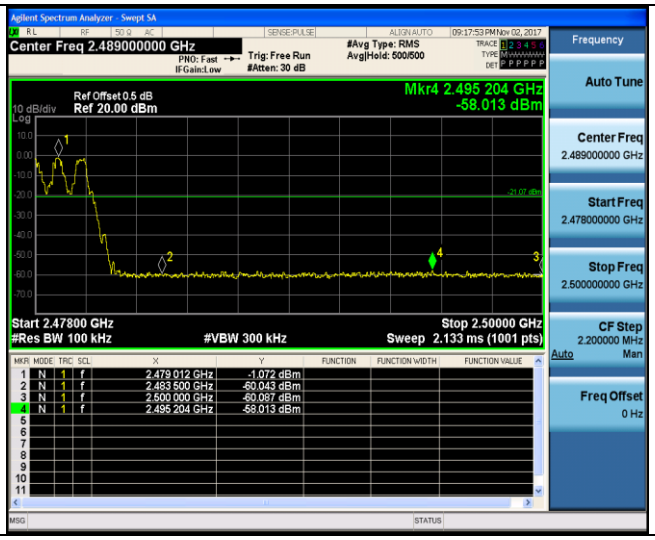
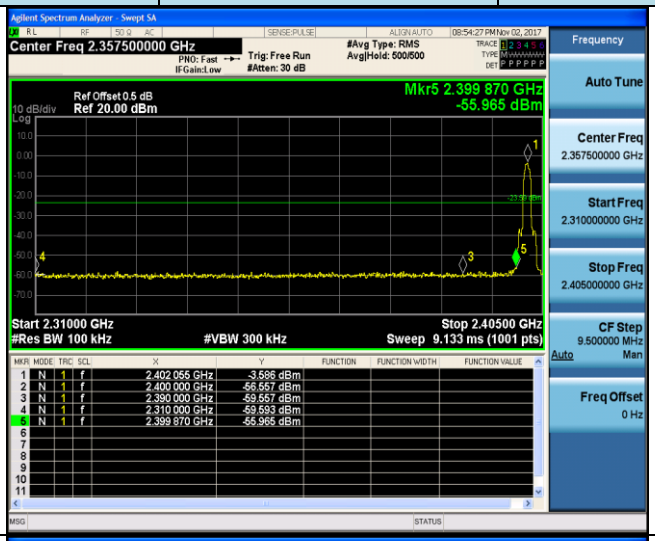
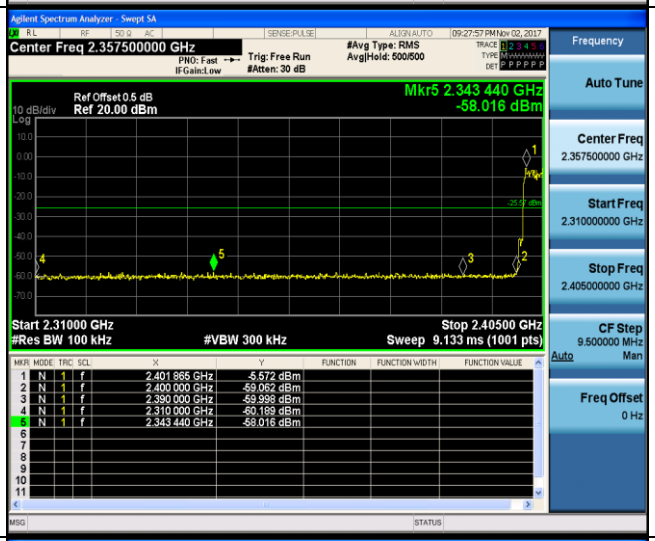
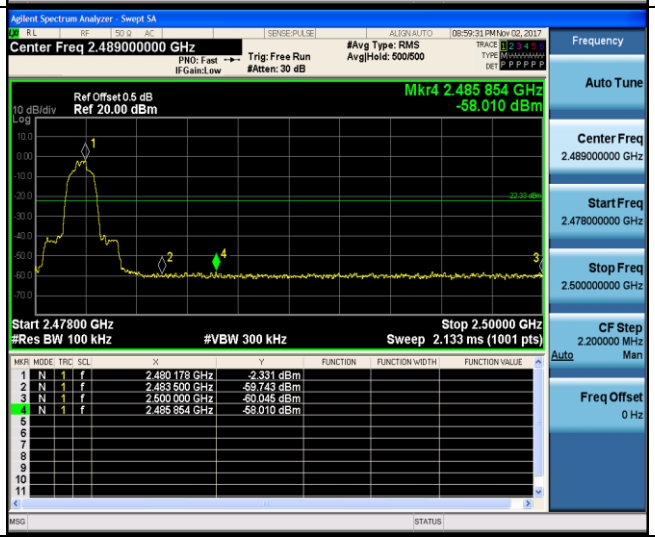
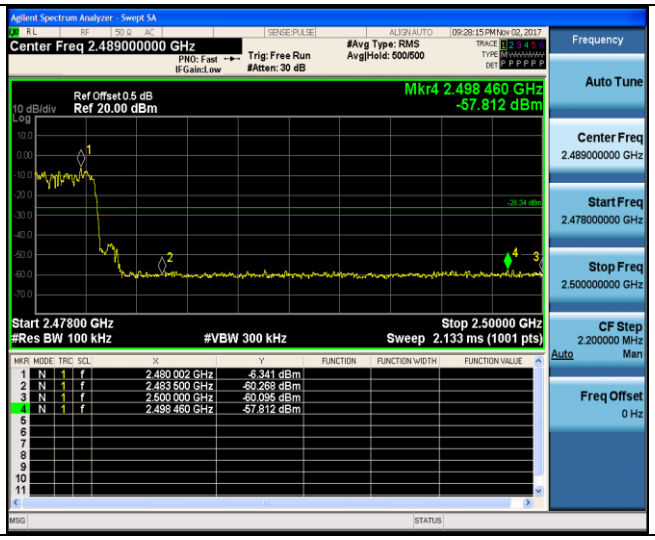
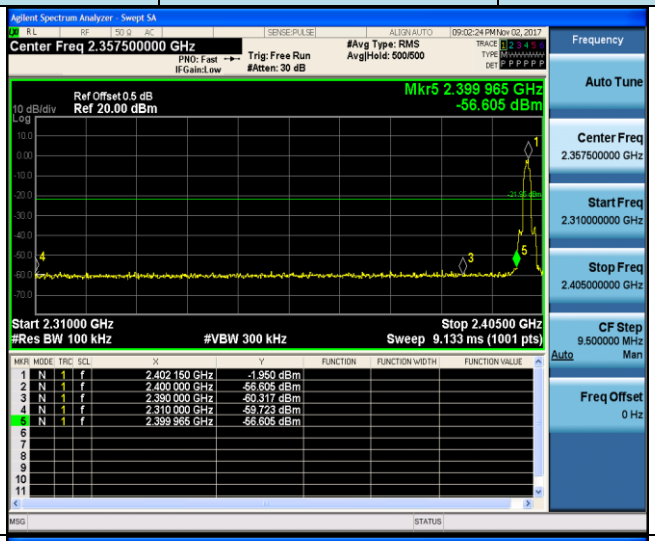
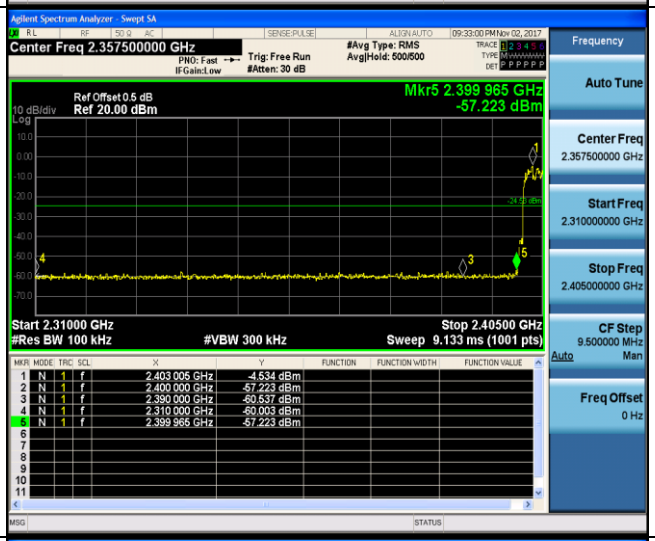
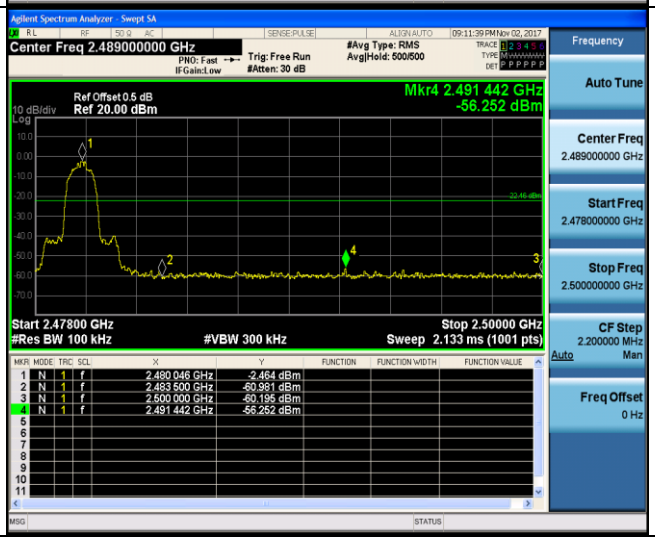
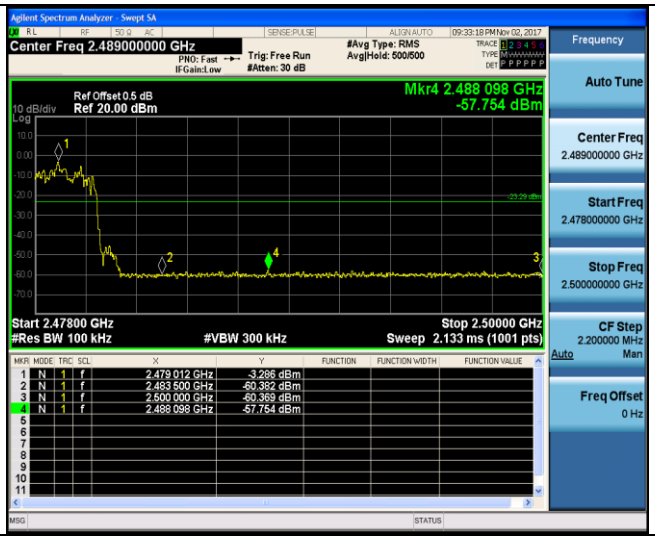
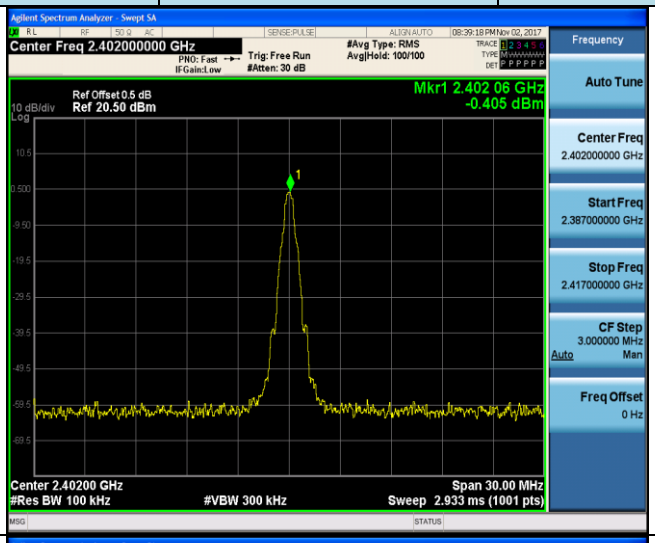
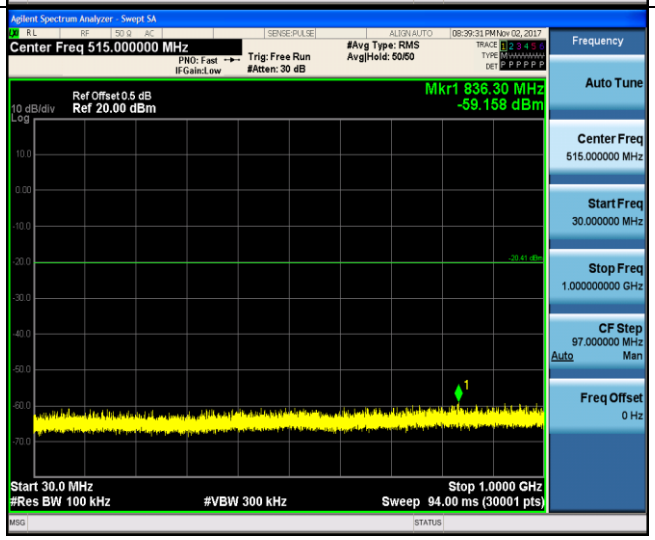
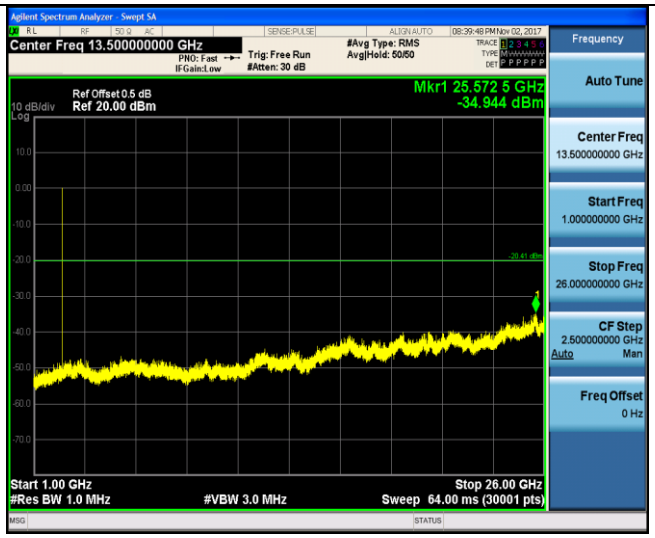
CH78 Hopping mode			

