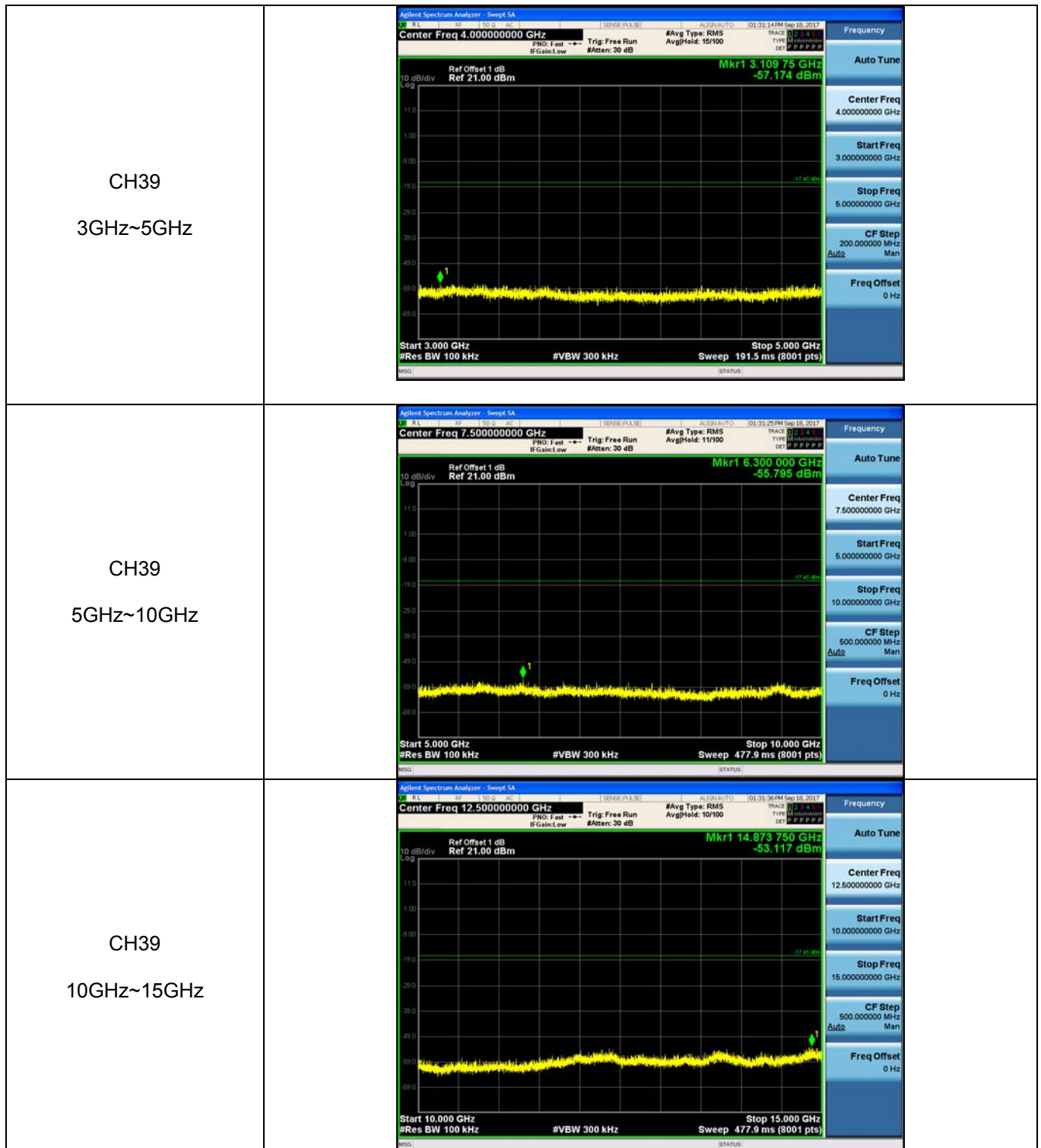
Test Item:	Band edge	Modulation type:	8DPSK																																													
CH00 No hopping mode	<table><thead><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.402 103 GHz</td><td>-1.672 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 GHz</td><td>-62.969 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390 000 GHz</td><td>-62.121 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.376 025 GHz</td><td>-67.507 dBm</td><td></td><td></td><td></td></tr></tbody></table>			MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 103 GHz	-1.672 dBm				2	N	1	f	2.400 000 GHz	-62.969 dBm				3	N	1	f	2.390 000 GHz	-62.121 dBm				4	N	1	f	2.376 025 GHz	-67.507 dBm			
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CH00 Hopping mode	<table><thead><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.402 150 GHz</td><td>-3.710 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 GHz</td><td>-62.190 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390 000 GHz</td><td>-65.409 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.382 580 GHz</td><td>-61.411 dBm</td><td></td><td></td><td></td></tr></tbody></table>			MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 150 GHz	-3.710 dBm				2	N	1	f	2.400 000 GHz	-62.190 dBm				3	N	1	f	2.390 000 GHz	-65.409 dBm				4	N	1	f	2.382 580 GHz	-61.411 dBm			
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CH78 No hopping mode	<table><thead><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.489 145 00 GHz</td><td>1.104 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 500 00 GHz</td><td>-60.706 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 000 00 GHz</td><td>-60.785 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.499 351 00 GHz</td><td>-67.959 dBm</td><td></td><td></td><td></td></tr></tbody></table>			MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.489 145 00 GHz	1.104 dBm				2	N	1	f	2.483 500 00 GHz	-60.706 dBm				3	N	1	f	2.500 000 00 GHz	-60.785 dBm				4	N	1	f	2.499 351 00 GHz	-67.959 dBm			
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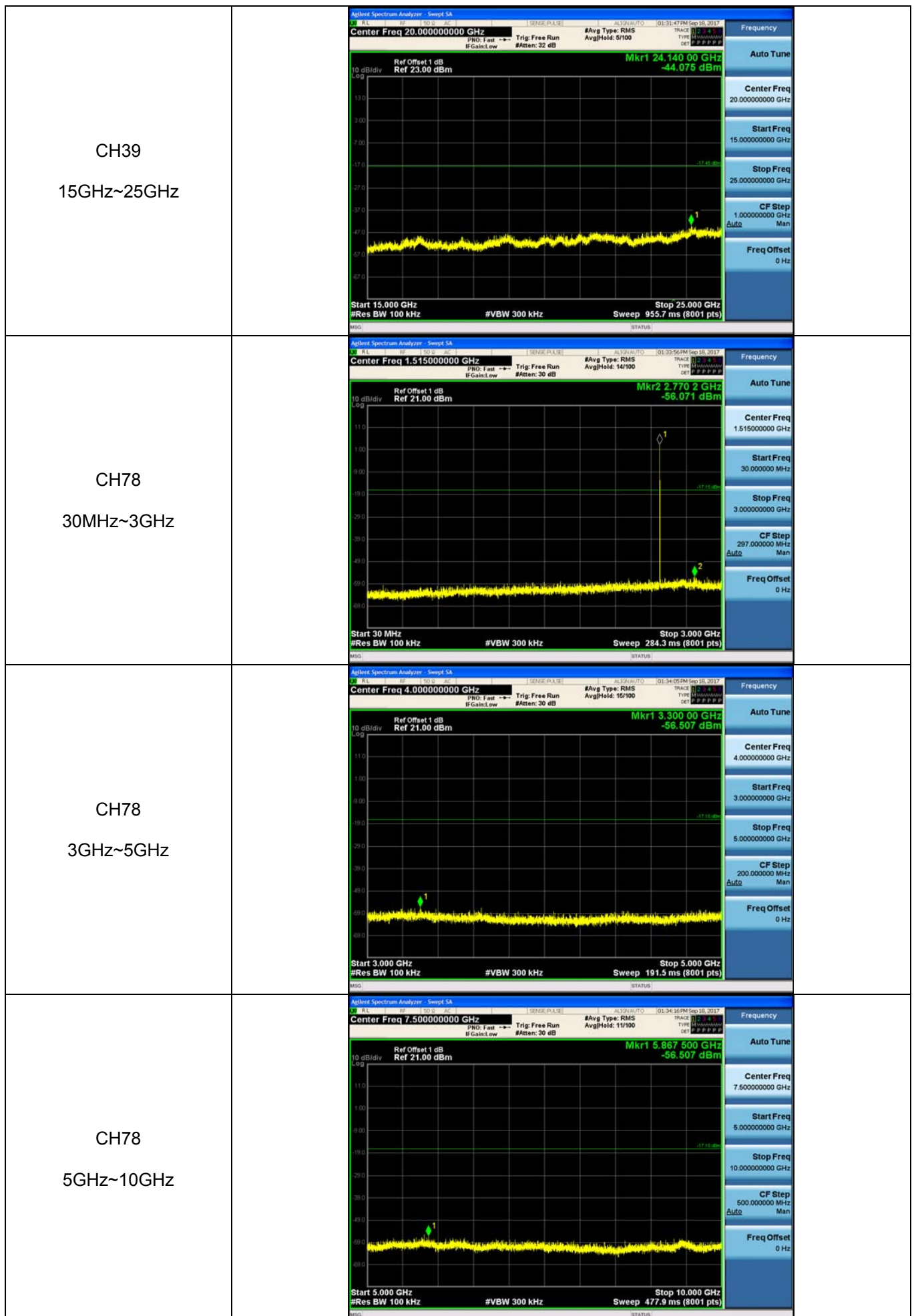
CH78
Hoppig mode

