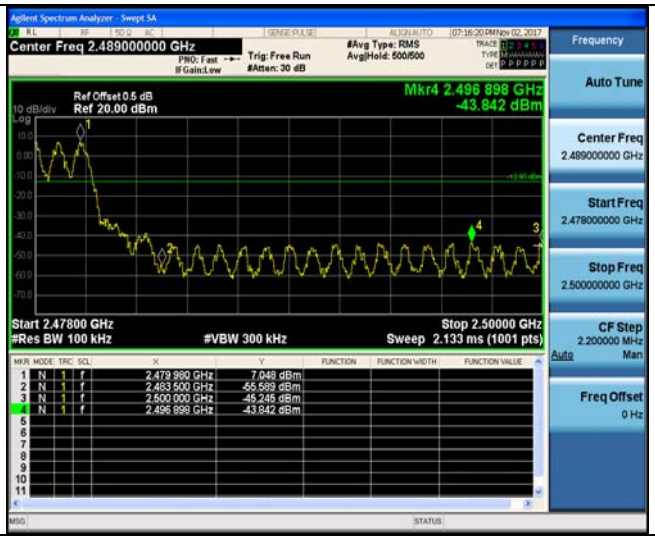
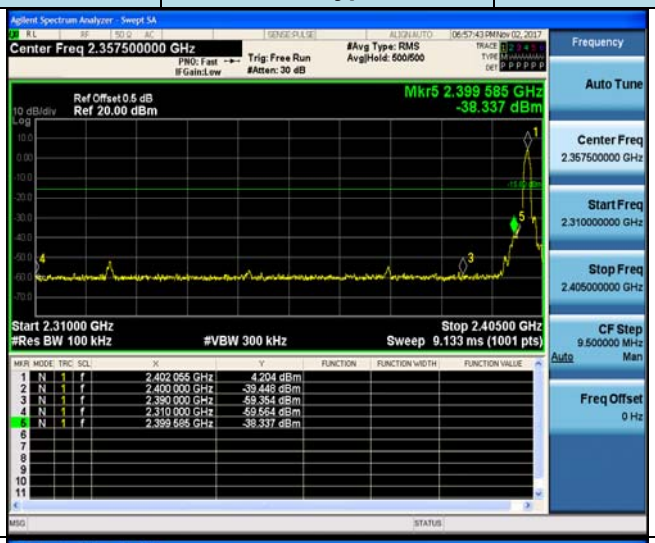
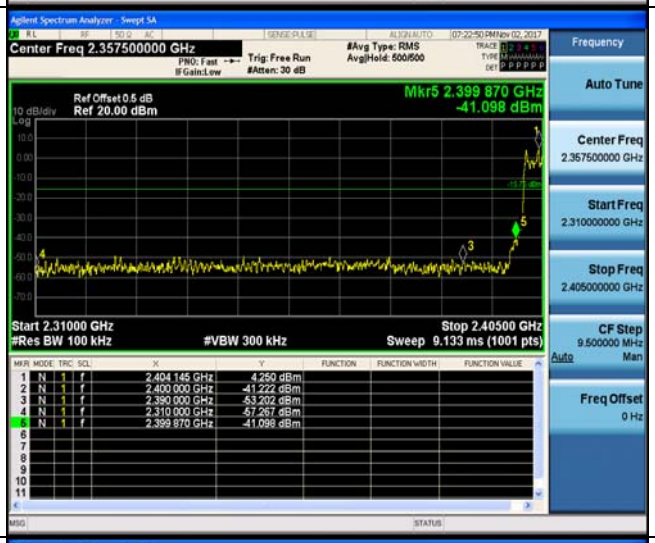
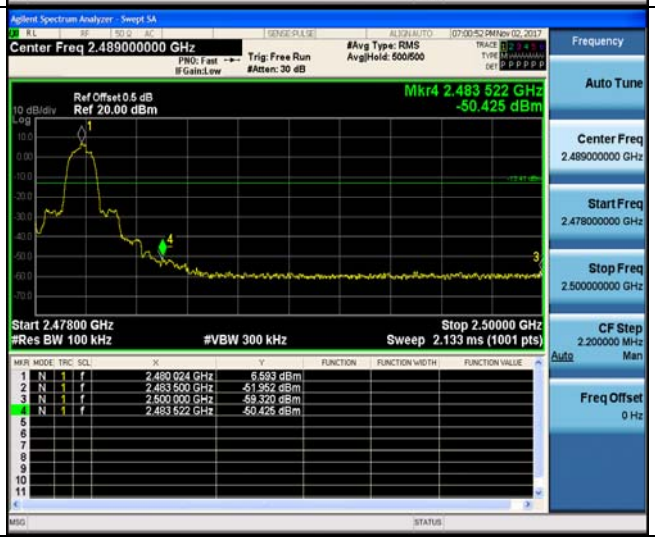
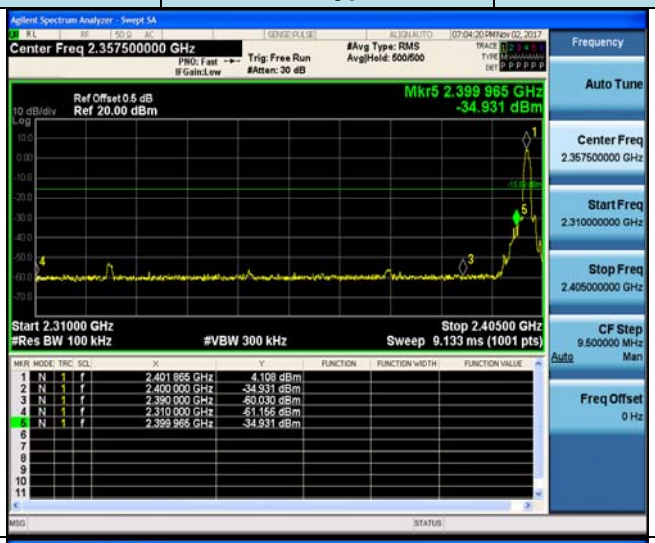
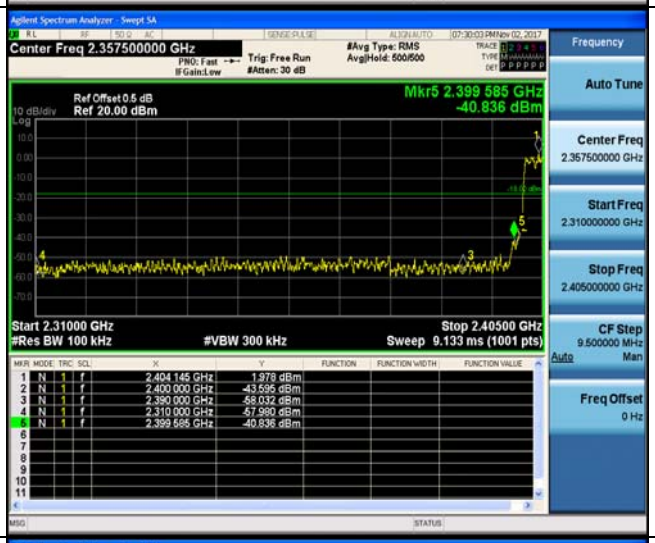
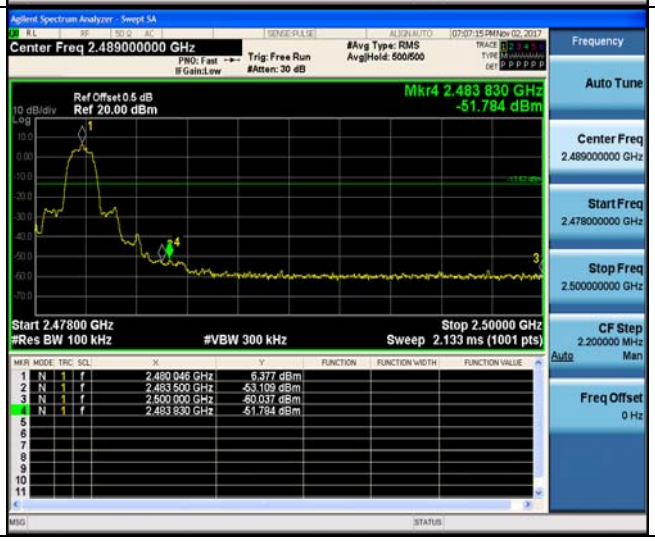
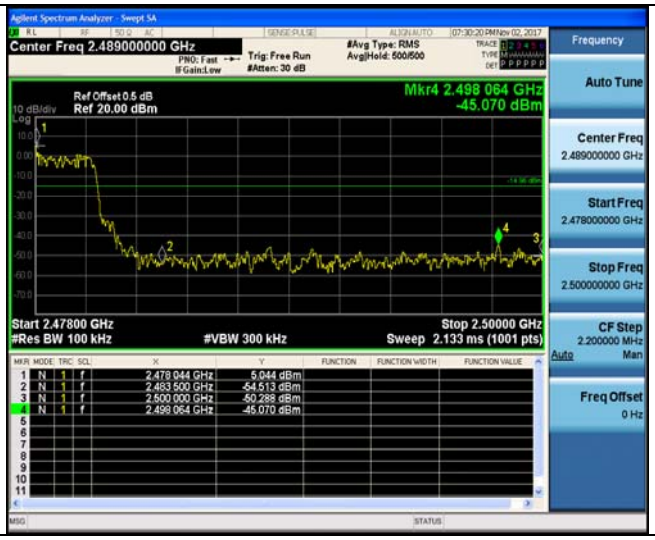
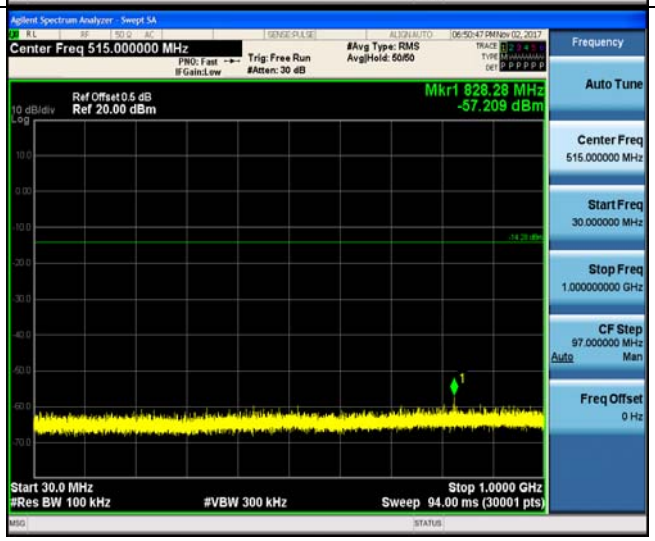
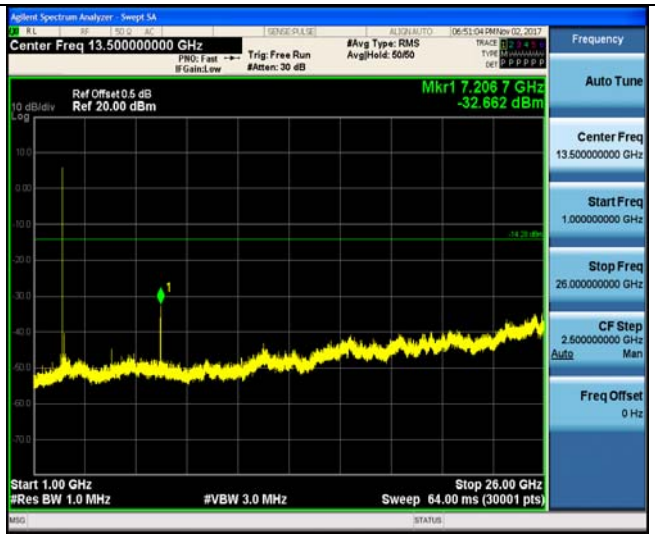
CH78 Hopping mode			