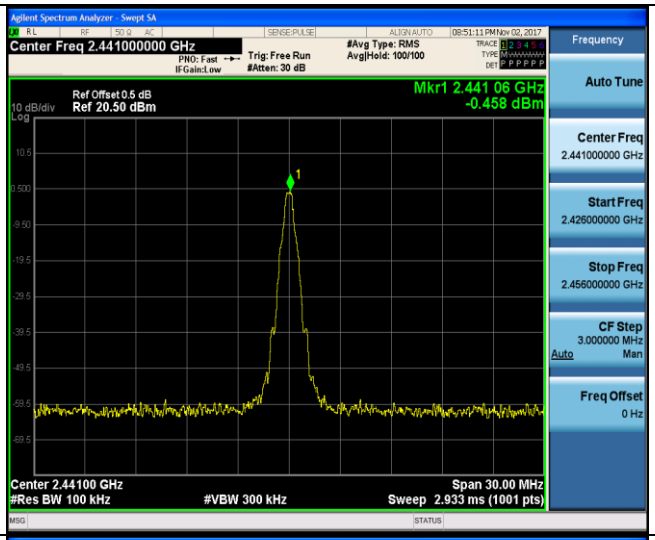
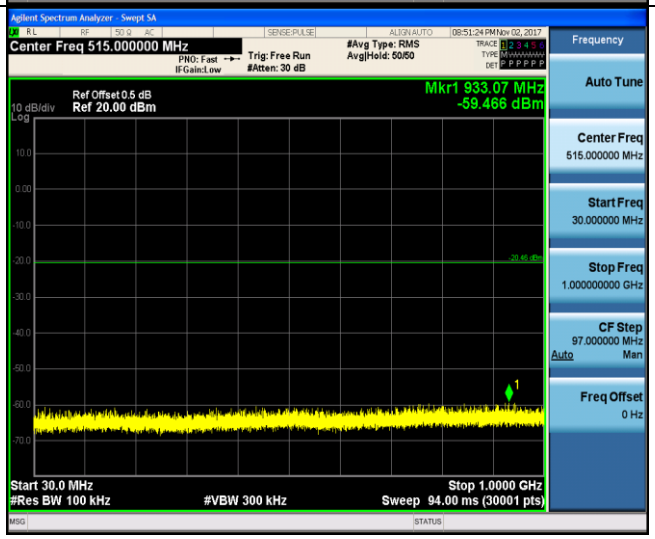
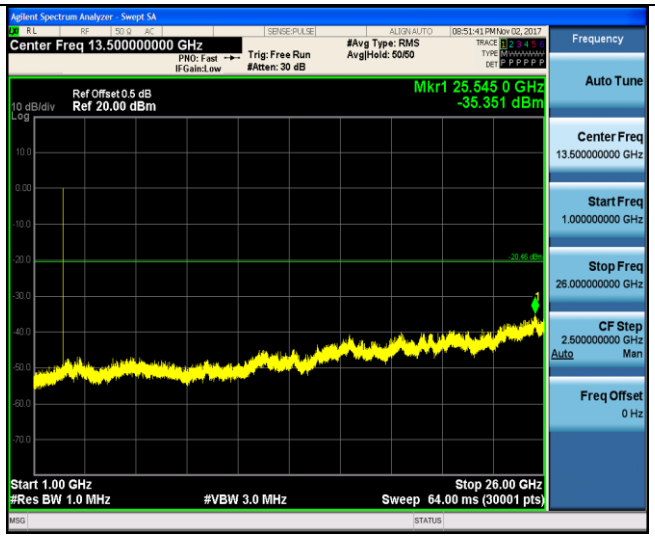
Test Item:	Band edge	Modulation type:	π/4DQPSK
CH00 No hopping mode	
CH00 Hopping mode	
CH78 No hopping mode	

