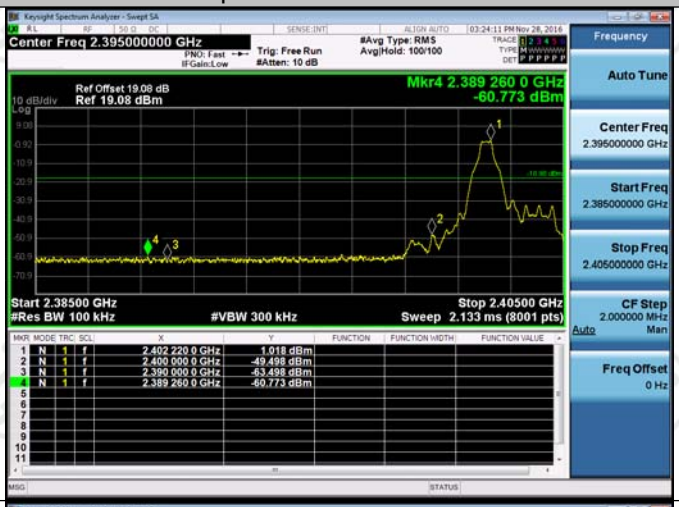
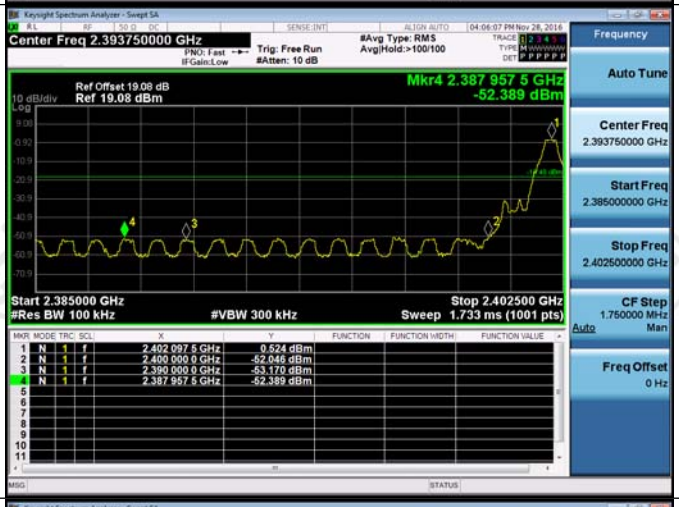
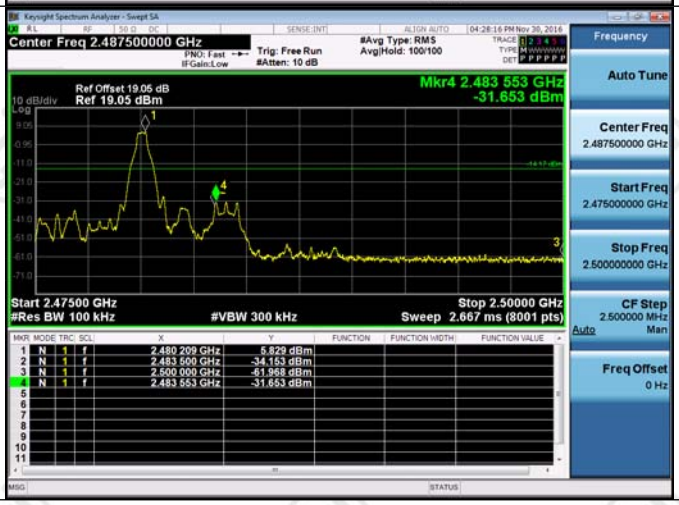
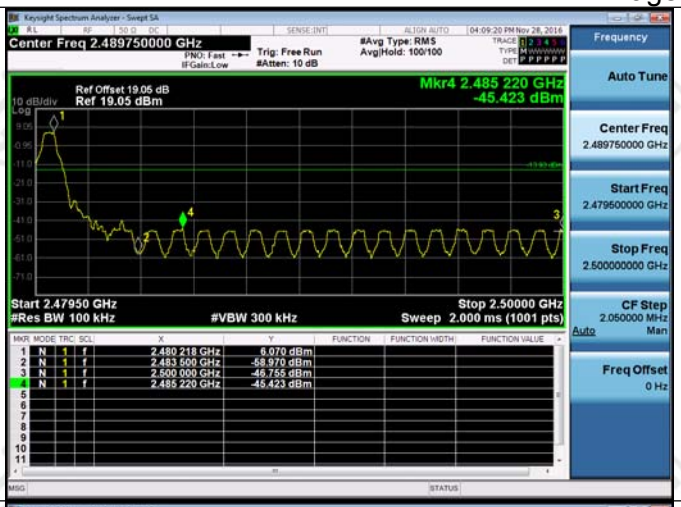
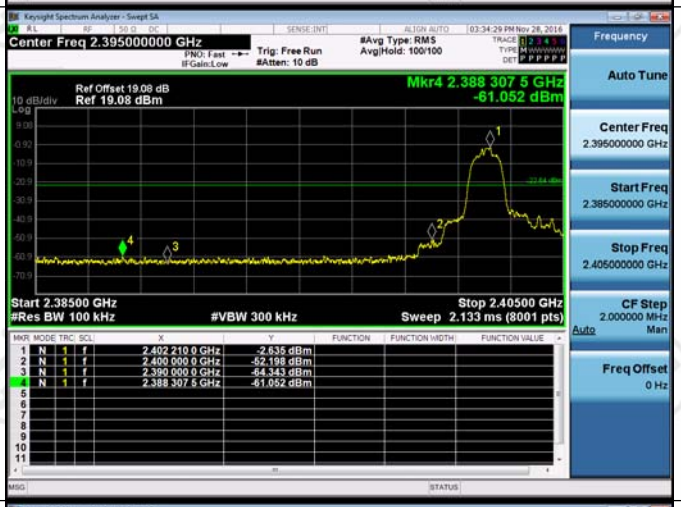
Appendix F): Band-edge for RF Conducted Emissions