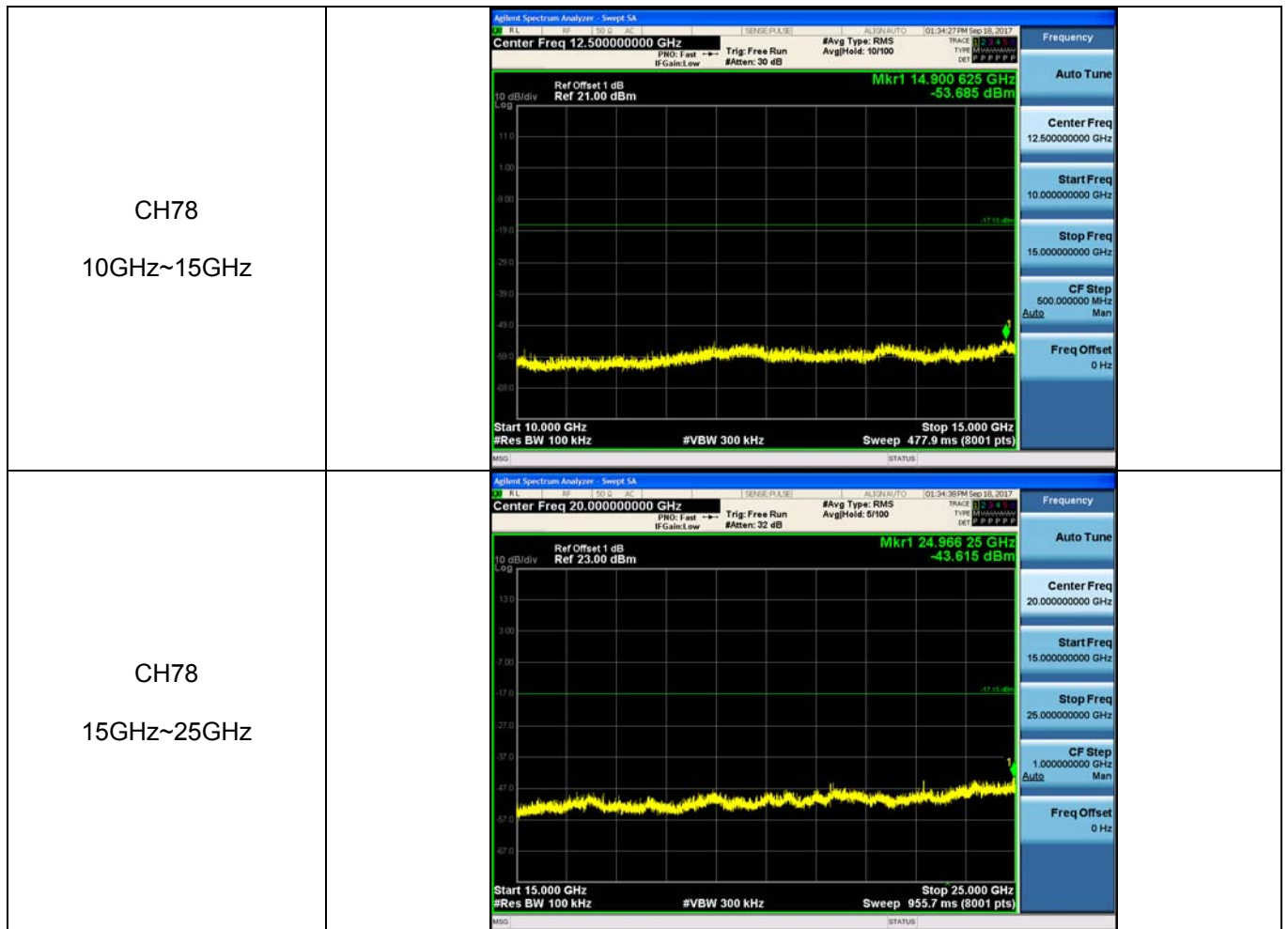


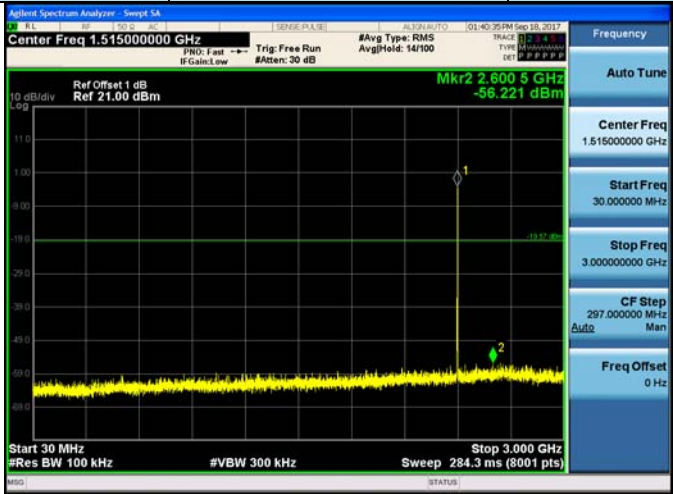
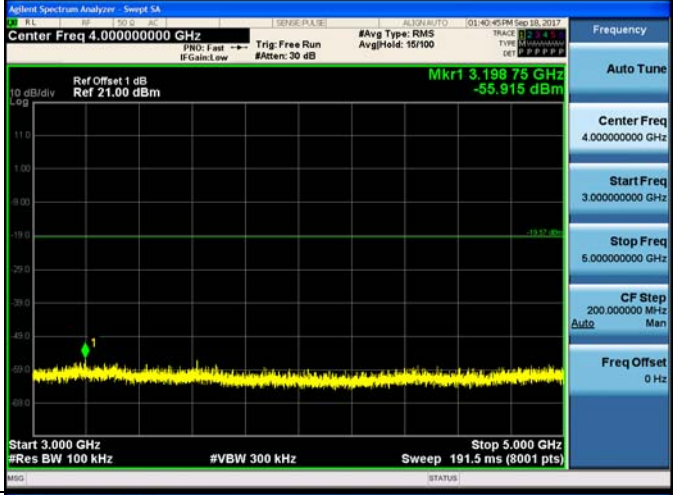
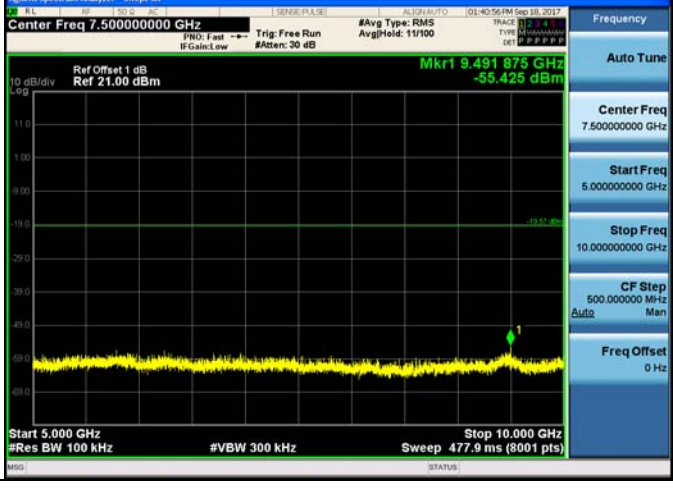
Test Item:	SE	Modulation type:	GFSK
CH00 30MHz~3GHz			
CH00 3GHz~5GHz			
CH00 5GHz~10GHz			