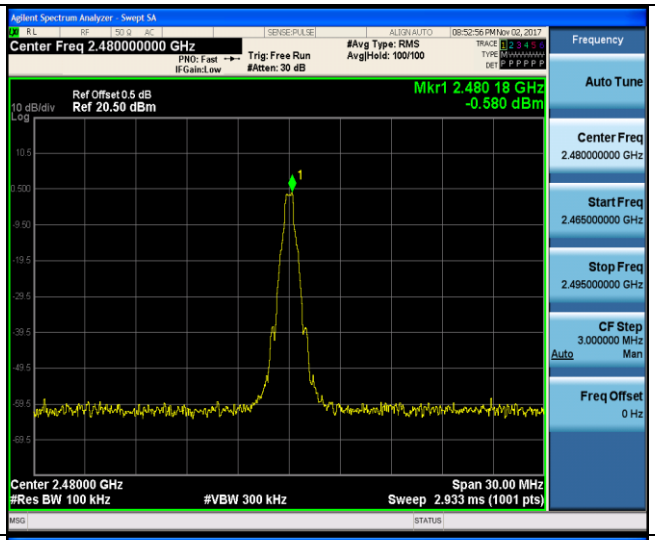
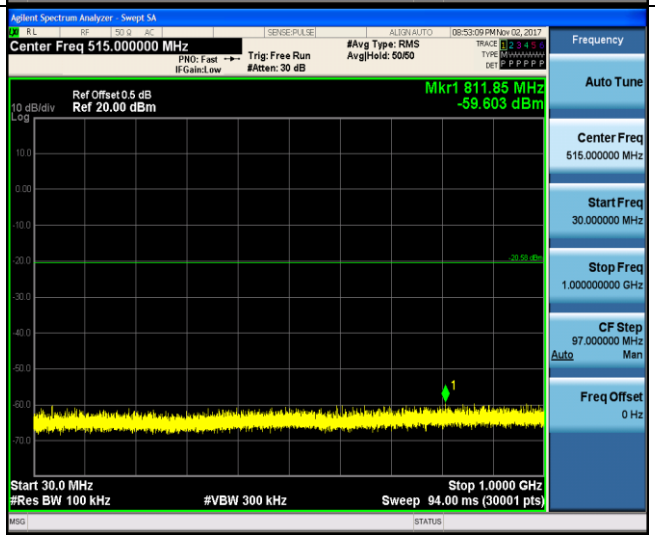
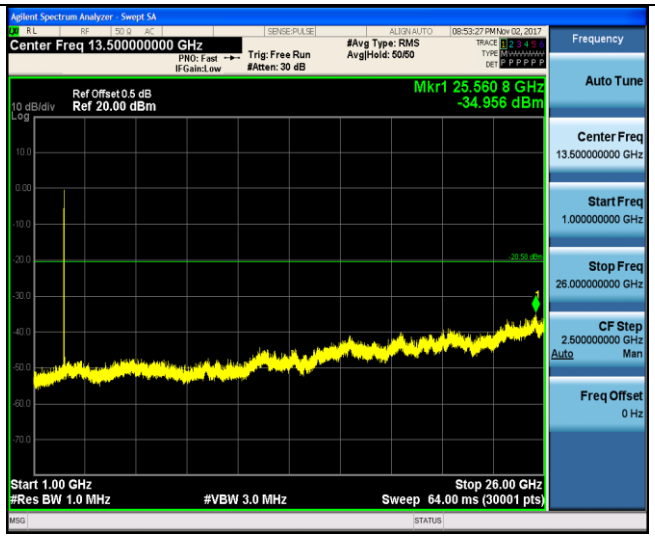
CH78 Hopping mode			

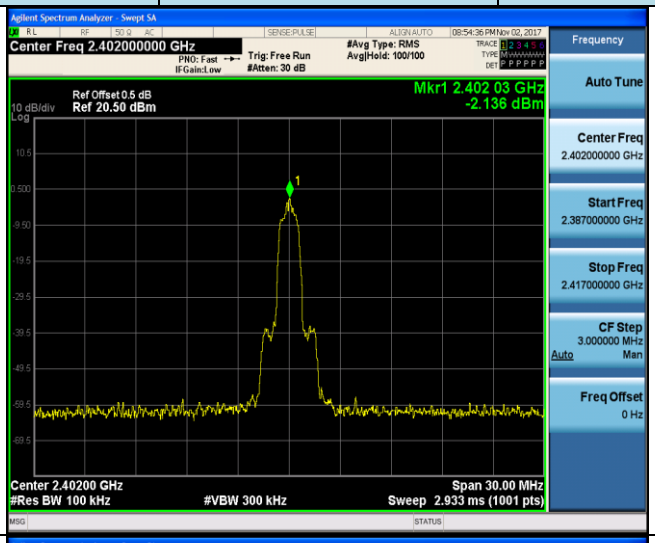
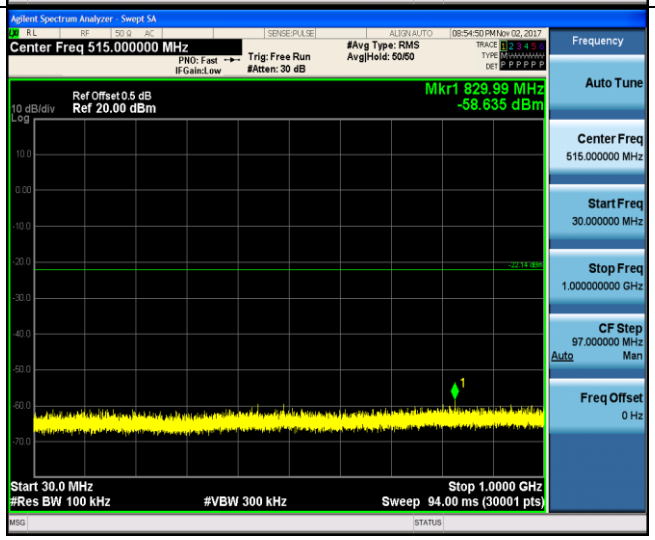
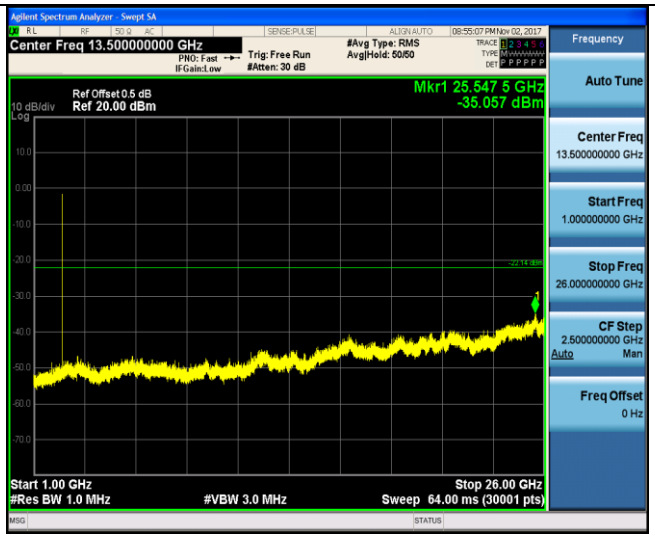
Test Item:	Band edge	Modulation type:	8DPSK
CH00 No hopping mode	
CH00 Hopping mode	
CH78 No hopping mode	