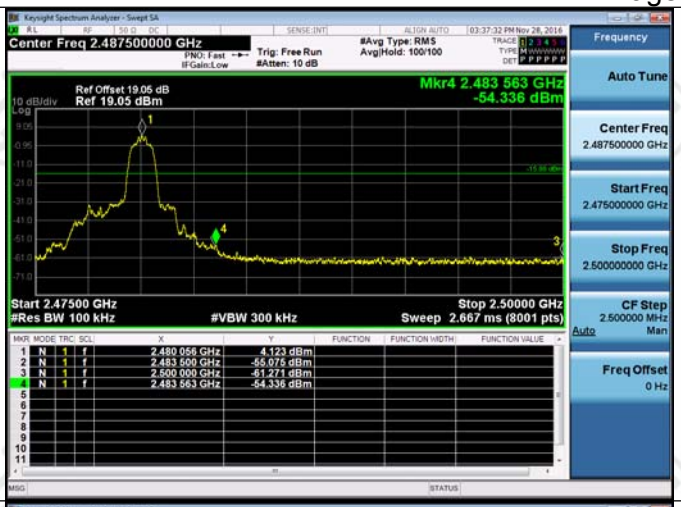
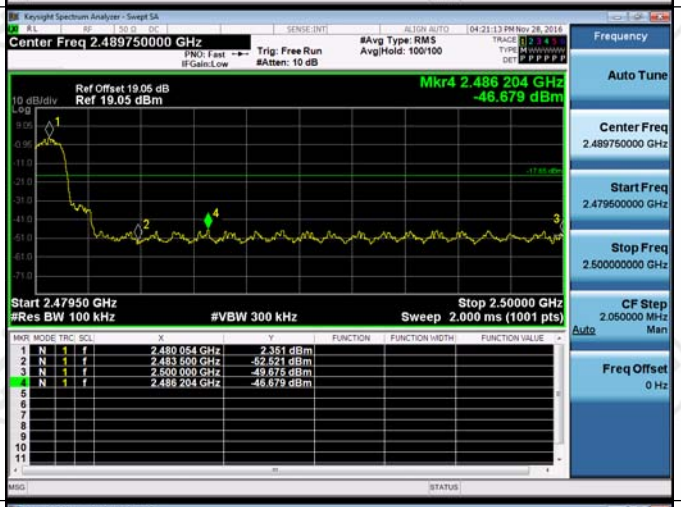
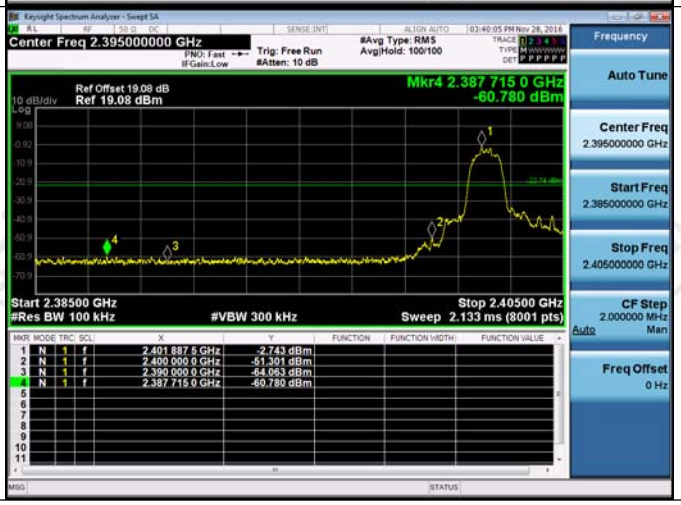
Result Table