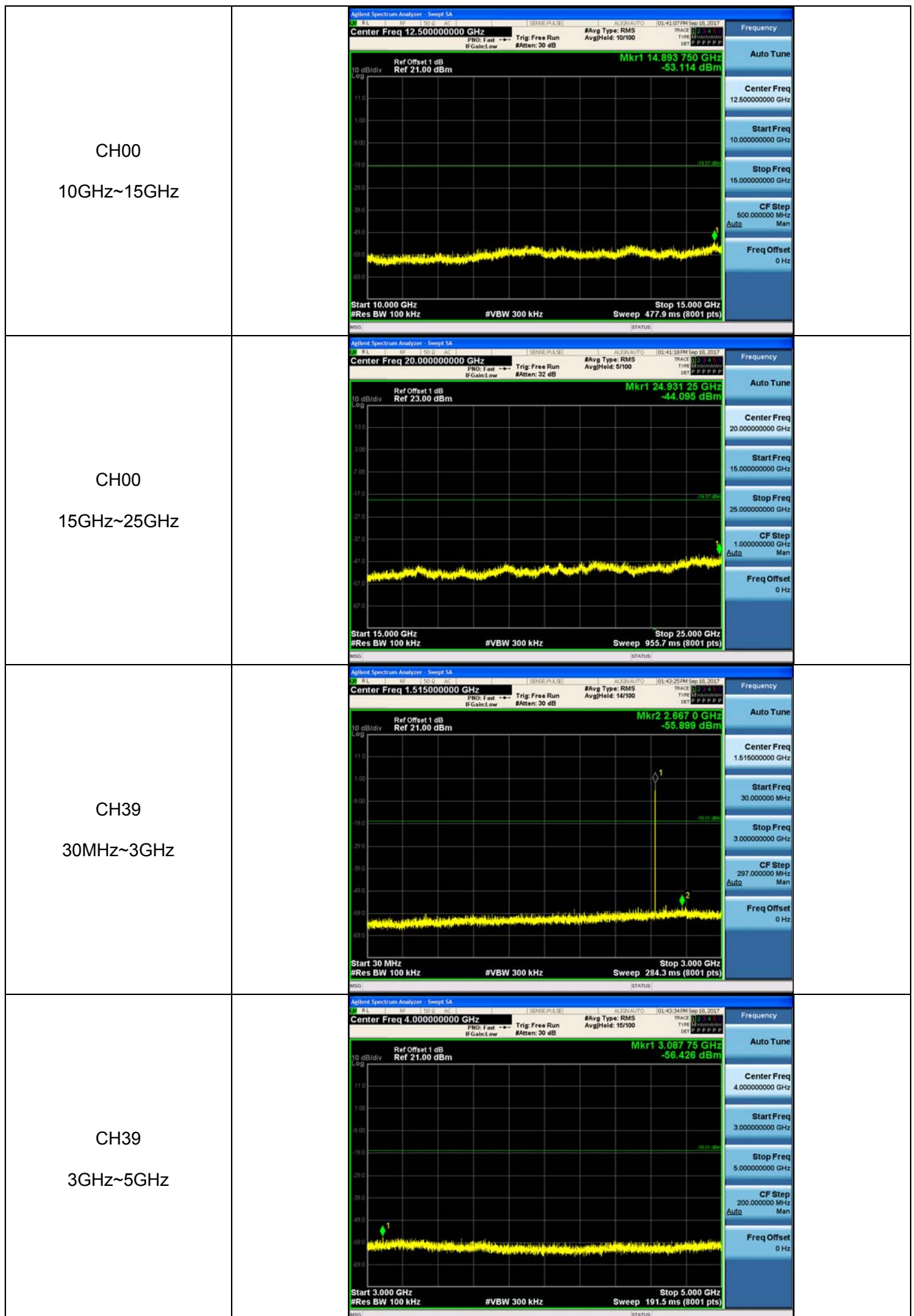


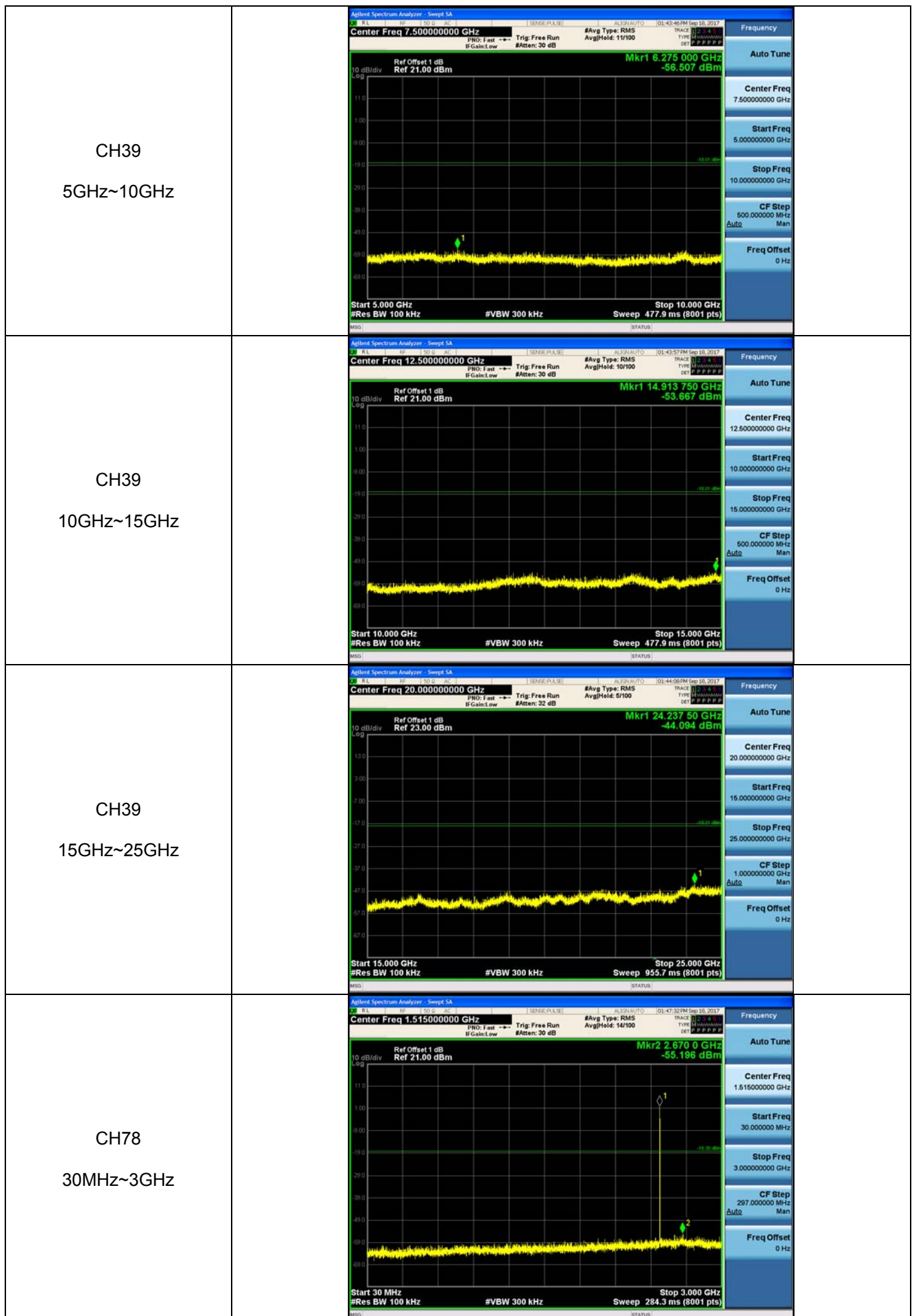


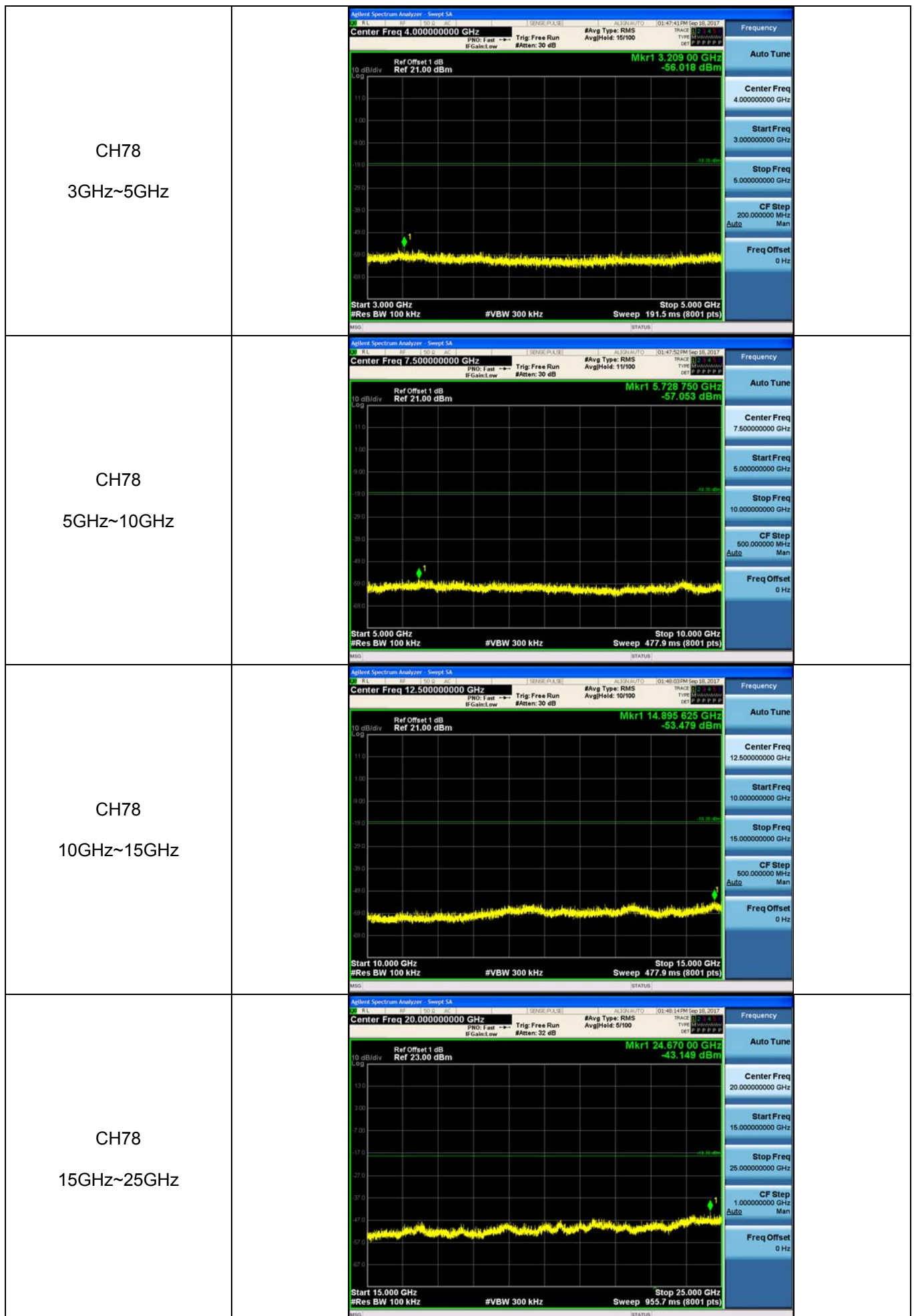