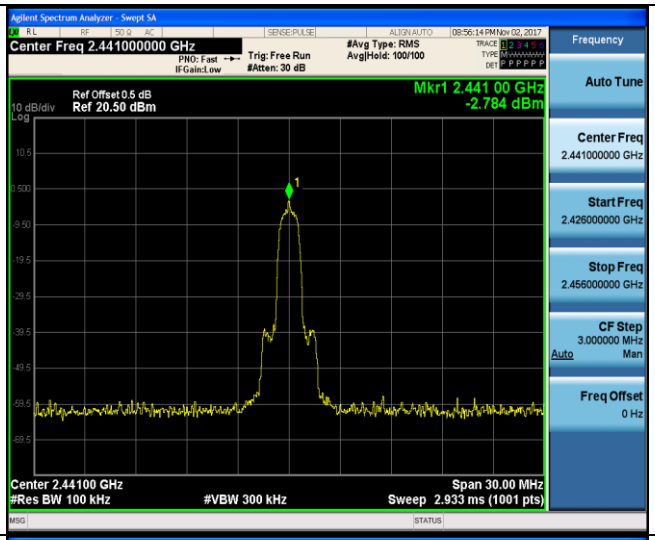
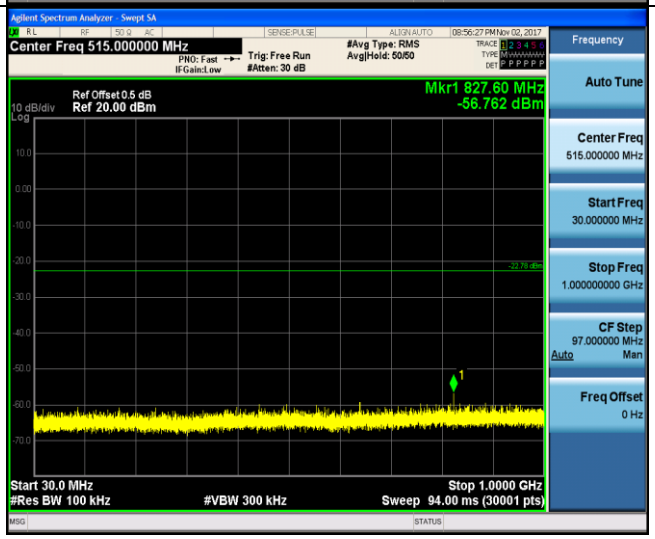
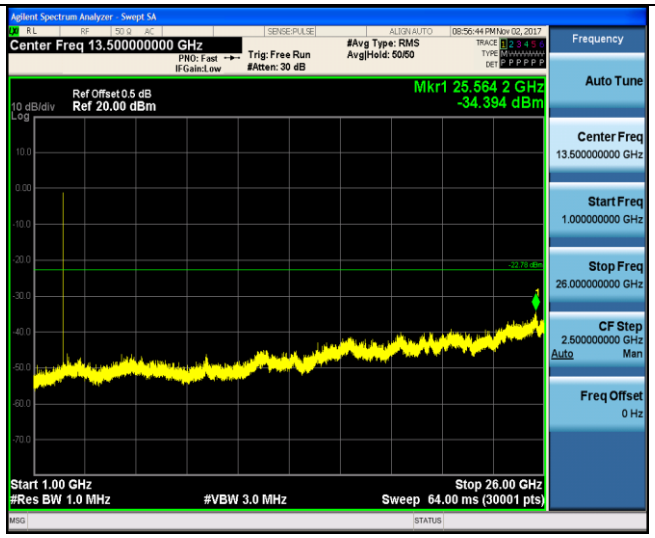
CH78 Hoppig mode			

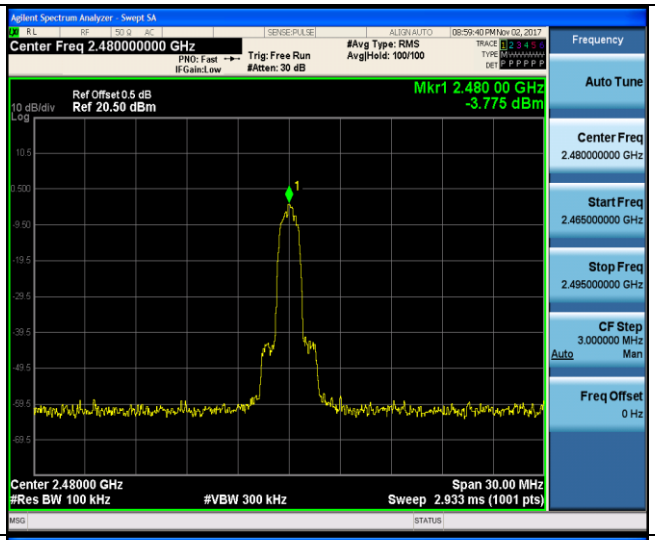
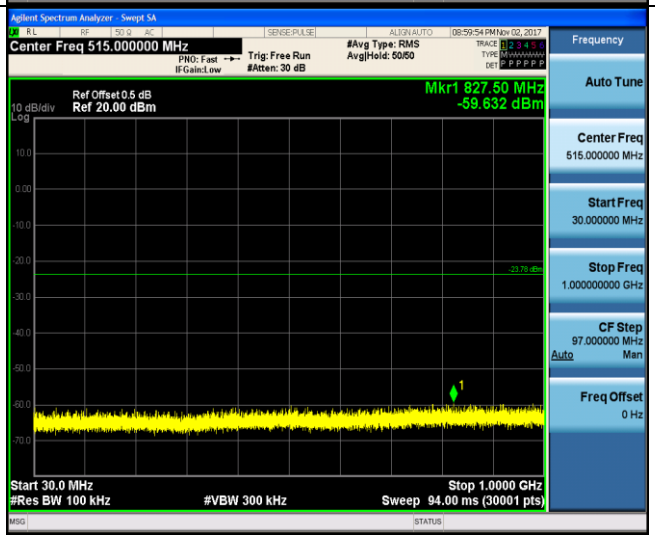
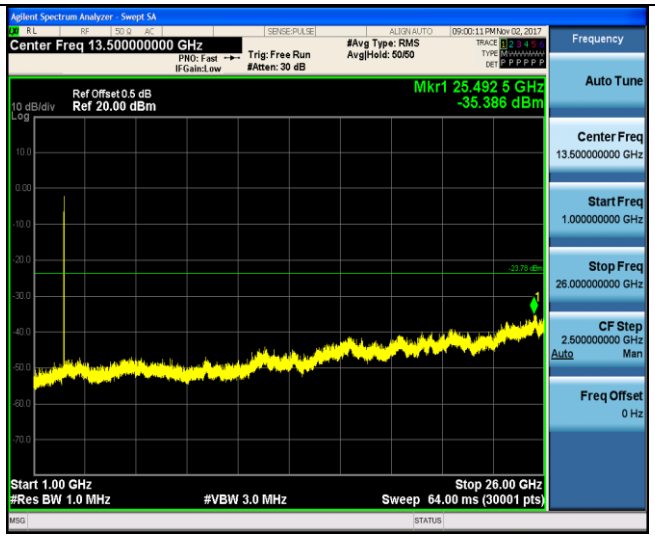
Test Item:	SE	Modulation type:	GFSK
reference level CH00			
CH00			
			

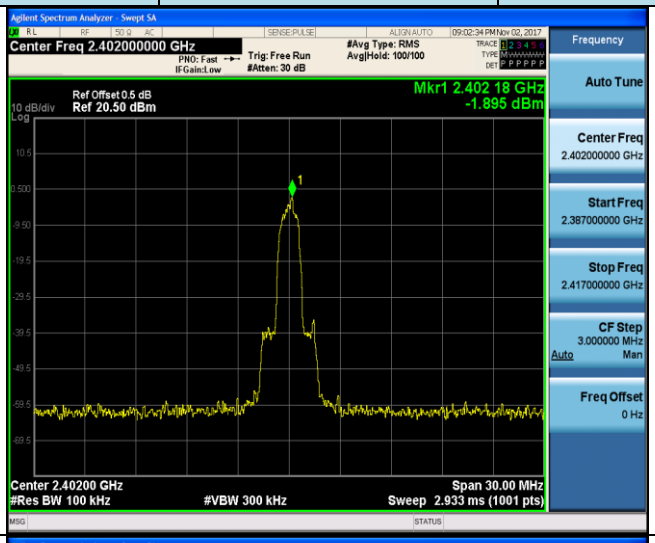
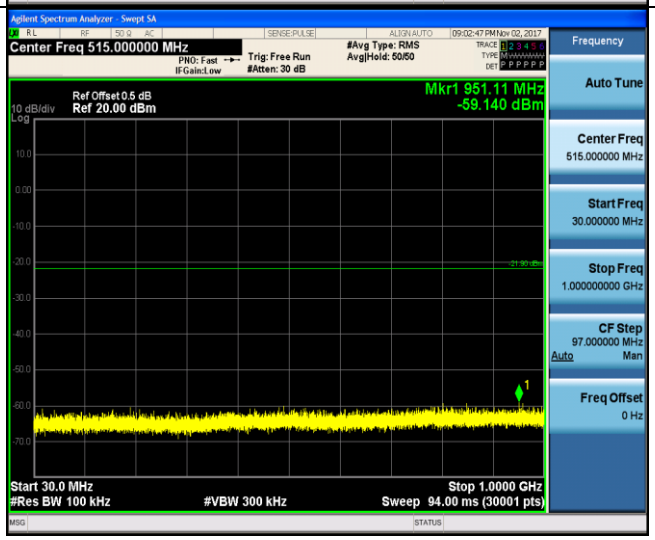
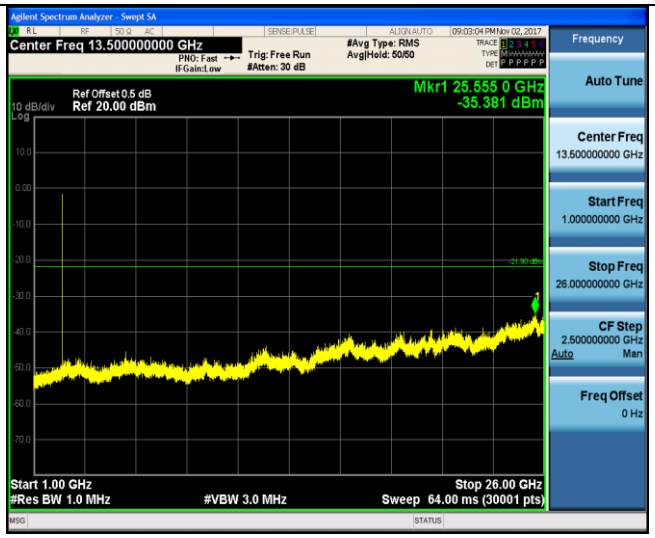
reference level CH39		
CH39		
		