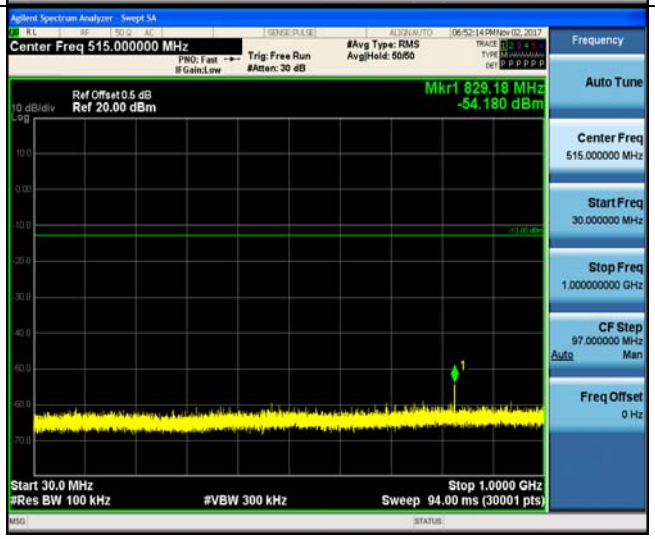
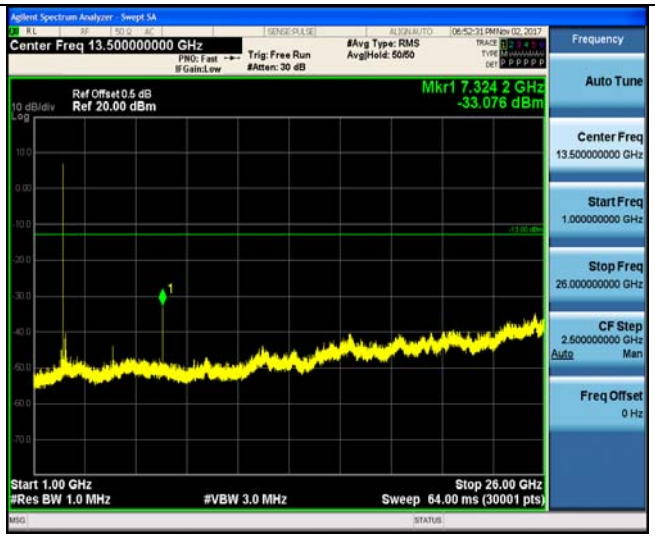
Test Item:	Band edge	Modulation type:	π/4DQPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

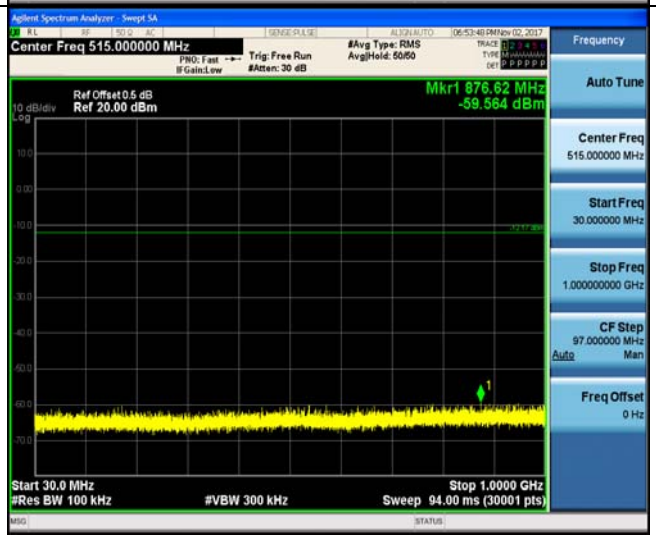
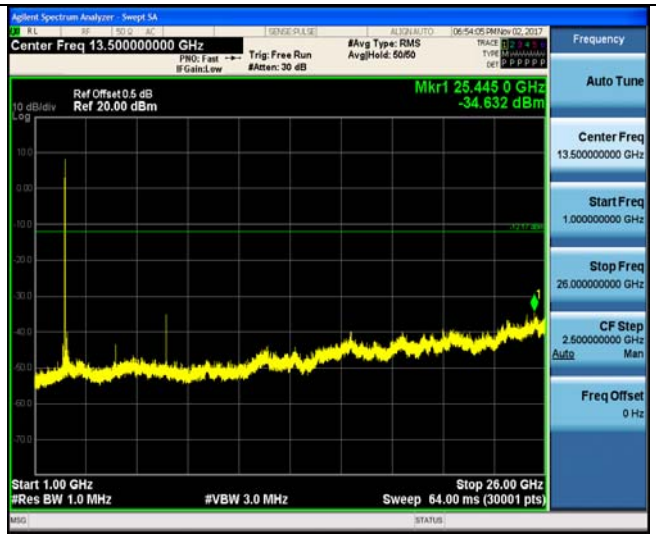
CH78 Hopping mode			