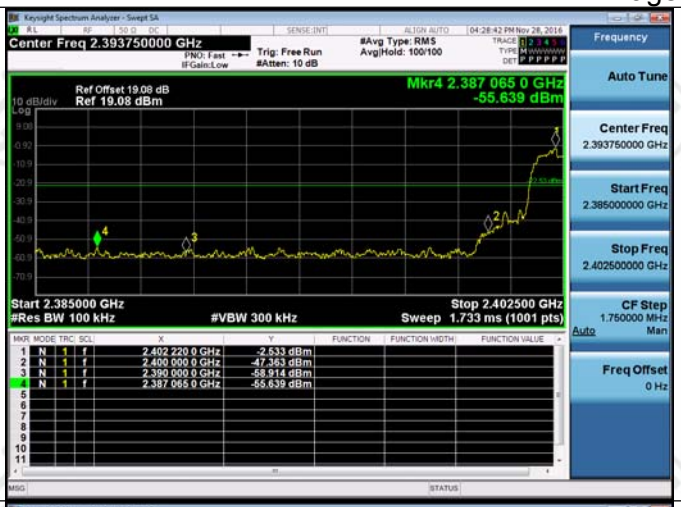
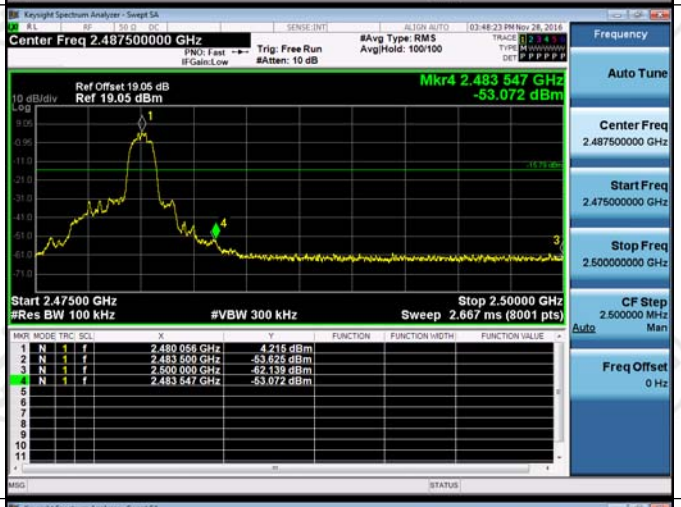
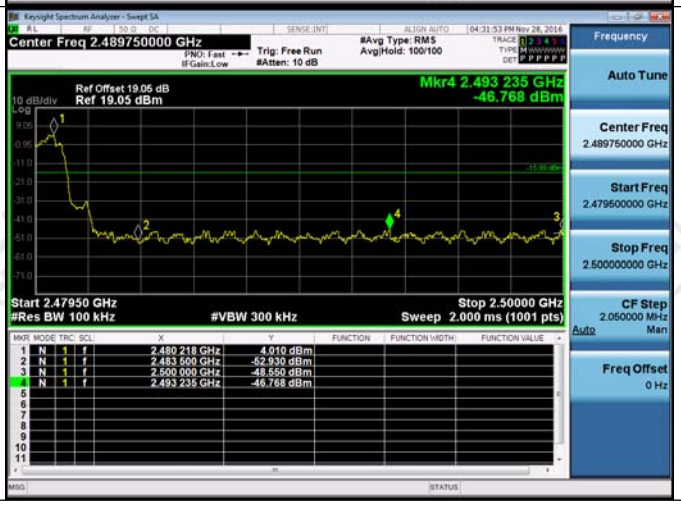
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.018	Off	-60.773	-18.98	PASS
			0.524	On	-52.389	-19.48	PASS
GFSK	HCH	2480	5.829	Off	-31.653	-14.17	PASS
			6.070	On	-45.423	-13.93	PASS
π/4DQPSK	LCH	2402	-2.635	Off	-61.052	-22.64	PASS
			-2.536	On	-56.346	-22.54	PASS
π/4DQPSK	HCH	2480	4.123	Off	-54.336	-15.88	PASS
			2.351	On	-46.679	-17.65	PASS
8DPSK	LCH	2402	-2.743	Off	-60.780	-22.74	PASS
			-2.533	On	-55.639	-22.53	PASS
8DPSK	HCH	2480	4.215	Off	-53.072	-15.79	PASS
			4.010	On	-46.768	-15.99	PASS

Test Graph

Graphs			
GFSK/LCH/No Hop			
GFSK/LCH/Hop			
GFSK/HCH/No Hop			

GFSK/HCH/Hop			
π/4DQPSK/LCH/ No Hop			
π/4DQPSK/LCH/ Hop			

π/4DQPSK/HCH/ No Hop			
π/4DQPSK/HCH/ Hop			
8DPSK/LCH/No Hop			

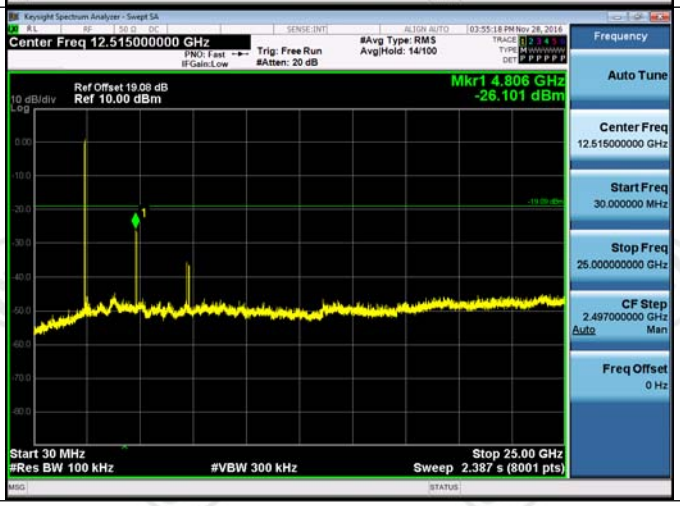
8DPSK/LCH/Hop			
8DPSK/HCH/No Hop			
8DPSK/HCH/Hop			