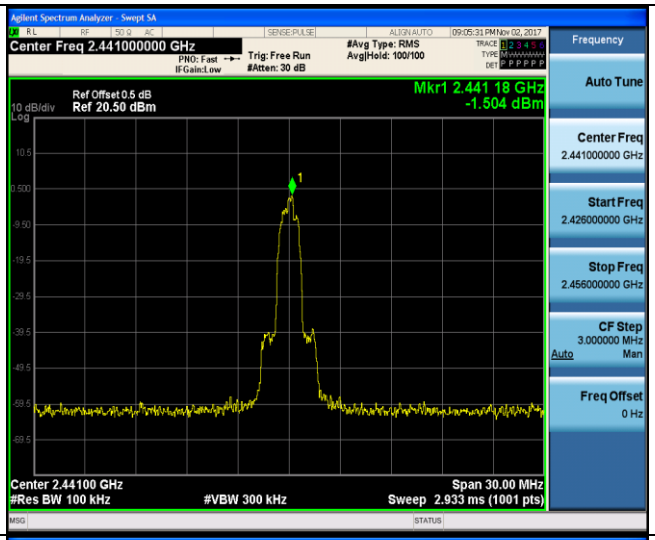
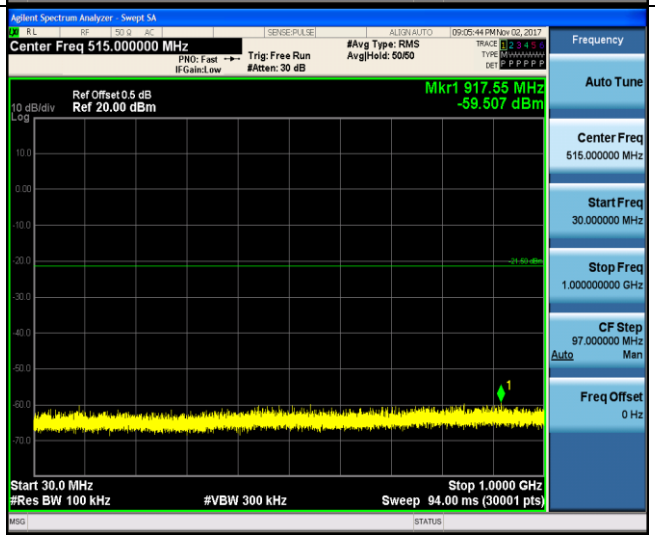
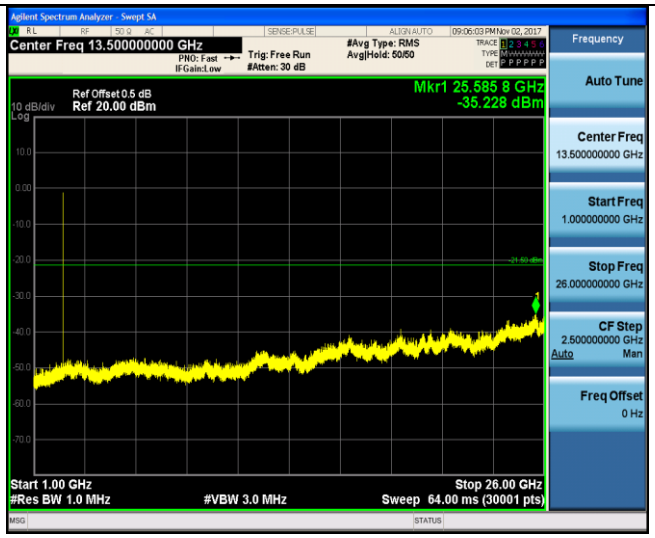
reference level CH78		
CH78		
		

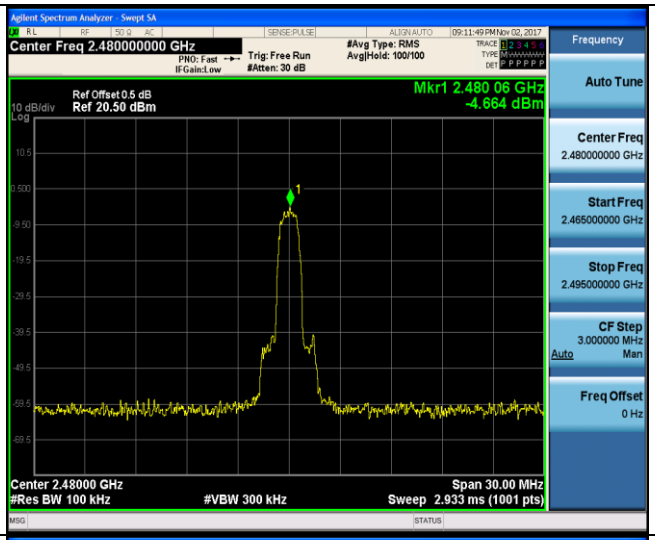
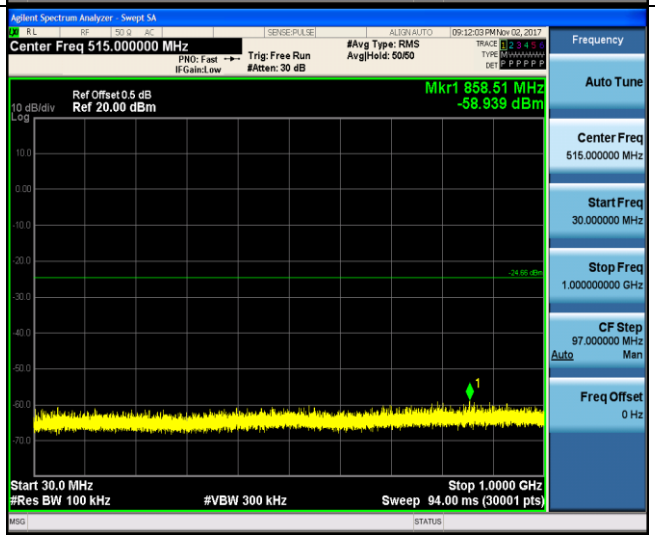
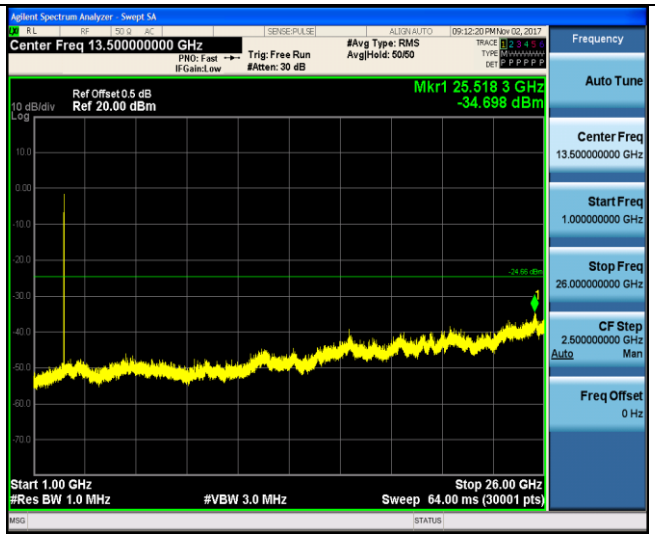
Test Item:	SE	Modulation type:	π/4DQPSK
reference level CH00			
CH00			
			