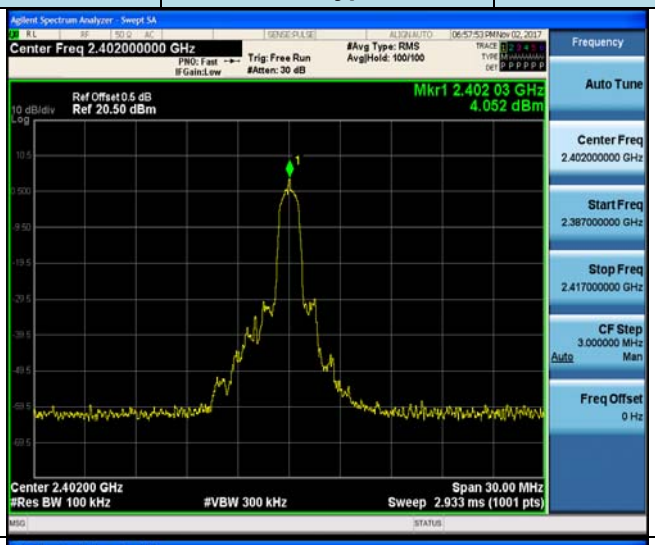
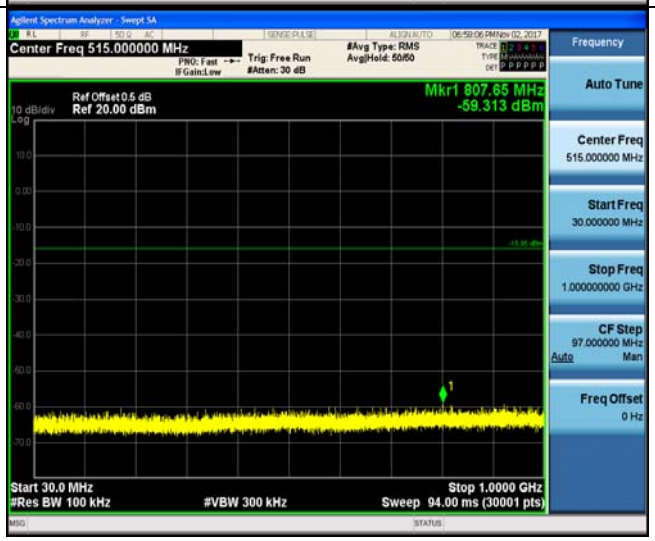
Test Item:	Band edge	Modulation type:	8DPSK
CH00 No hopping mode			
CH00 Hopping mode			
CH78 No hopping mode			

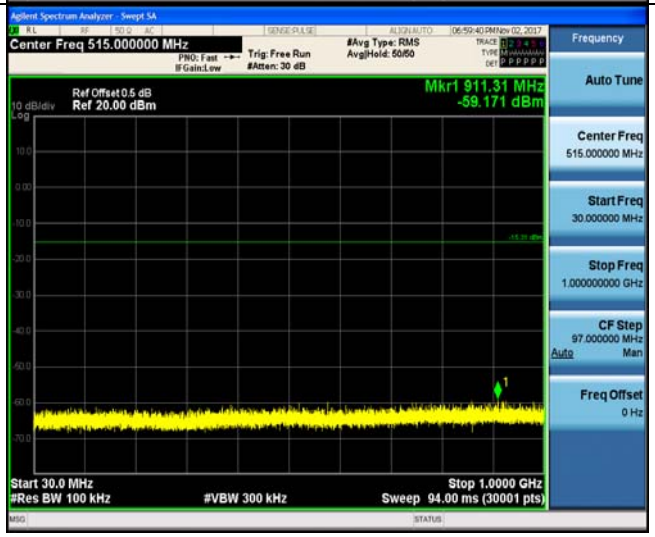
CH78 Hoppig mode			

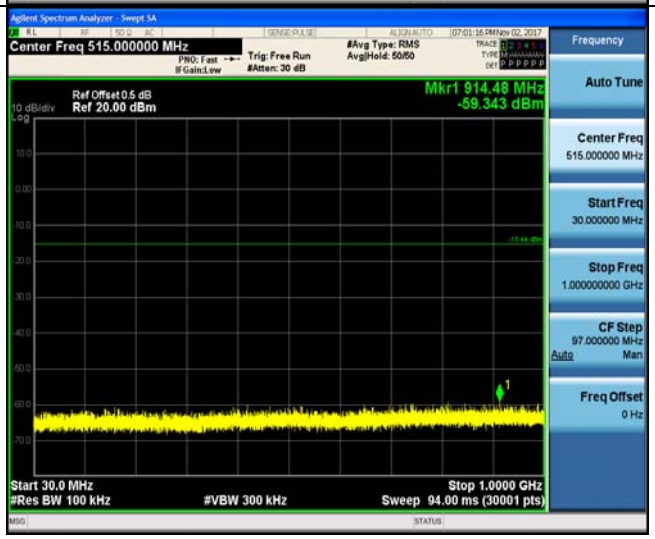
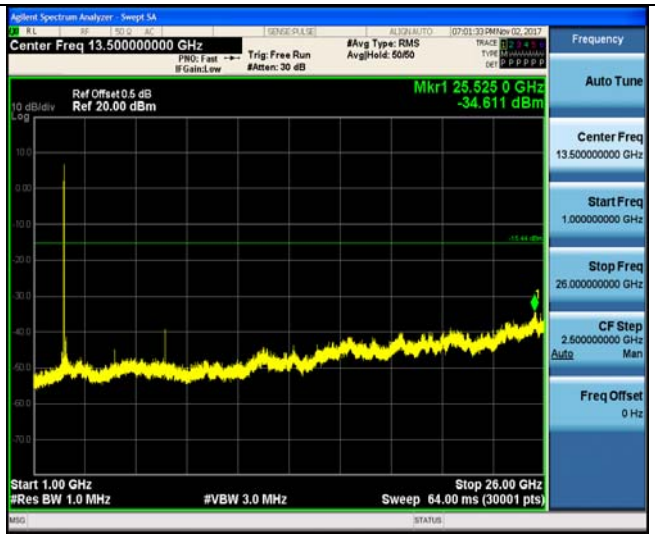
Test Item:	SE	Modulation type:	GFSK
reference level CH00			
CH00			
			

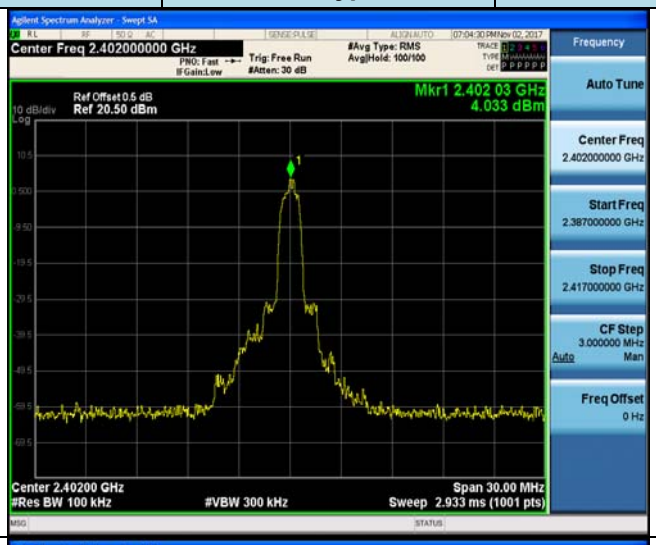
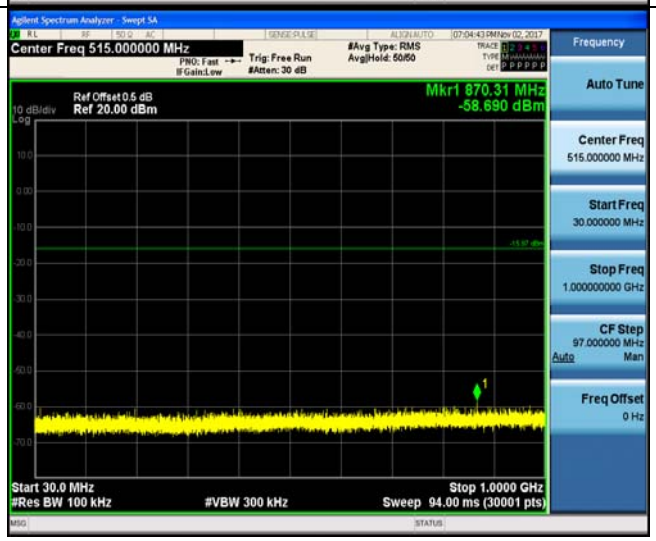
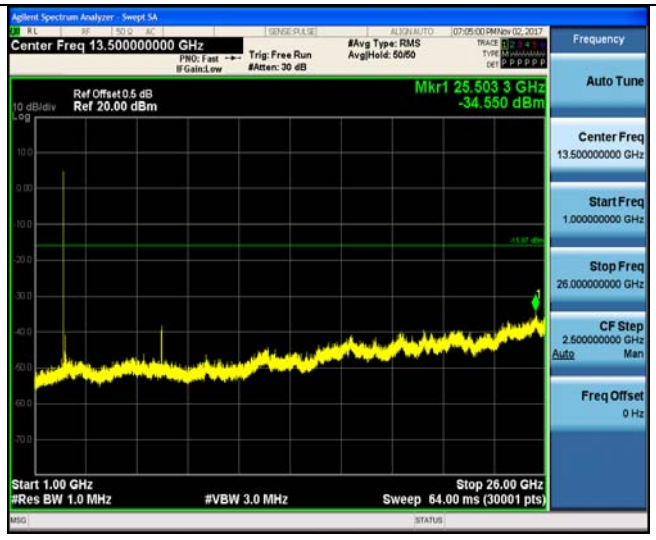
reference level CH39		
CH39		
		