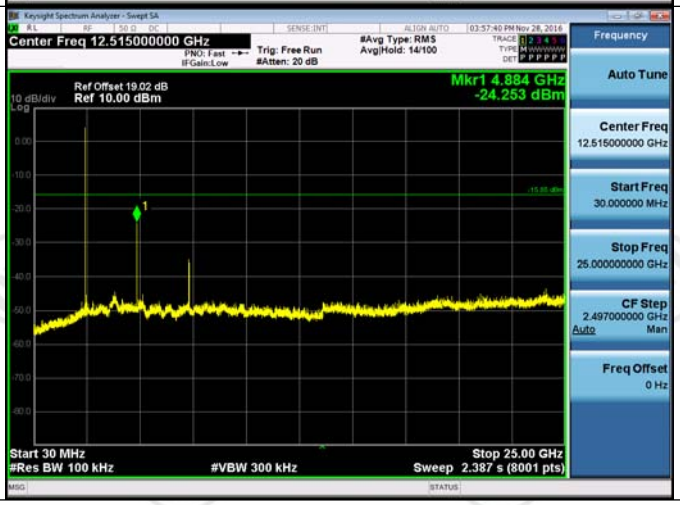
Appendix G): RF Conducted Spurious Emissions

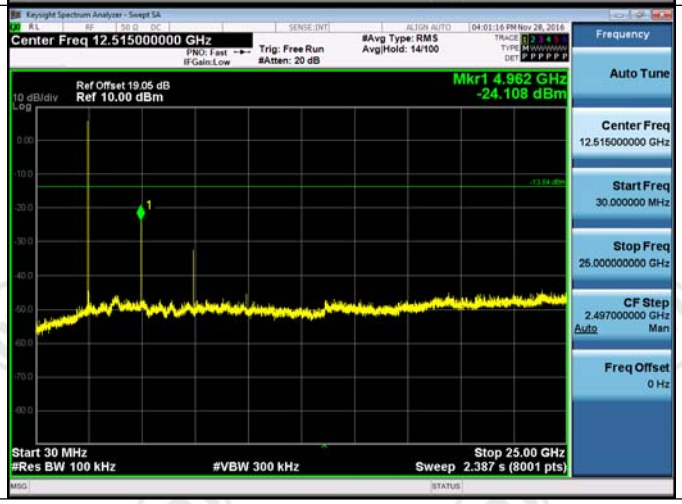
Result Table

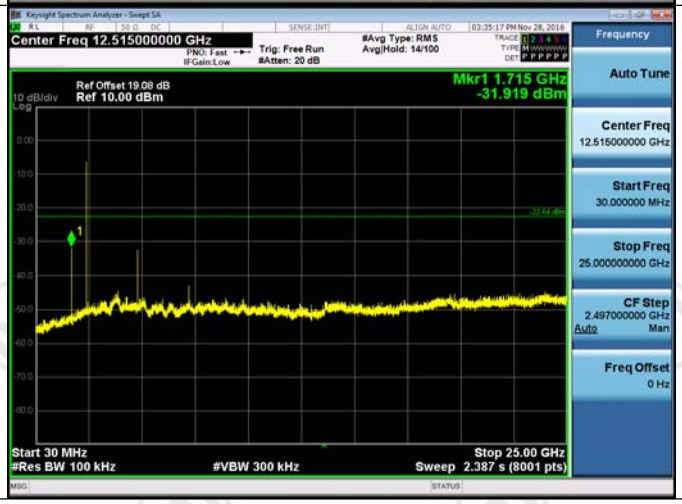
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	0.908	<Limit	PASS
GFSK	MCH	4.148	<Limit	PASS
GFSK	HCH	6.157	<Limit	PASS
π/4DQPSK	LCH	-2.639	<Limit	PASS
π/4DQPSK	MCH	1.332	<Limit	PASS
π/4DQPSK	HCH	4.043	<Limit	PASS
8DPSK	LCH	-2.559	<Limit	PASS
8DPSK	MCH	1.337	<Limit	PASS
8DPSK	HCH	4.121	<Limit	PASS