reference level CH39		
CH39		
		

reference level CH78		
CH78		
		

Test Item:	SE	Modulation type:	8DPSK
reference level CH00			
CH00		
		

reference level CH39		
CH39		
		

reference level CH78		
CH78		
		

5.11. Spurious Emissions (radiated)

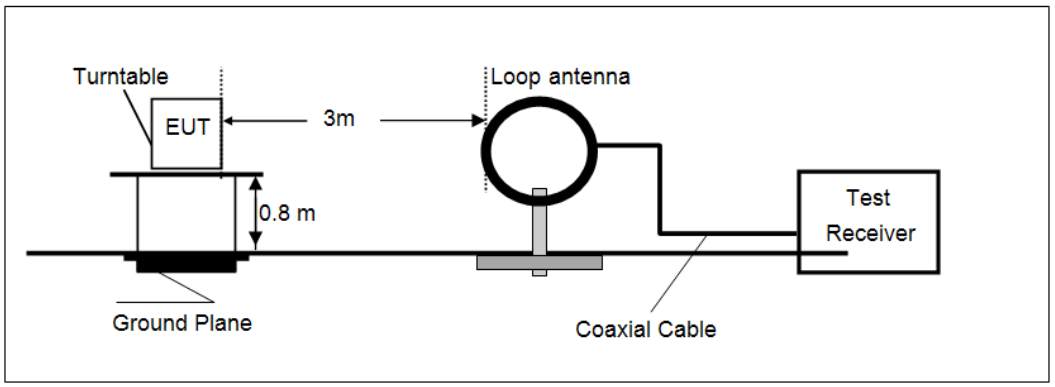
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

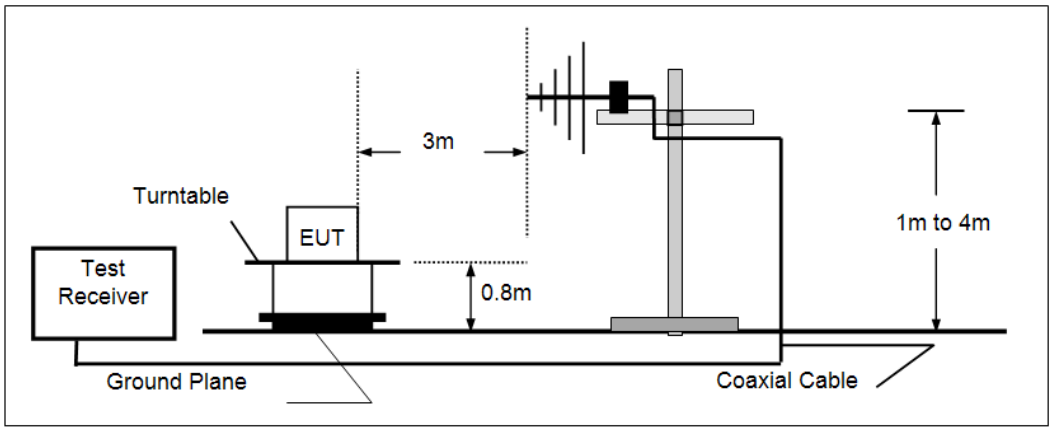
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

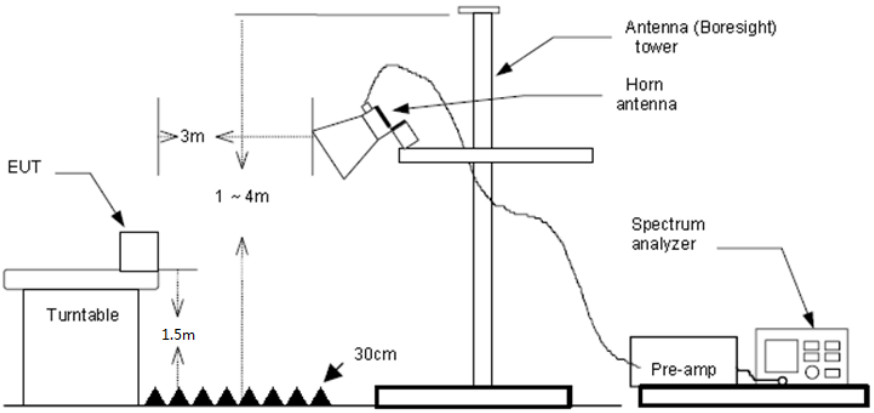
- Below 30 MHz



- 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 detectoris 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:

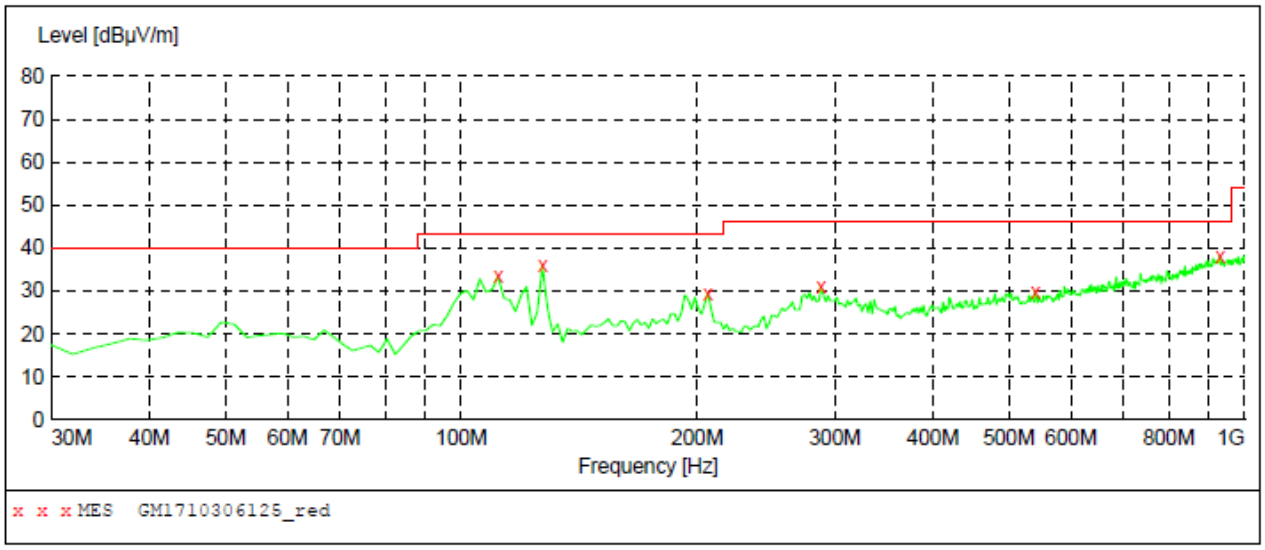
1) Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2) The emission levels of other frequencies are very lower than the limit and not show in test report.
3) Below 1 GHz,Have pre-scan all modulation mode, found the GFSK modulation High channel which it was worst case, 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.

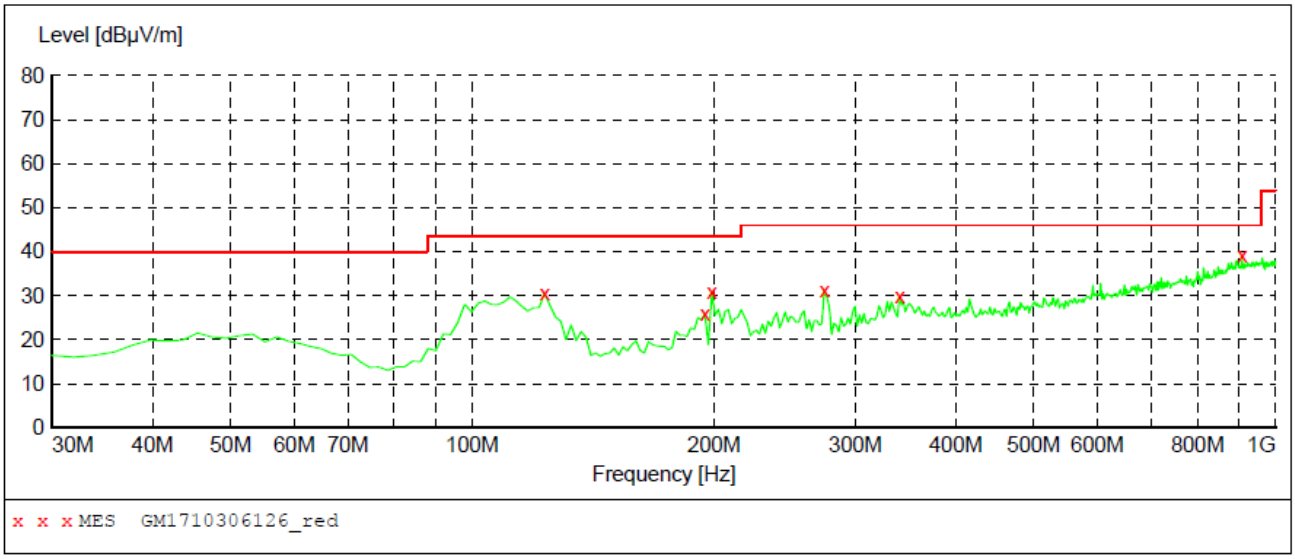
➢ **30 MHz ~ 1 GHz**

Polarization:	Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
111.480000	33.40	-11.0	43.5	10.1	QP	100.0	148.00	VERTICAL
127.000000	36.00	-13.1	43.5	7.5	QP	100.0	172.00	VERTICAL
206.540000	29.50	-10.5	43.5	14.0	QP	100.0	33.00	VERTICAL
288.020000	30.90	-7.5	46.0	15.1	QP	100.0	329.00	VERTICAL
540.220000	29.90	-1.0	46.0	16.1	QP	100.0	160.00	VERTICAL
930.160000	38.20	7.1	46.0	7.8	QP	100.0	291.00	VERTICAL