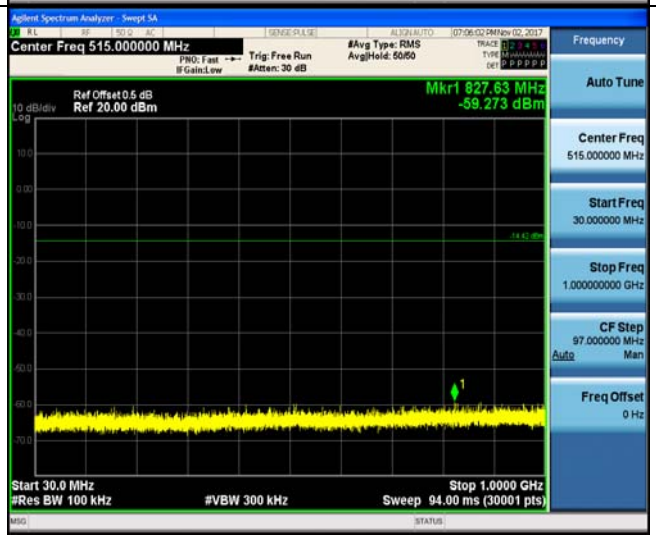
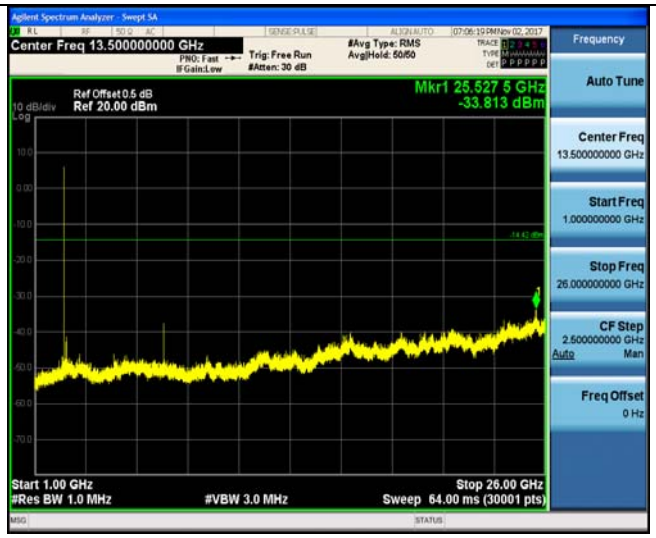
reference level CH78		
CH78		
		

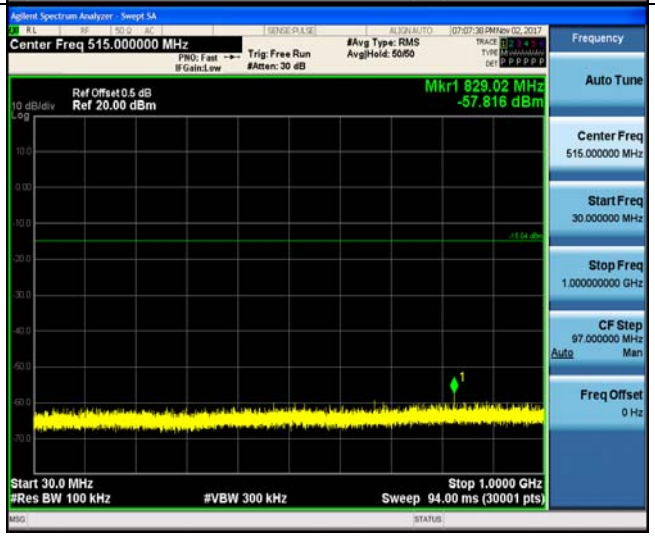
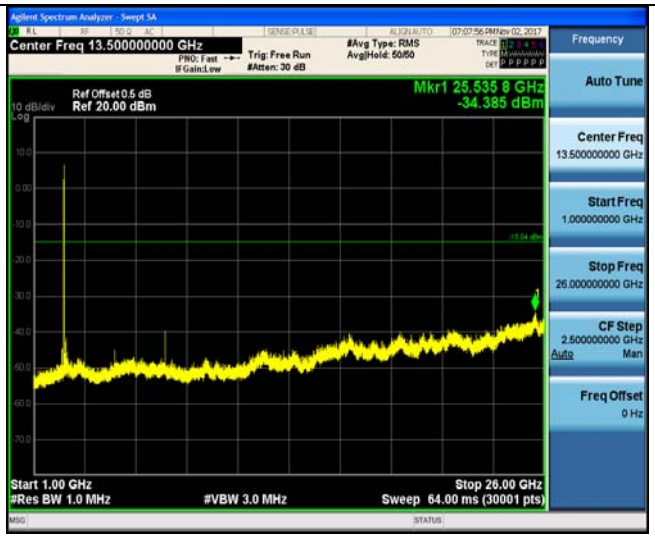
Test Item:	SE	Modulation type:	π/4DQPSK
reference level CH00			
CH00			

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)

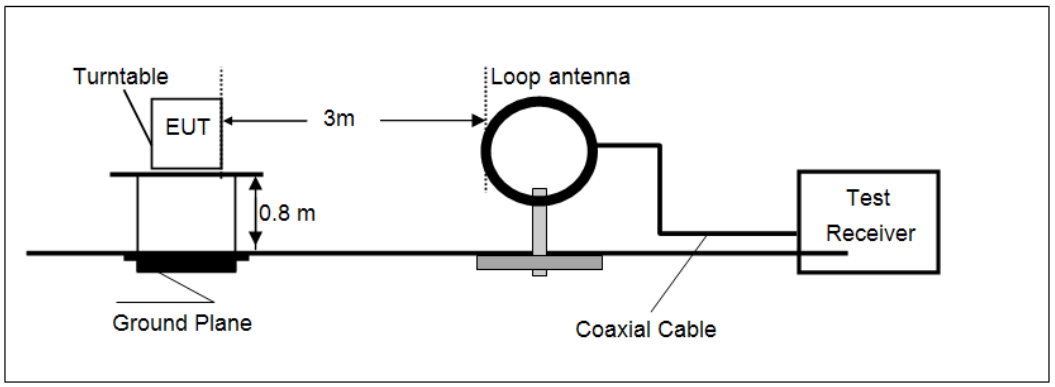
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

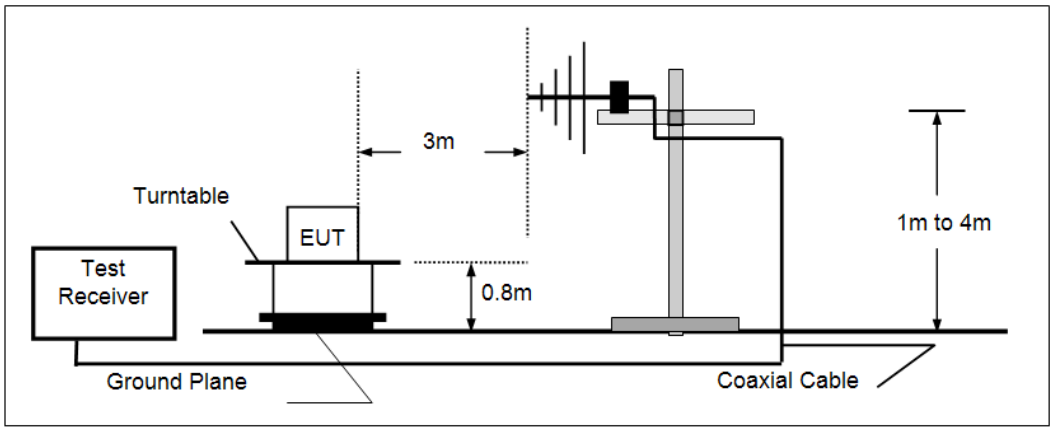
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