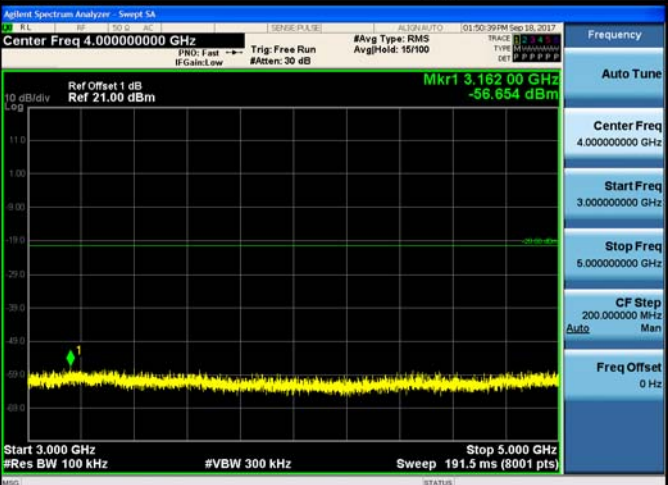
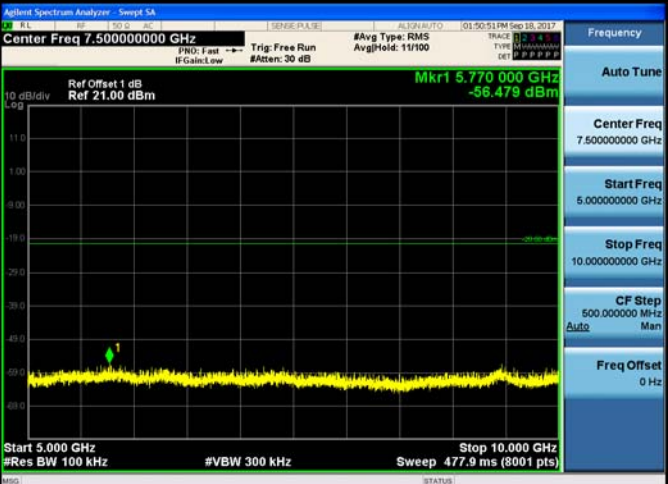


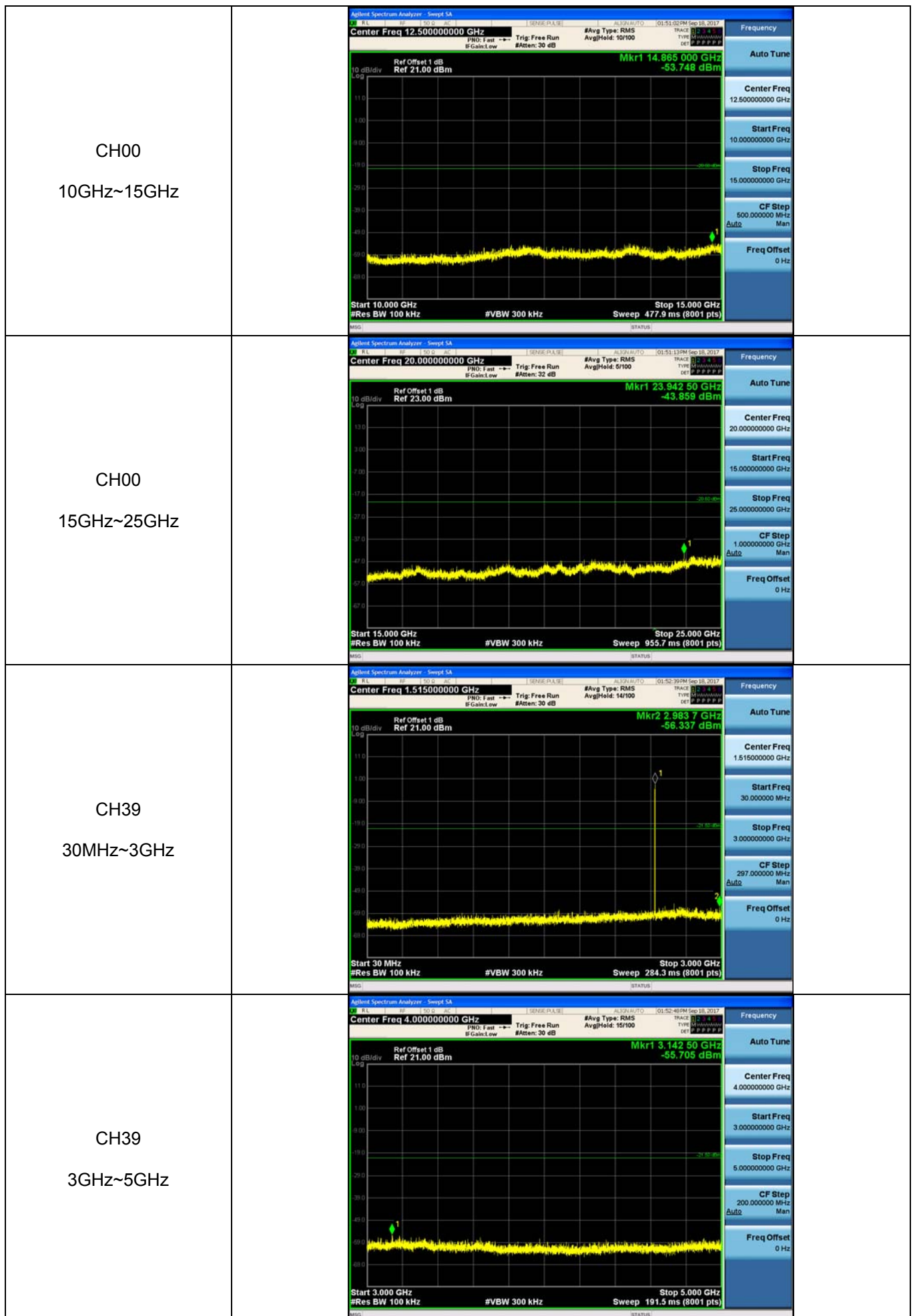
Test Item:	SE	Modulation type:	$\pi/4$ DQPSK
CH00 30MHz~3GHz			
CH00 3GHz~5GHz			
CH00 5GHz~10GHz			