Polarization:	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
123.120000	30.50	-12.7	43.5	13.0	QP	300.0	143.00	HORIZONTAL
194.900000	25.90	-10.1	43.5	17.6	QP	100.0	130.00	HORIZONTAL
198.780000	30.70	-9.8	43.5	12.8	QP	100.0	118.00	HORIZONTAL
274.440000	31.30	-7.9	46.0	14.7	QP	100.0	106.00	HORIZONTAL
340.400000	29.90	-5.6	46.0	16.1	QP	100.0	106.00	HORIZONTAL
908.820000	39.00	6.9	46.0	7.0	QP	300.0	328.00	HORIZONTAL

➢ **1 GHz ~ 25 GHz**

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
1948.25	42.61	25.79	6.19	37.26	37.33	74.00	-36.67	Vertical	Peak
3844.28	34.46	29.64	8.56	38.20	34.46	74.00	-39.54	Vertical	Peak
4809.50	43.91	31.58	9.55	36.93	48.11	74.00	-25.89	Vertical	Peak
6764.54	33.47	34.07	11.56	35.06	44.04	74.00	-29.96	Vertical	Peak
1413.67	37.56	25.89	5.04	36.48	32.01	74.00	-41.99	Horizontal	Peak
3096.33	35.62	28.79	7.60	38.22	33.79	74.00	-40.21	Horizontal	Peak
4809.50	45.34	31.58	9.55	36.93	49.54	74.00	-24.46	Horizontal	Peak
7338.62	31.80	36.30	12.01	34.90	45.21	74.00	-28.79	Horizontal	Peak

CH39									
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
1431.78	37.37	25.87	5.09	36.50	31.83	74.00	-42.17	Vertical	Peak
3018.50	37.61	28.64	7.50	38.23	35.52	74.00	-38.48	Vertical	Peak
4883.52	43.22	31.43	9.59	36.73	47.51	74.00	-26.49	Vertical	Peak
6511.12	32.69	34.02	11.20	35.34	42.57	74.00	-31.43	Vertical	Peak
1283.34	36.69	26.22	4.80	36.52	31.19	74.00	-42.81	Horizontal	Peak
1943.29	43.69	25.74	6.18	37.25	38.36	74.00	-35.64	Horizontal	Peak
3184.25	36.23	28.80	7.70	38.20	34.53	74.00	-39.47	Horizontal	Peak
4883.52	41.09	31.43	9.59	36.73	45.38	74.00	-28.62	Horizontal	Peak

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
1491.30	35.66	25.81	5.26	36.58	30.15	74.00	-43.85	Vertical	Peak
3233.26	35.62	28.60	7.76	38.26	33.72	74.00	-40.28	Vertical	Peak
4958.68	45.50	31.46	9.64	36.52	50.08	74.00	-23.92	Vertical	Peak
7135.98	31.67	35.82	11.86	34.99	44.36	74.00	-29.64	Vertical	Peak
1953.21	44.25	25.84	6.20	37.26	39.03	74.00	-34.97	Horizontal	Peak
3598.09	34.44	29.29	8.27	38.27	33.73	74.00	-40.27	Horizontal	Peak
4958.68	41.85	31.46	9.64	36.52	46.43	74.00	-27.57	Horizontal	Peak
7117.84	31.95	35.71	11.86	34.96	44.56	74.00	-29.44	Horizontal	Peak

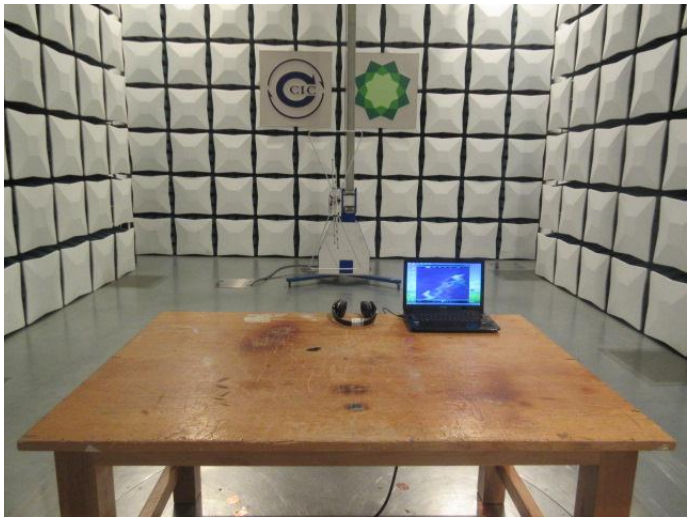
Remark:

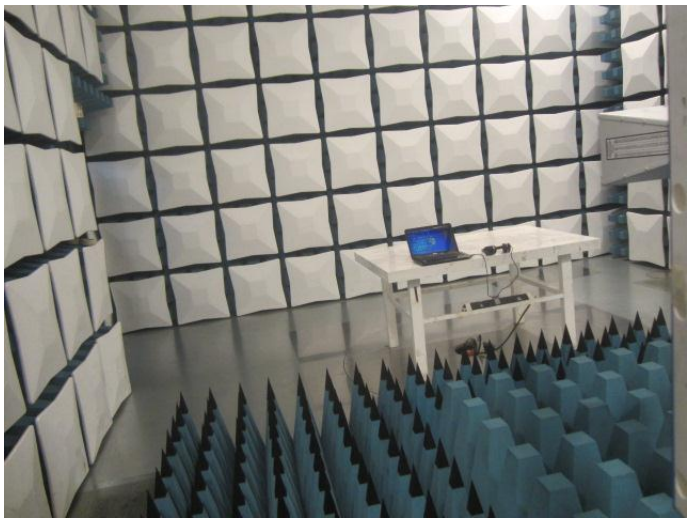
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies(test frequency band is 1GHz to 25GHz) are very lower than the limit and not show in test report.

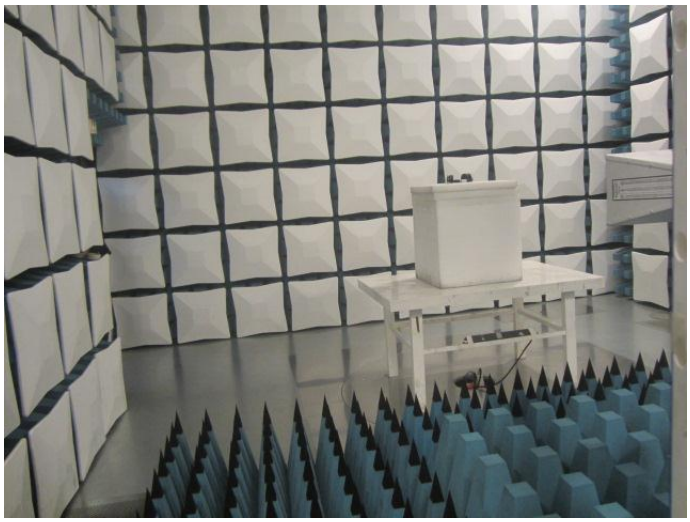
6. TEST SETUP PHOTOS

Conducted Emissions (AC Mains)