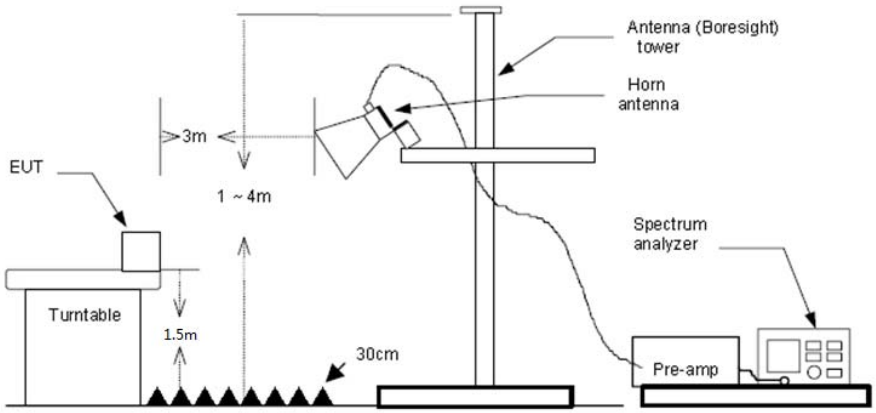
- Below 30 MHz



- 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:

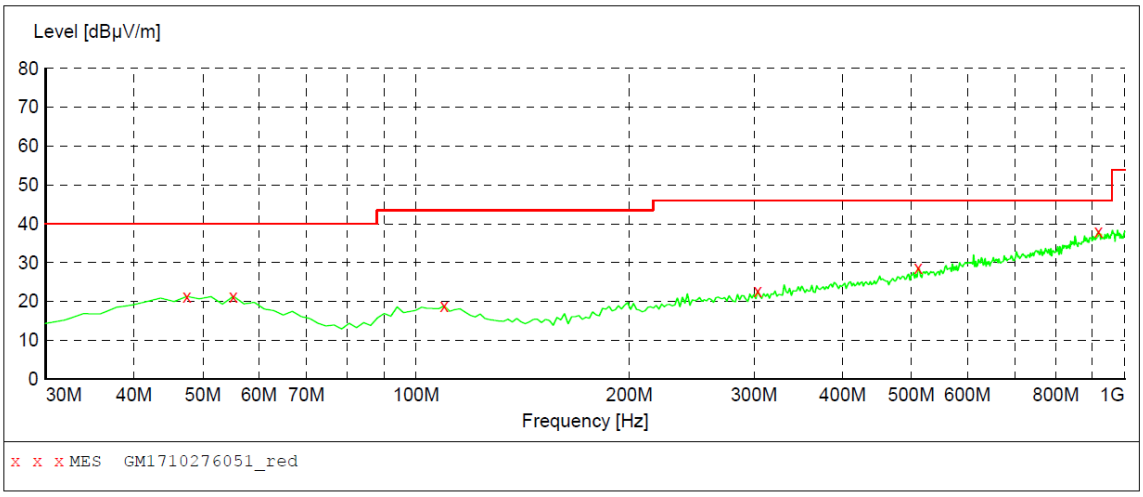
1) Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2) The emission levels of other frequencies are very lower than the limit and not show in test report.
3) Below 1 GHz,Have pre-scan all modulation mode, found the GFSK modulation High channel which it was worst case,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

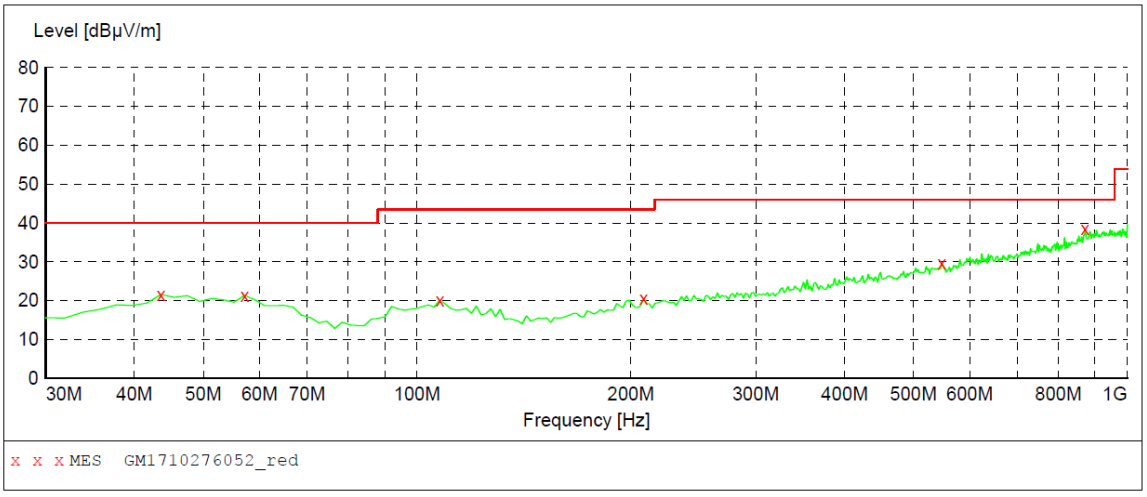
➢ **30 MHz ~ 1 GHz**

Polarization:	Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	21.30	-8.8	40.0	18.7	QP	100.0	12.00	VERTICAL
55.220000	21.30	-9.2	40.0	18.7	QP	100.0	187.00	VERTICAL
109.540000	18.90	-10.8	43.5	24.6	QP	100.0	94.00	VERTICAL
303.540000	22.70	-7.2	46.0	23.3	QP	100.0	67.00	VERTICAL
511.120000	28.70	-1.5	46.0	17.3	QP	100.0	360.00	VERTICAL
918.520000	38.10	7.0	46.0	7.9	QP	100.0	348.00	VERTICAL

Polarization:	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
43.580000	21.60	-9.1	40.0	18.4	QP	100.0	112.00	HORIZONTAL
57.160000	21.40	-9.4	40.0	18.6	QP	100.0	192.00	HORIZONTAL
107.600000	20.10	-10.6	43.5	23.4	QP	300.0	0.00	HORIZONTAL
208.480000	20.60	-10.5	43.5	22.9	QP	300.0	296.00	HORIZONTAL
547.980000	29.60	-0.8	46.0	16.4	QP	100.0	192.00	HORIZONTAL
871.960000	38.50	6.1	46.0	7.5	QP	300.0	165.00	HORIZONTAL

➢ **Above 1 GHz**

CH00 for GFSK									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1724.17	48.40	25.25	5.81	36.98	42.48	74.00	-31.52	Vertical	Peak
3552.58	40.49	29.16	8.20	38.34	39.51	74.00	-34.49	Vertical	
4809.50	56.03	31.58	9.55	36.93	60.23	74.00	-13.77	Vertical	
7209.02	42.58	36.21	11.87	35.07	55.59	74.00	-18.41	Vertical	
4809.50	27.72	31.58	9.55	36.93	31.92	54.00	-22.08	Vertical	Average
7209.02	26.03	36.21	11.87	35.07	39.04	54.00	-14.96	Vertical	
1340.089	43.66	26.08	4.9	36.49	38.15	74.00	-35.85	Horizontal	Peak
4809.499	54.5	31.58	9.55	36.93	58.7	74.00	-15.3	Horizontal	
6140.854	40.62	32.66	10.91	35.34	48.85	74.00	-25.15	Horizontal	
7209.015	45.32	36.21	11.87	35.07	58.33	74.00	-15.67	Horizontal	
4809.498	42.85	31.58	9.55	36.93	47.05	54.00	-6.95	Horizontal	Average
7209.016	18.91	36.21	11.87	35.07	31.92	54.00	-22.08	Horizontal	

CH39 for GFSK									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1299.773	46.1	26.2	4.83	36.52	40.61	74.00	-33.39	Vertical	Peak
1795.839	42.52	25.39	5.95	37.13	36.73	74.00	-37.27	Vertical	
4883.519	44.63	31.43	9.59	36.73	48.92	74.00	-25.08	Vertical	
7319.964	42.27	36.3	11.99	34.92	55.64	74.00	-18.36	Vertical	
4883.518	39.93	31.43	9.59	36.73	44.22	54.00	-9.78	Vertical	Average
7319.965	27.05	36.3	11.99	34.92	40.42	54.00	-13.58	Vertical	
1346.93	47.54	26.06	4.91	36.49	42.02	74.00	-31.98	Horizontal	Peak
4181.16	42.63	29.98	8.92	37.69	43.84	74.00	-30.16	Horizontal	
4883.52	59.23	31.43	9.59	36.73	63.52	74.00	-10.48	Horizontal	
7319.96	44.45	36.30	11.99	34.92	57.82	74.00	-16.18	Horizontal	
7319.96	25.92	36.30	11.99	34.92	39.29	54.00	-14.71	Horizontal	Average
4883.52	36.13	31.43	9.59	36.73	40.42	54.00	-13.58	Horizontal	