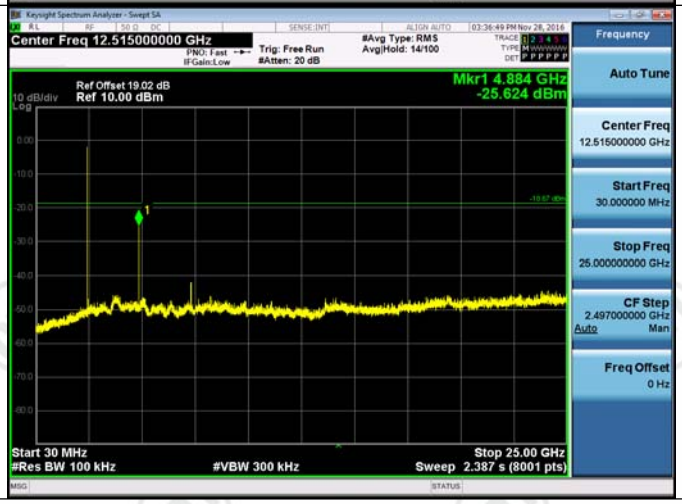
Test Graph

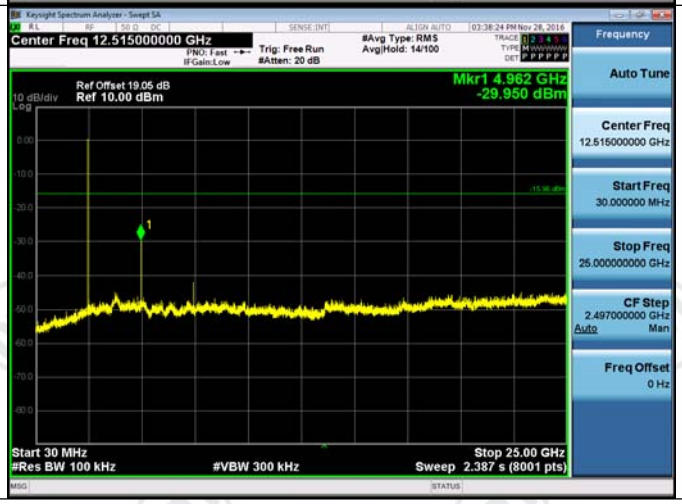
GFSK_LCH_Graphs		
Pref		
Puw		

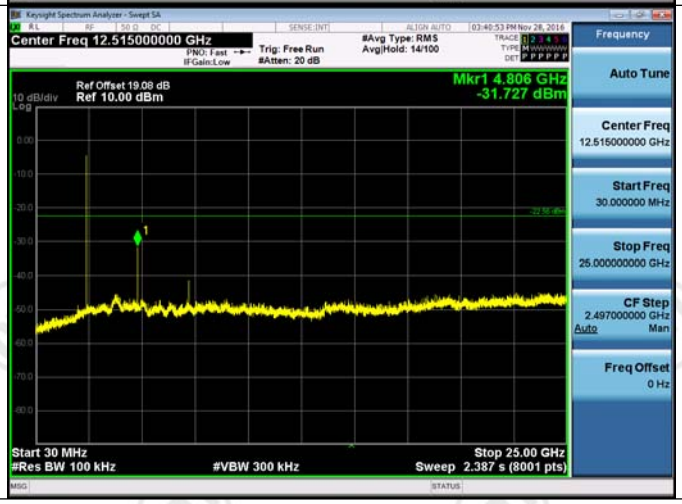
GFSK_MCH_Graphs			
Pref			
Puw			

GFSK_HCH_Graphs			
Pref			
Puw			

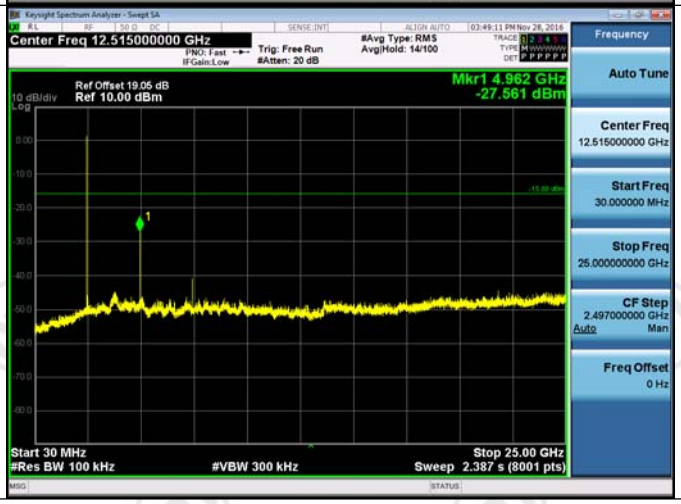
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

π/4DQPSK_MCH_Graphs			
Pref			
Puw			

π/4DQPSK_HCH_Graphs			
Pref			
Puw			

8DPSK_LCH_Graphs			
Pref			
Puw			

8DPSK_MCH_Graphs			
Pref			
Puw			

8DPSK_HCH_Graphs			
Pref			
Puw			

Appendix H): Pseudorandom Frequency Hopping Sequence

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1) requirement:

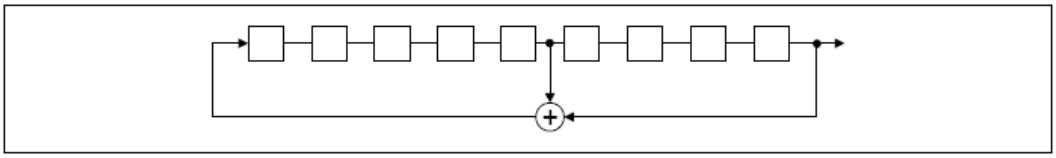
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

EUT Pseudorandom Frequency Hopping Sequence

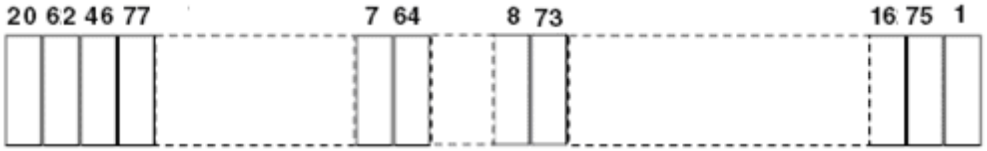
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 2^9 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