Radiated Emissions



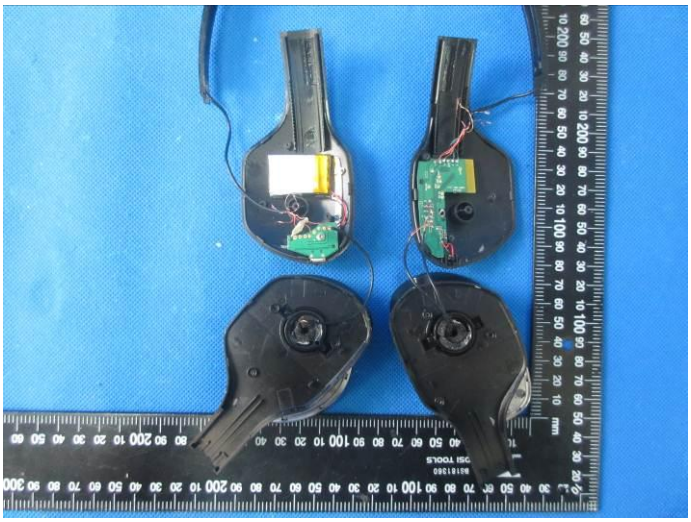


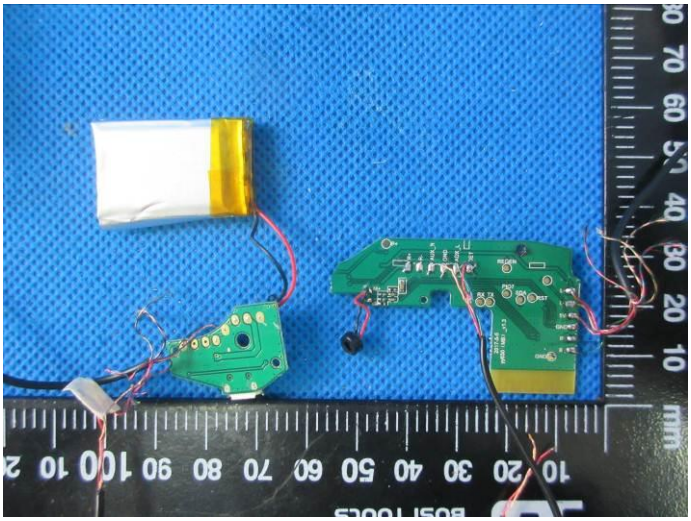


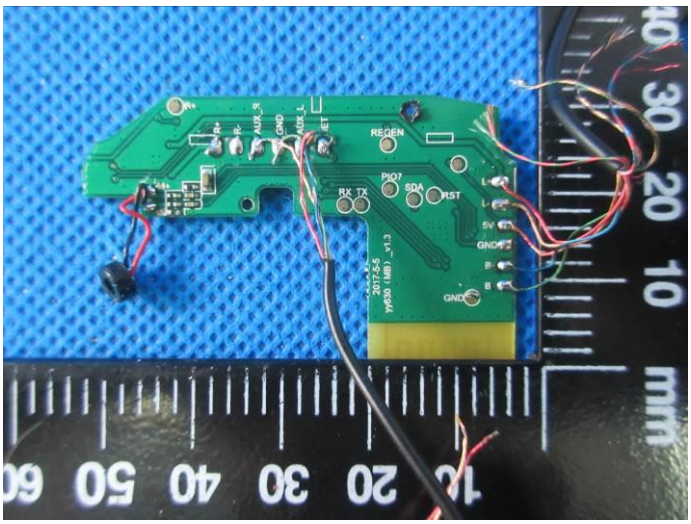
7. EXTERANAL AND INTERNAL PHOTOS

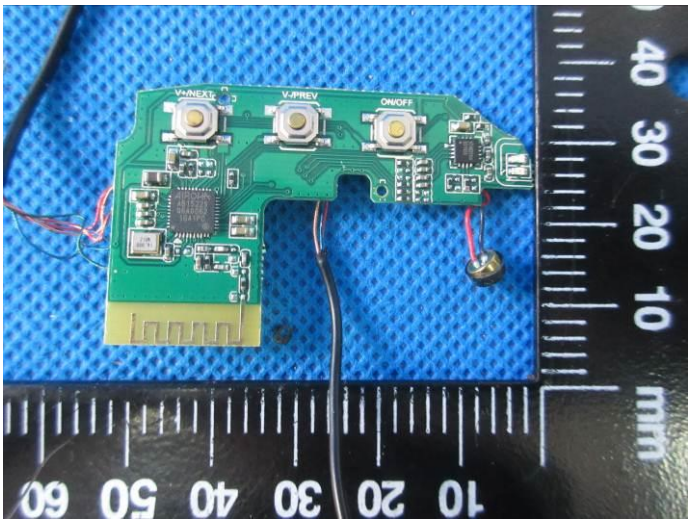
EXTERANAL PHOTOS

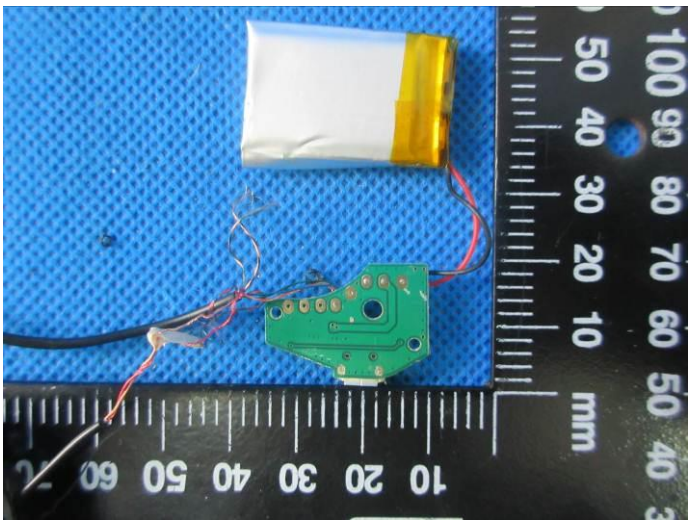
INTERNAL PHOTOS

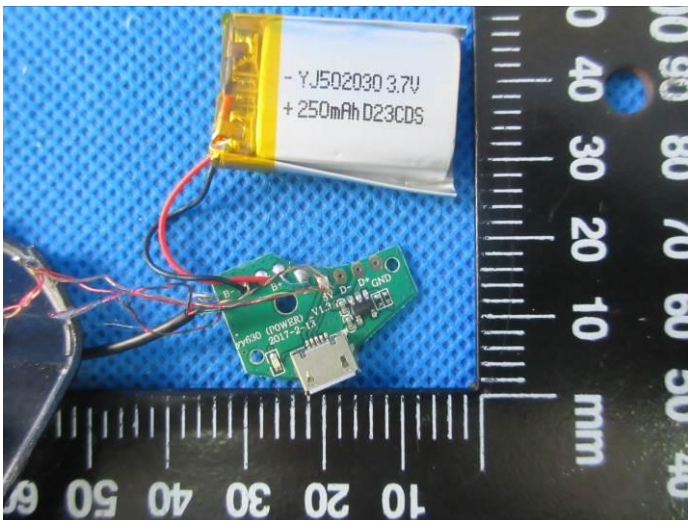


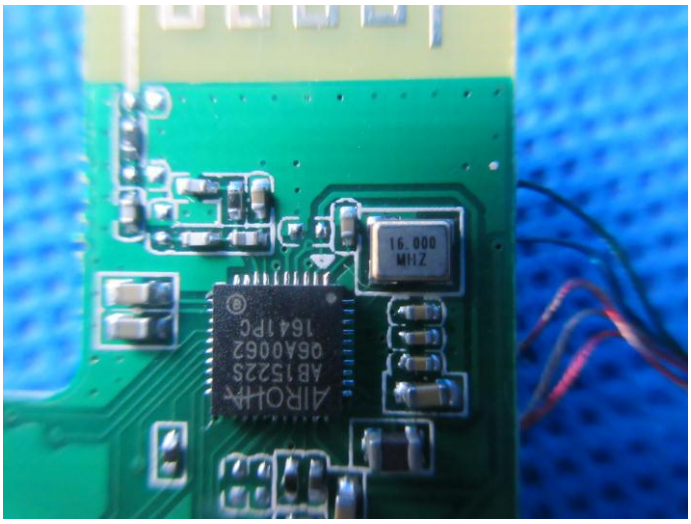


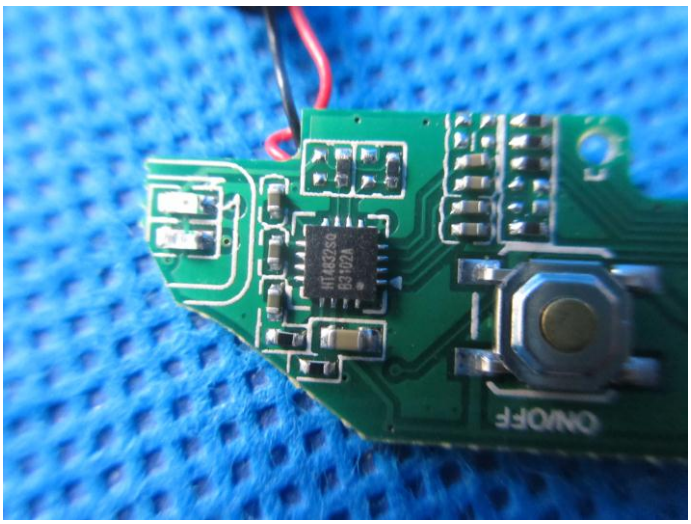

REGEN
PIO7
SDA
RST
RX TX
GND
mm


V+/NEXT
V-/PREV
ON/OFF
mm


mm







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