CH78 for GFSK									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2081.55	44.55	26.63	6.34	37.32	40.20	74.00	-33.80	Vertical	Peak
3192.37	41.69	28.80	7.71	38.20	40.00	74.00	-34.00	Vertical	
4958.68	54.77	31.46	9.64	36.52	59.35	74.00	-14.65	Vertical	
7451.57	42.92	36.20	12.24	34.86	56.50	74.00	-17.50	Vertical	
4958.68	38.54	31.46	9.64	36.52	43.12	54.00	-10.88	Vertical	Average
7451.57	31.11	36.20	12.24	34.86	44.69	54.00	-9.31	Vertical	
1795.84	47.24	25.39	5.95	37.13	41.45	74.00	-32.55	Horizontal	Peak
3963.52	36.18	29.70	8.73	38.13	36.48	74.00	-37.52	Horizontal	
4958.68	56.60	31.46	9.64	36.52	61.18	74.00	-12.82	Horizontal	
7451.57	43.48	36.20	12.24	34.86	57.06	74.00	-16.94	Horizontal	
4958.68	37.94	31.46	9.64	36.52	42.52	54.00	-11.48	Horizontal	Average
7451.57	23.66	36.20	12.24	34.86	37.24	54.00	-16.76	Horizontal	

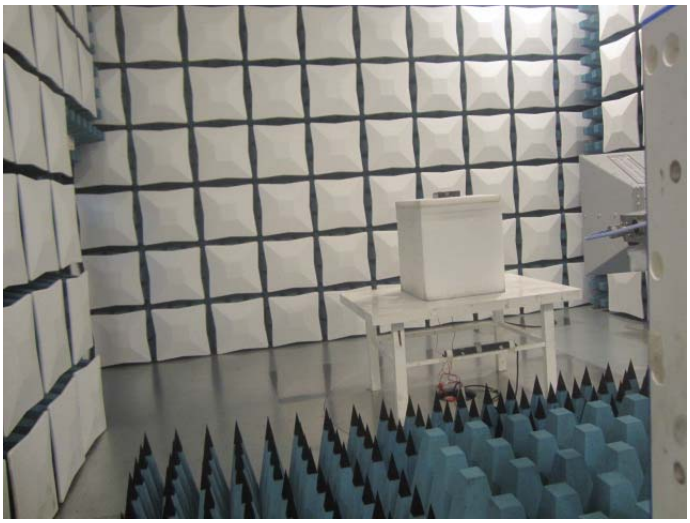
➢ Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

2. The peak level is lower than average limit(54dBuV/m), this data is the too weak instrument of signal is unable to test. The emission levels of other frequencies are very lower than the limit and not show in test report.

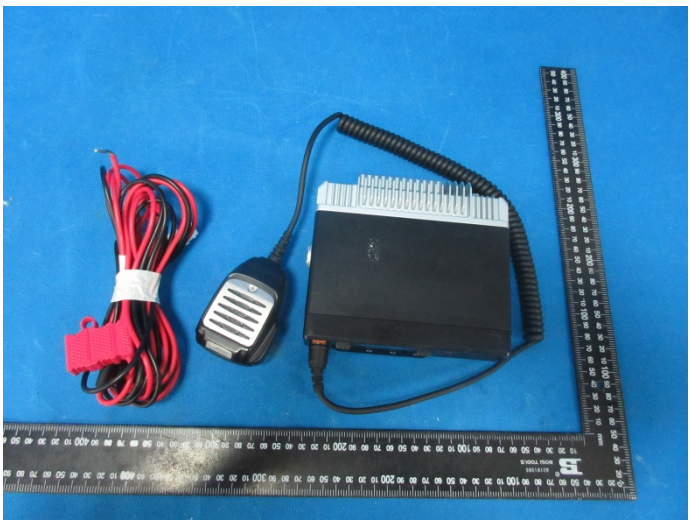
6. TEST SETUP PHOTOS

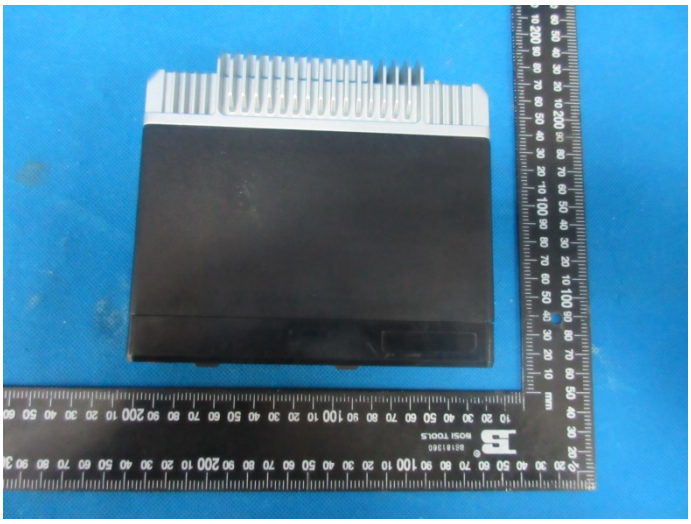
Radiated Emission:

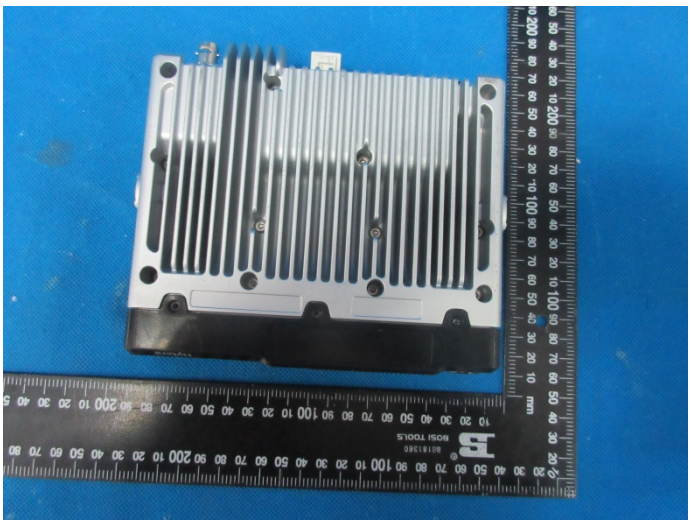


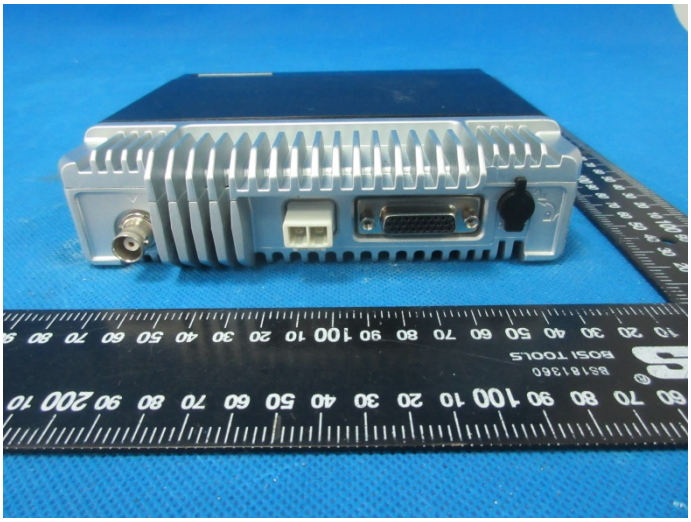
7. EXTERANAL AND INTERNAL PHOTOS

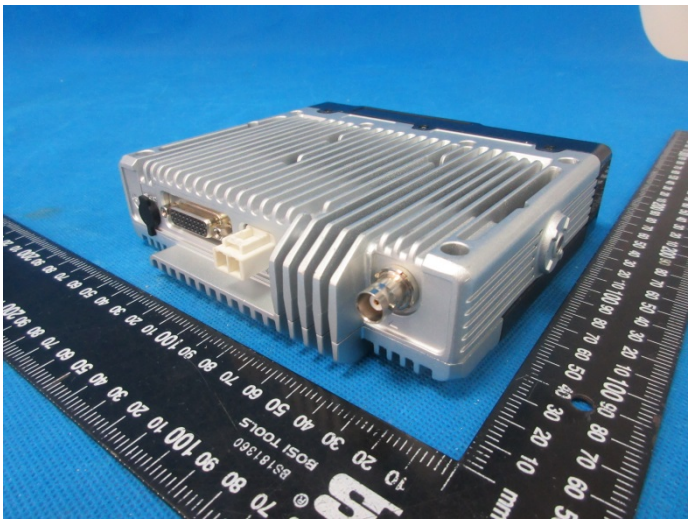
External Photos of the EUT

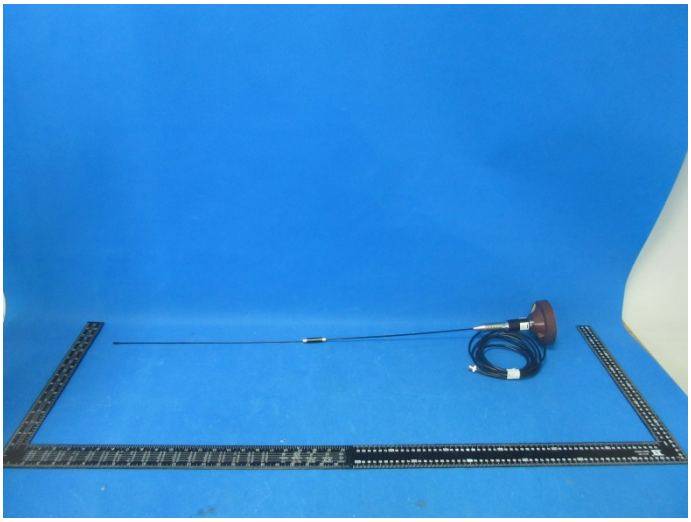


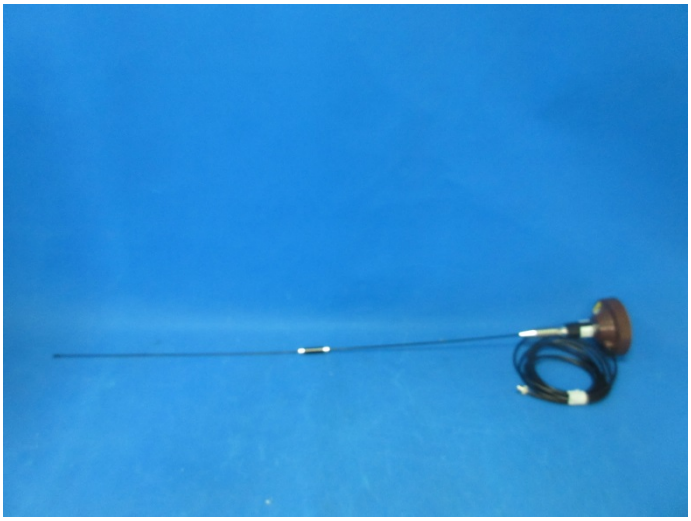


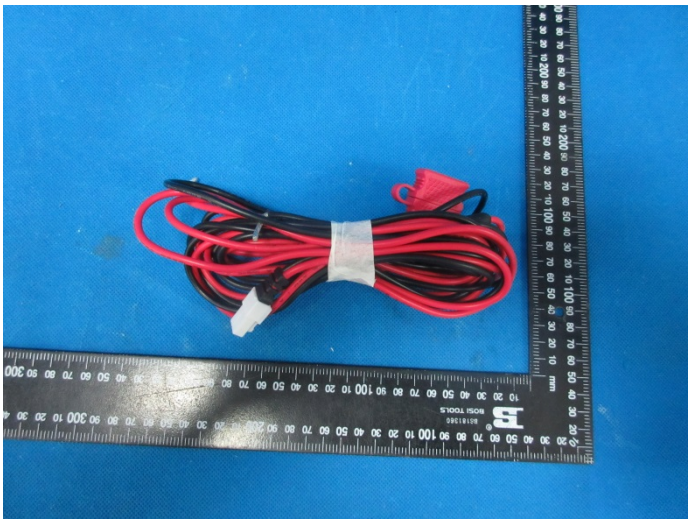




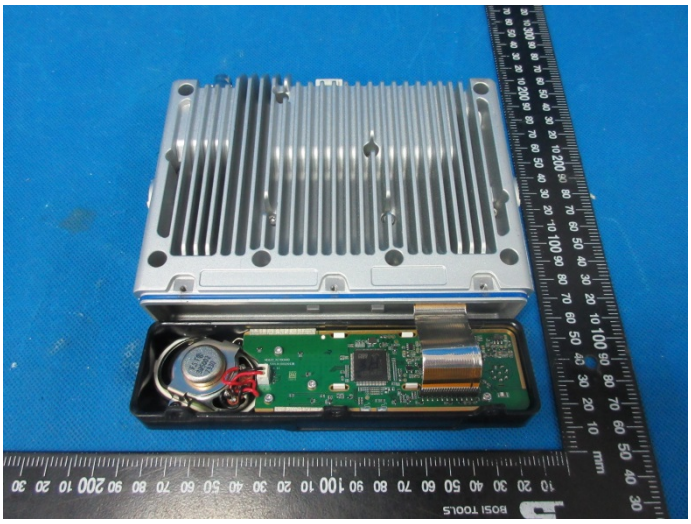


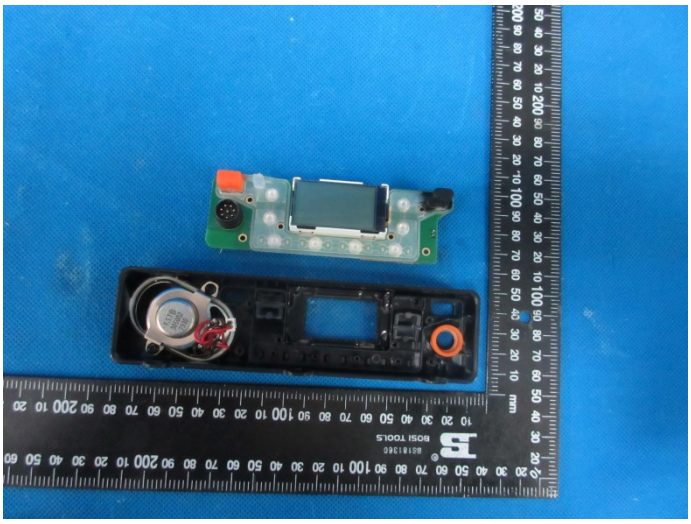


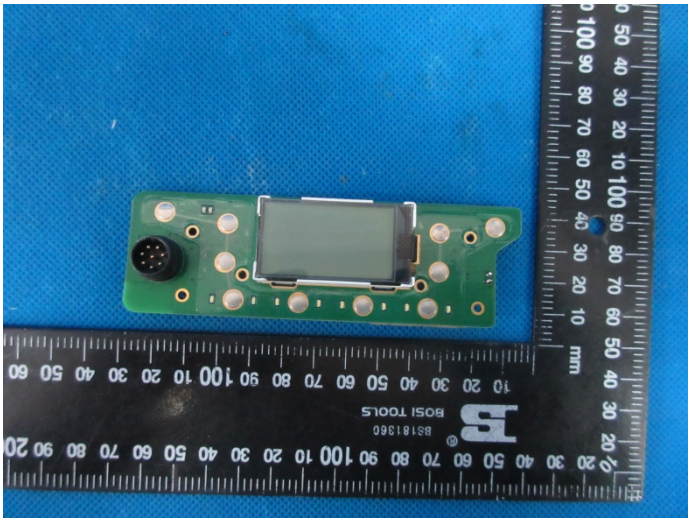


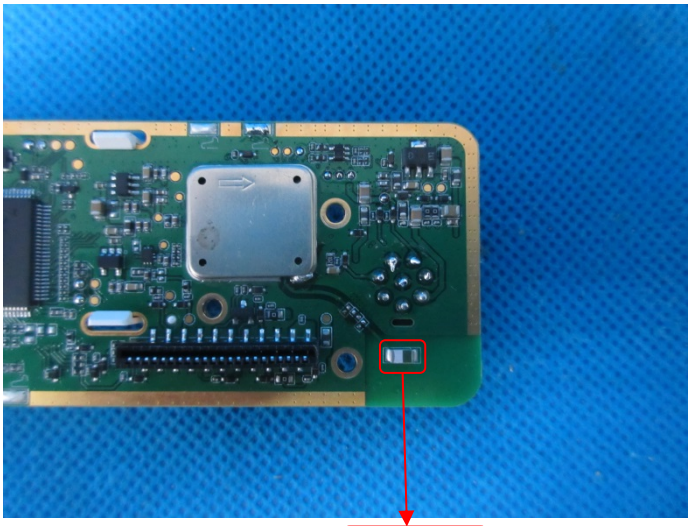


Internal Photos of the EUT





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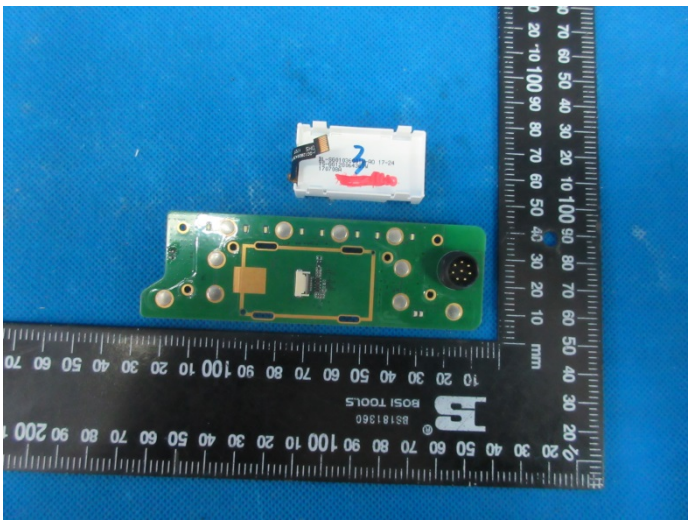