Appendix I): Antenna Requirement

15.203 requirement:

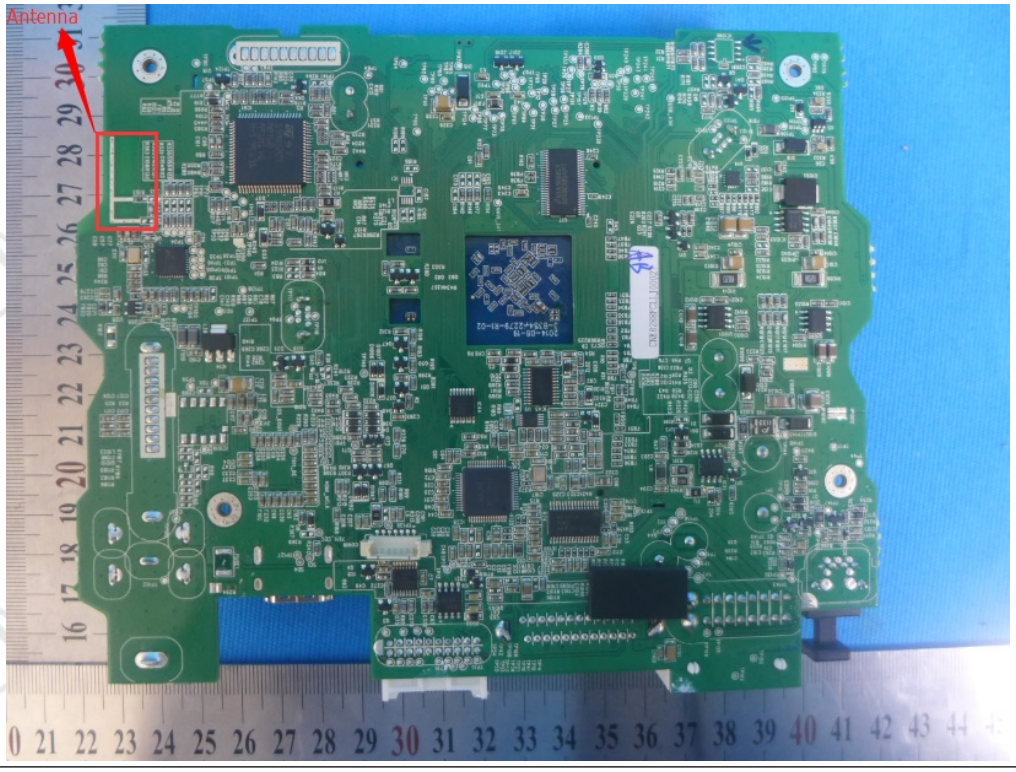
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	

The antenna is PCB Inverted-F Antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.



Appendix J): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).

h. b. Test the EUT in the lowest channel , the Highest channel

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

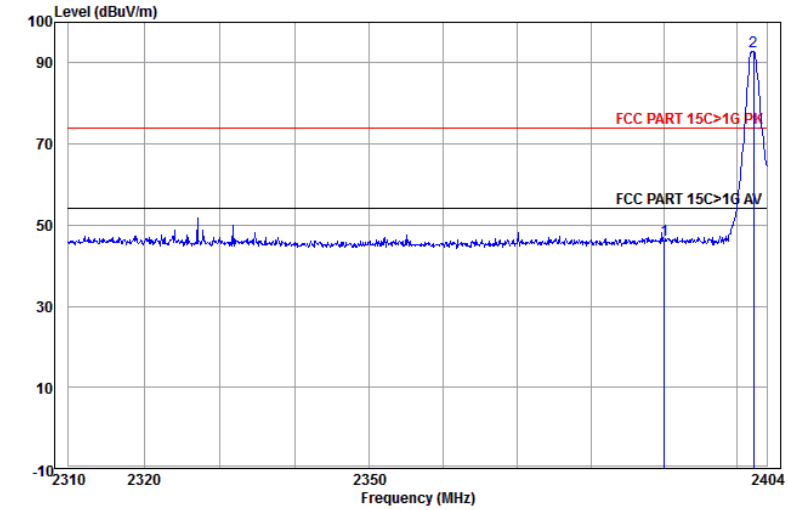
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Limit (dBμV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

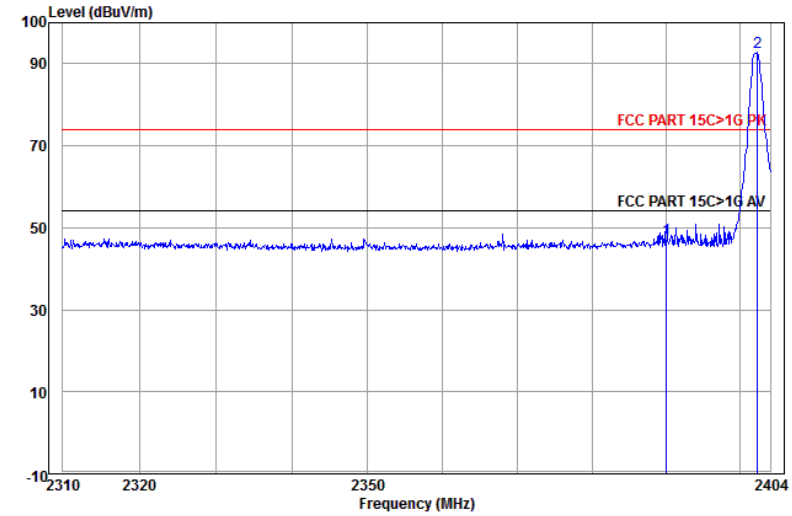
Test plot as follows:

Worse case mode:	GFSK(1-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



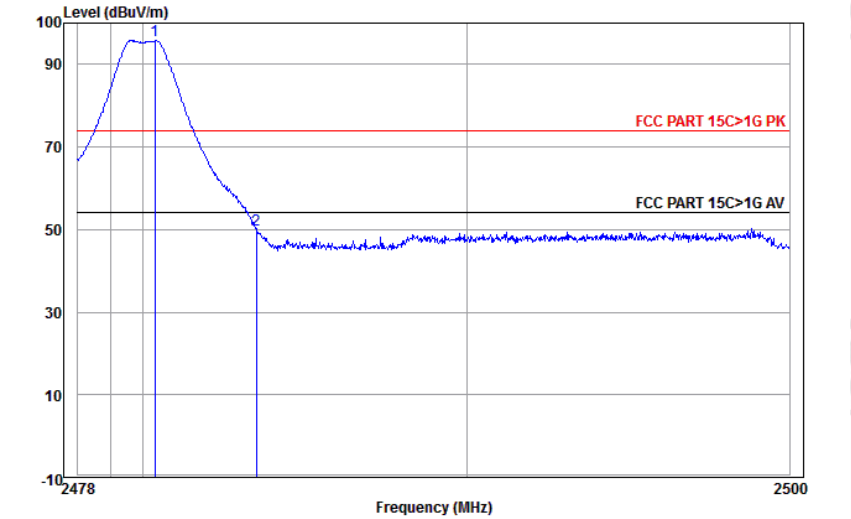
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	43.91	46.33	74.00	-27.67	Horizontal	
2 pp	2402.179	32.56	4.31	34.39	90.35	92.83	74.00	18.83	Horizontal	

Worse case mode:	GFSK(1-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



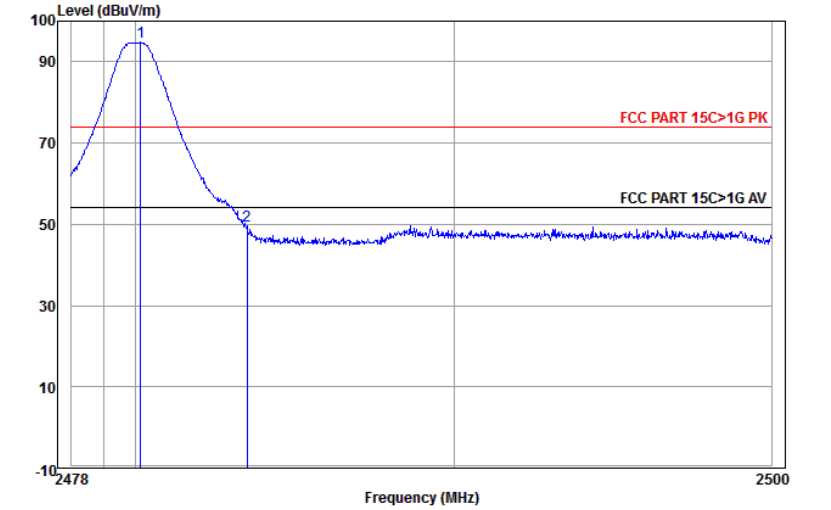
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	44.73	47.15	74.00	-26.85	Vertical	
2 pp	2402.275	32.56	4.31	34.39	90.21	92.69	74.00	18.69	Vertical	

Worse case mode:	GFSK(1-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



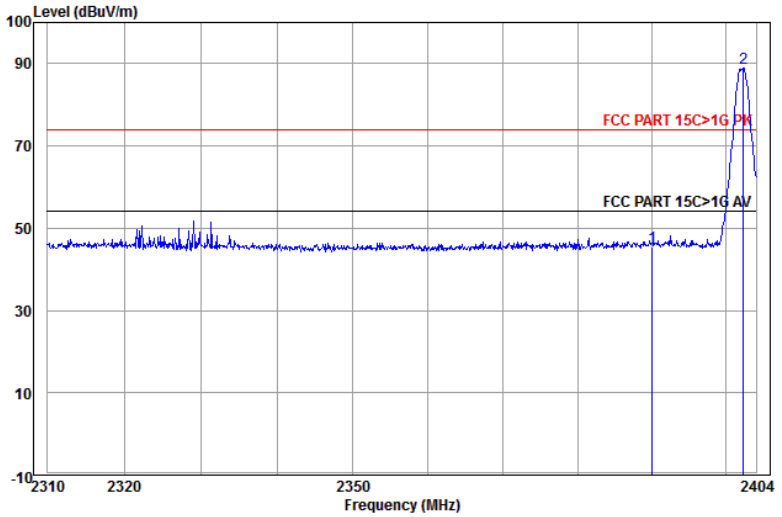
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.367	32.71	4.50	34.41	92.98	95.78	74.00	21.78	Horizontal	
2	2483.500	32.71	4.51	34.41	47.06	49.87	74.00	-24.13	Horizontal	