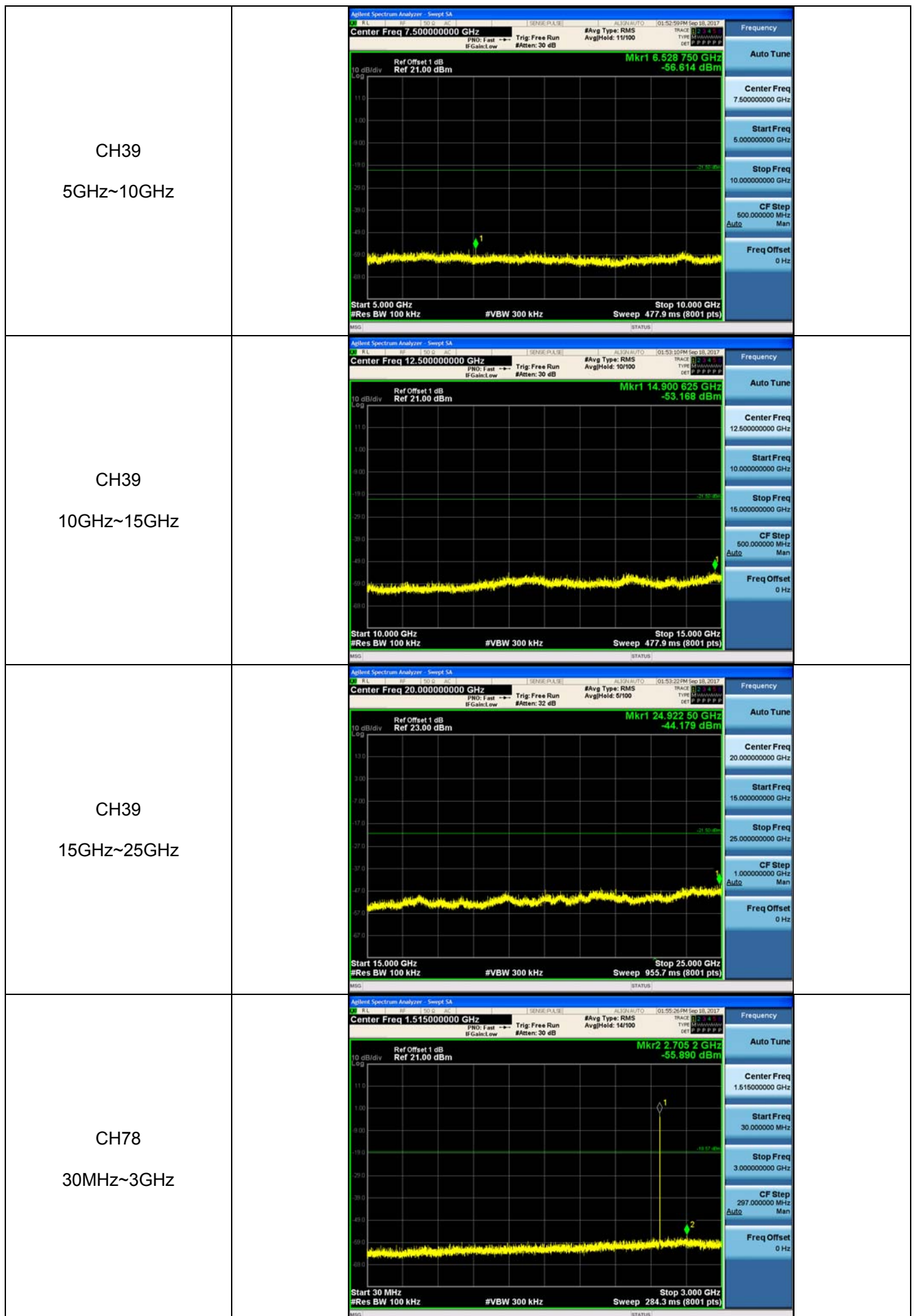


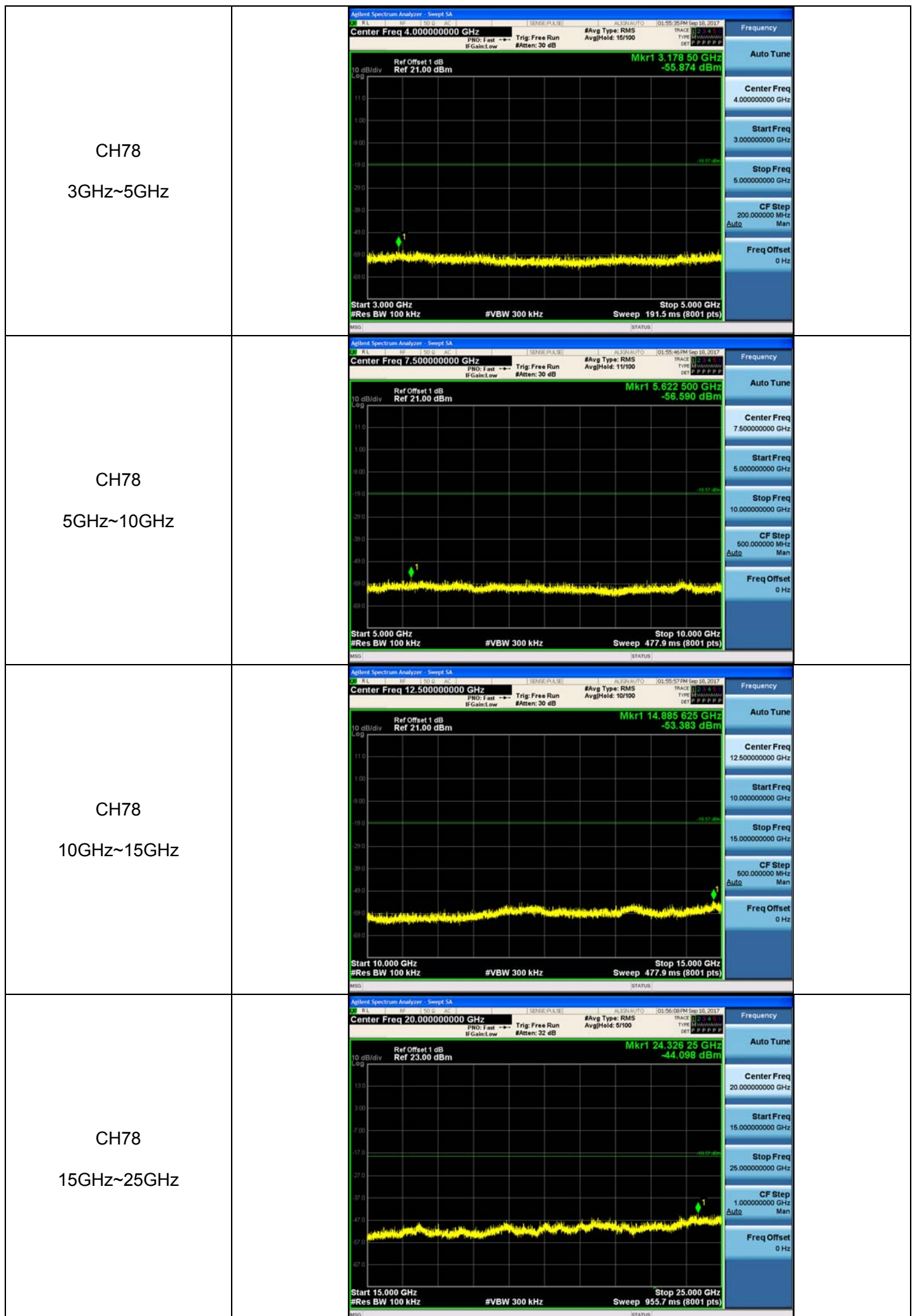




Test Item:	SE	Modulation type:	8DPSK
CH00 30MHz~3GHz			
CH00 3GHz~5GHz			
CH00 5GHz~10GHz			