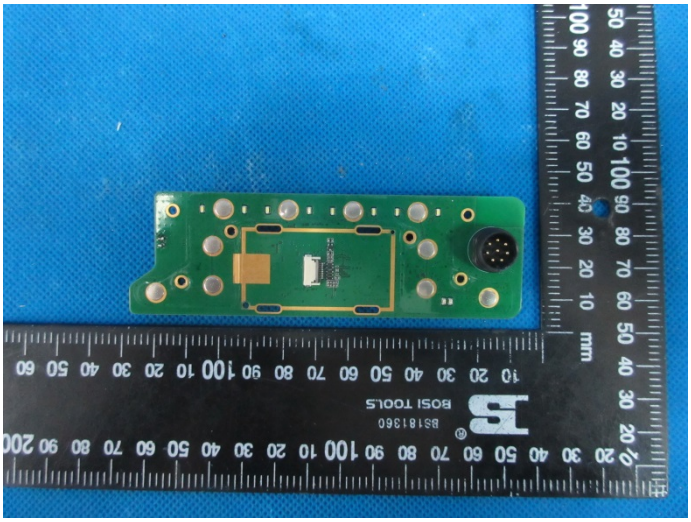

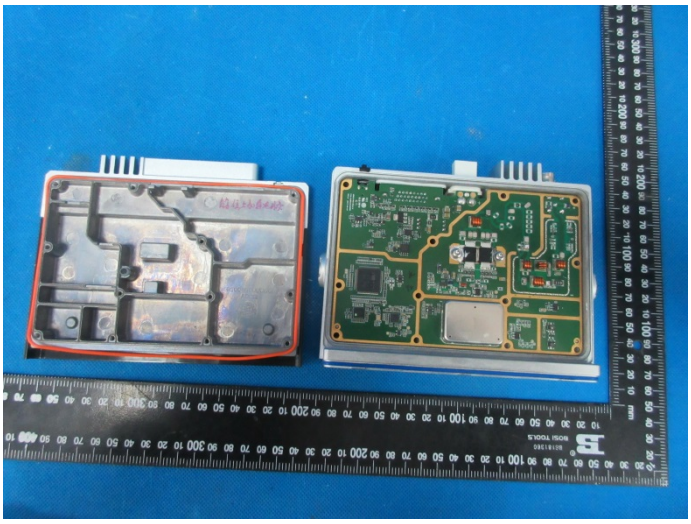

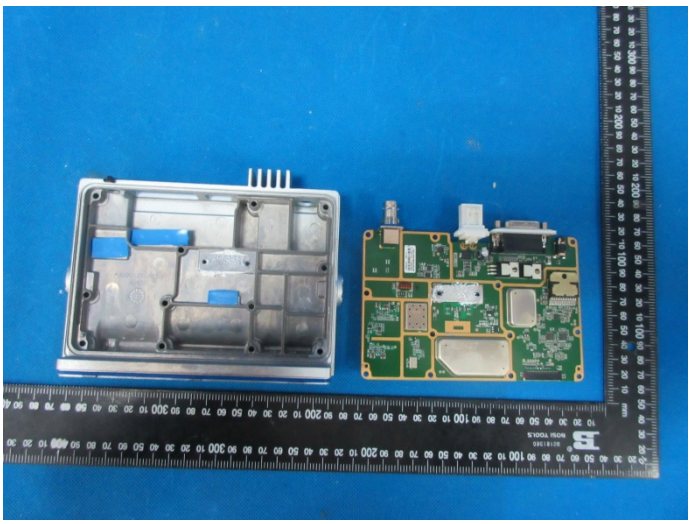

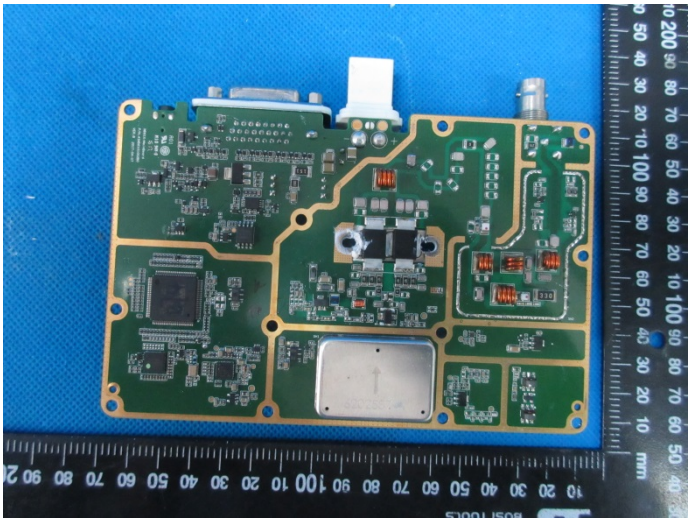

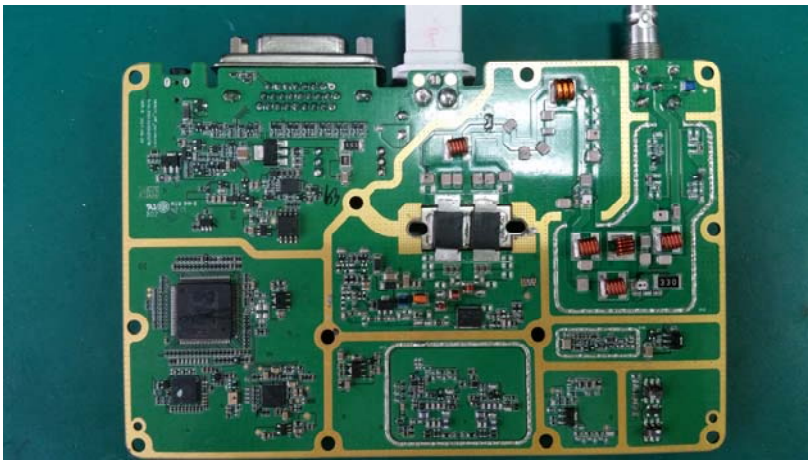

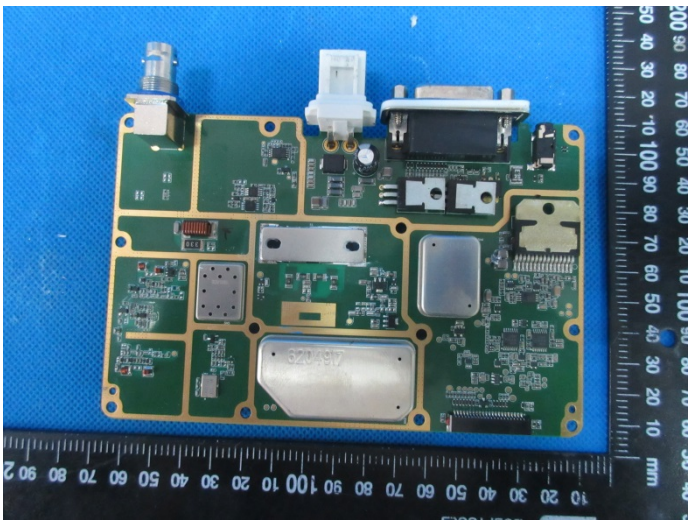

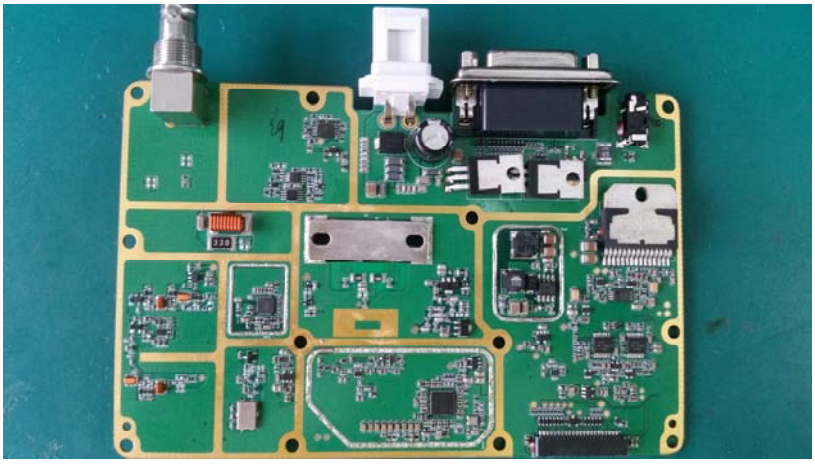

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