5.11. Spurious Emissions (radiated)

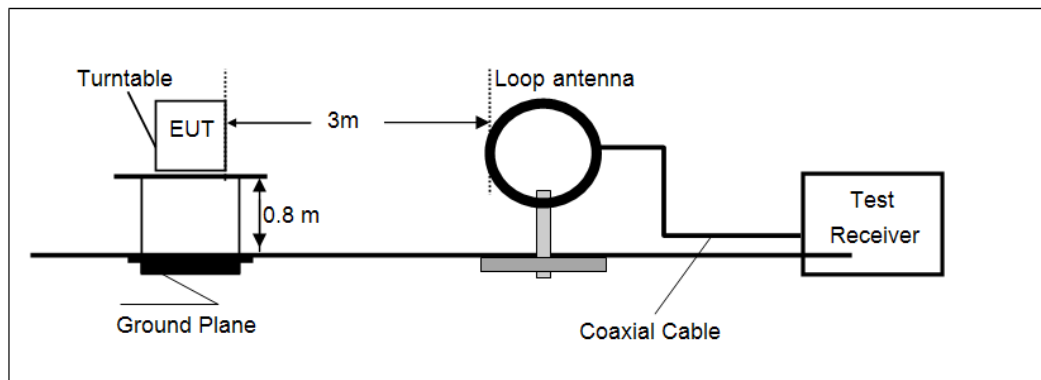
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

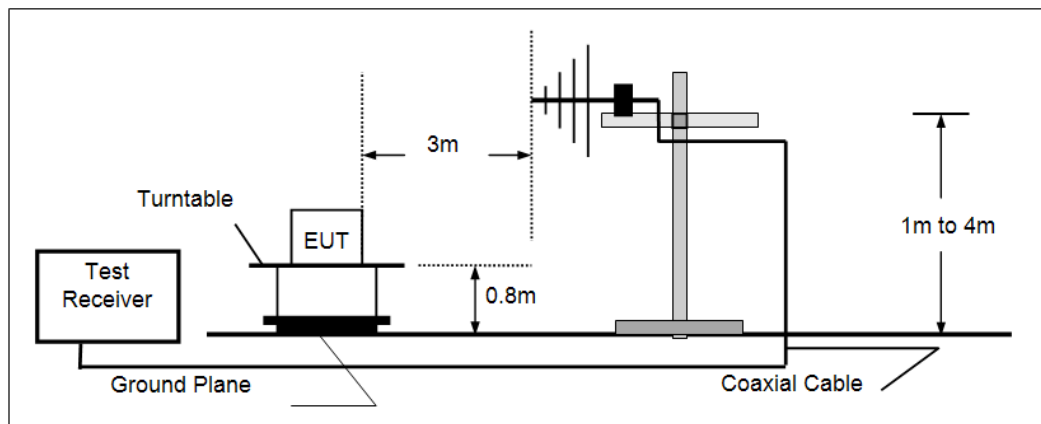
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

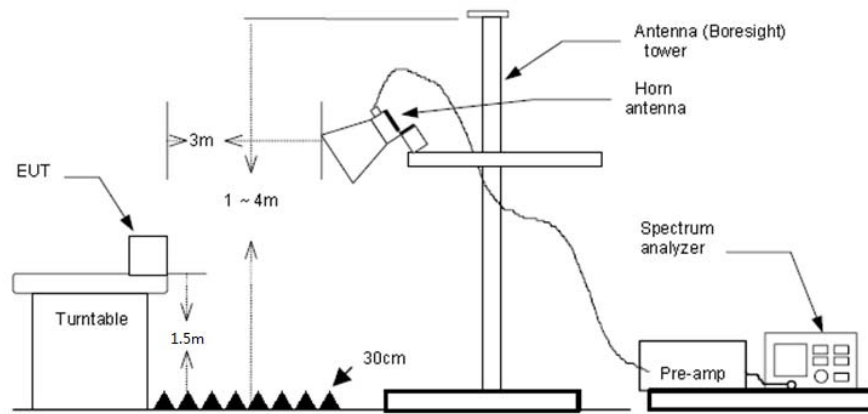
- Below 30 MHz



- 30 MHz ~1000 MHz



- Above 1 GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10:2013.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Below 1 GHz, RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - (3) Above 1 GHz, RBW=1 MHz, VBW=3 MHz Peak detector for Peak value
RBW=1 MHz, VBW=10 Hz Peak detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ Passed ☐ Not Applicable

Note:

- 1) Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2) The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3) Below 1 GHz, Have pre-scan all modulation mode, found the GFSK modulation High channel which it was worst case, so only the worst case's data on the test report.
- 4) Above 1 GHz, Have pre-scan all modulation mode, found the GFSK modulation which it was worst case, so only the worst case's data on the test report
- 5) The peak level is lower than average limit (54 dBuV/m), this data is the too weak instrument of signal is unable to test.

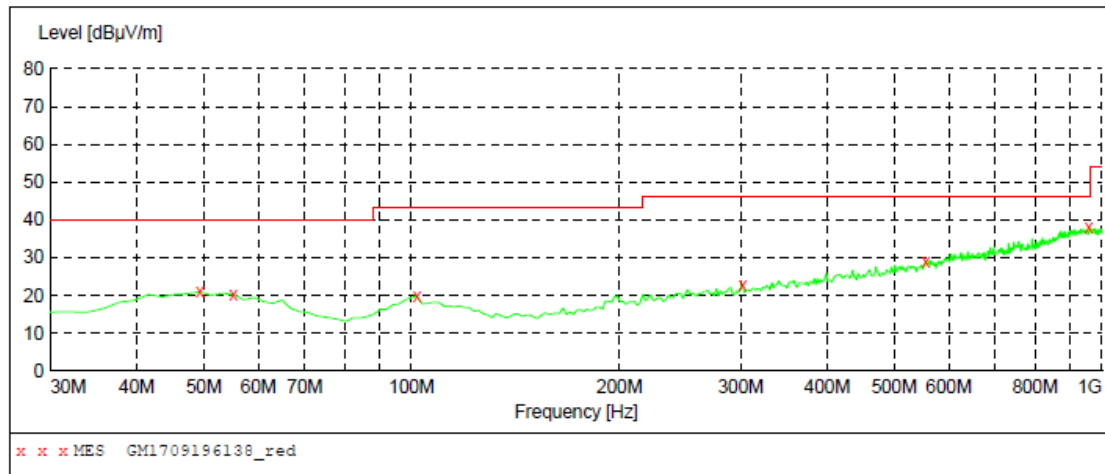
➤ 9 kHz ~ 30 MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

➤ 30 MHz ~ 1 GHz

Polarization:

Vertical

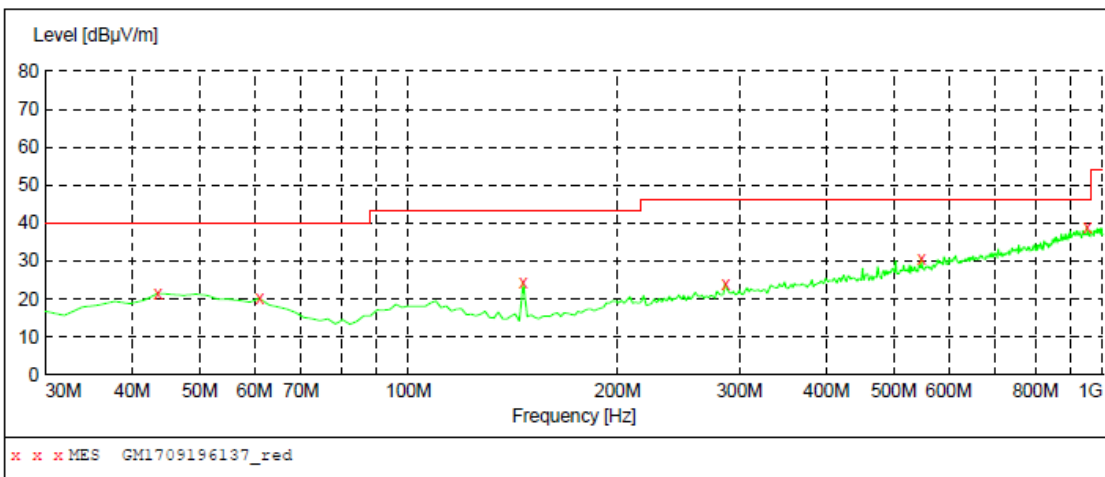
**MEASUREMENT RESULT: "GM1709196138_red"**

9/19/2017 8:47PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	21.00	-8.7	40.0	19.0	QP	100.0	78.00	VERTICAL
55.220000	20.30	-9.2	40.0	19.7	QP	100.0	154.00	VERTICAL
101.780000	19.90	-10.5	43.5	23.6	QP	100.0	177.00	VERTICAL
301.600000	22.80	-7.2	46.0	23.2	QP	100.0	78.00	VERTICAL
555.740000	29.00	-0.6	46.0	17.0	QP	100.0	218.00	VERTICAL
957.320000	38.10	7.3	46.0	7.9	QP	100.0	140.00	VERTICAL

Polarization:

Horizontal

**MEASUREMENT RESULT: "GM1709196137_red"**

9/19/2017 8:45PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
43.580000	21.50	-9.1	40.0	18.5	QP	300.0	359.00	HORIZONTAL
61.040000	20.20	-10.3	40.0	19.8	QP	300.0	245.00	HORIZONTAL
146.400000	24.20	-13.9	43.5	19.3	QP	300.0	159.00	HORIZONTAL
286.080000	24.00	-7.5	46.0	22.0	QP	300.0	92.00	HORIZONTAL
547.980000	30.70	-0.8	46.0	15.3	QP	300.0	184.00	HORIZONTAL
949.560000	38.90	7.2	46.0	7.1	QP	300.0	119.00	HORIZONTAL

➤ Above 1 GHz

CH00									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1638.59	37.18	25.02	5.65	36.80	31.05	74.00	-42.95	Vertical	Peak
4288.96	33.61	30.18	9.02	37.61	35.20	74.00	-38.80	Vertical	Peak
5204.40	33.21	31.49	9.84	36.21	38.33	74.00	-35.67	Vertical	Peak
7961.43	32.42	36.95	12.49	34.63	47.23	74.00	-26.77	Vertical	Peak
1746.25	37.69	25.29	5.86	37.03	31.81	74.00	-42.19	Horizontal	Peak
3903.44	34.86	29.70	8.64	38.17	35.03	74.00	-38.97	Horizontal	Peak
5703.86	32.94	31.62	10.44	35.58	39.42	74.00	-34.58	Horizontal	Peak
7451.57	32.07	36.20	12.24	34.86	45.65	74.00	-28.35	Horizontal	Peak

CH39									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1809.61	29.93	25.39	5.97	37.15	24.14	74.00	-49.86	Vertical	Peak
3824.76	28.57	29.62	8.53	38.22	28.50	74.00	-45.50	Vertical	Peak
5086.52	28.88	31.85	9.74	36.31	34.16	74.00	-39.84	Vertical	Peak
6678.99	28.12	34.20	11.45	35.21	38.56	74.00	-35.44	Vertical	Peak
1746.25	31.97	25.29	5.86	37.03	26.09	74.00	-47.91	Horizontal	Peak
3719.15	30.47	29.36	8.41	38.25	29.99	74.00	-44.01	Horizontal	Peak
4996.69	28.39	31.50	9.67	36.41	33.15	74.00	-40.85	Horizontal	Peak
6494.56	27.73	33.96	11.16	35.33	37.52	74.00	-36.48	Horizontal	Peak

CH78									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2003.57	30.13	26.31	6.27	37.30	25.41	74.00	-48.59	Vertical	Peak
3747.66	29.51	29.44	8.44	38.24	29.15	74.00	-44.85	Vertical	Peak
6063.19	29.13	32.50	10.78	35.40	37.01	74.00	-36.99	Vertical	Peak
8615.13	29.08	37.39	12.91	34.50	44.88	74.00	-29.12	Vertical	Peak
1943.29	35.41	25.74	6.18	37.25	30.08	74.00	-43.92	Horizontal	Peak
3854.08	29.44	29.65	8.58	38.20	29.47	74.00	-44.53	Horizontal	Peak
6219.51	28.24	32.94	11.01	35.29	36.90	74.00	-37.10	Horizontal	Peak
7860.74	28.64	36.47	12.97	34.91	43.17	74.00	-30.83	Horizontal	Peak

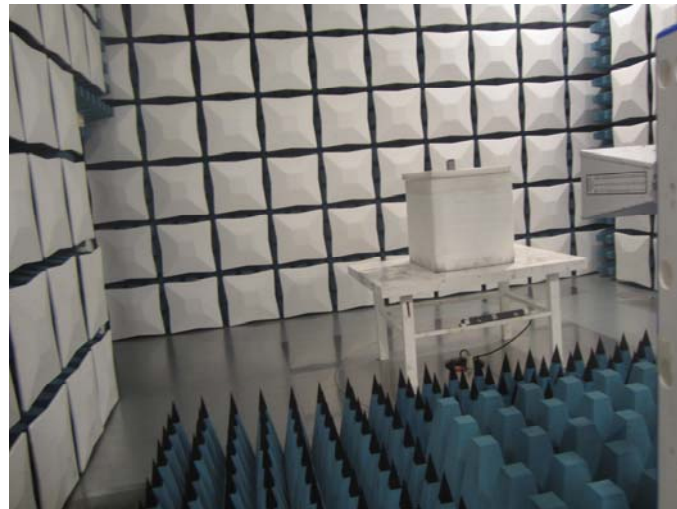
6. TEST SETUP PHOTOS

Conducted Emissions (AC Mains)



Radiated Emissions





7. EXTERANAL AND INTERNAL PHOTOS

Reference to Test Report No.: TRE1709005801.

.....**End of Report**.....