Worse case mode:	GFSK(1-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



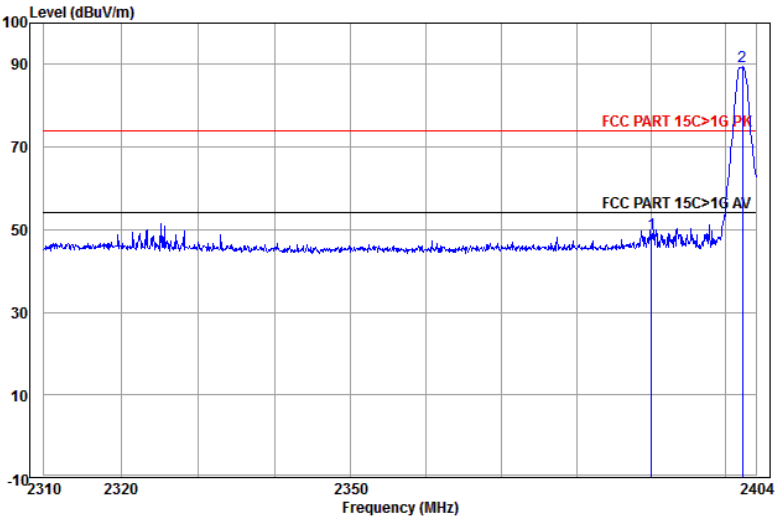
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.169	32.71	4.50	34.41	91.98	94.78	74.00	20.78	Vertical	
2	2483.500	32.71	4.51	34.41	46.76	49.57	74.00	-24.43	Vertical	

Worse case mode:	π/4DQPSK(2-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



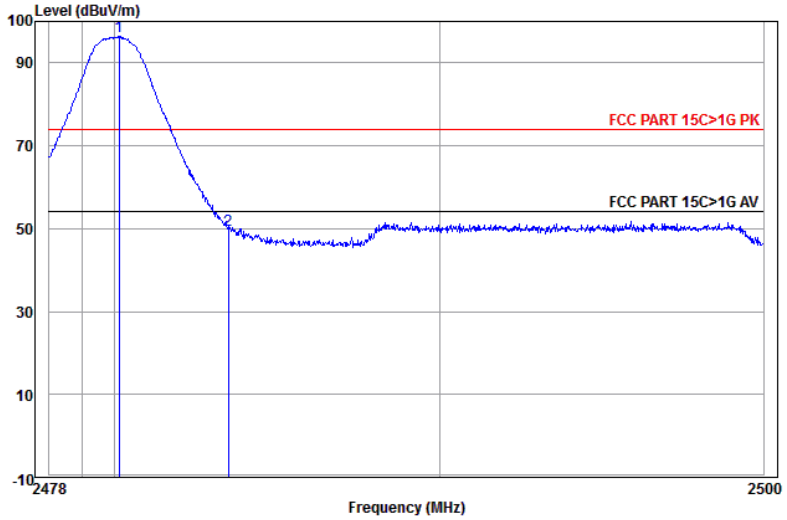
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	42.98	45.40	74.00	-28.60	Horizontal	
2 pp	2402.275	32.56	4.31	34.39	86.39	88.87	74.00	14.87	Horizontal	

Worse case mode:	π/4DQPSK(2-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



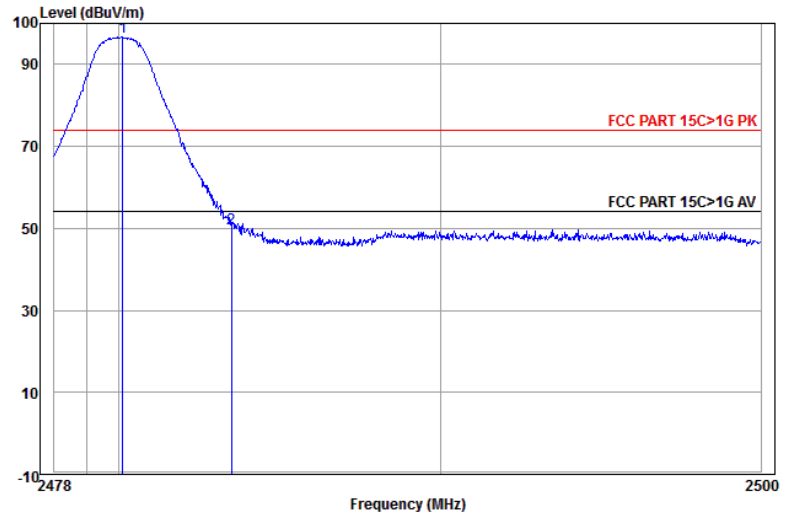
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	46.56	48.98	74.00	-25.02	Vertical	
2 pp	2402.179	32.56	4.31	34.39	86.97	89.45	74.00	15.45	Vertical	

Worse case mode:	π/4DQPSK(2-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



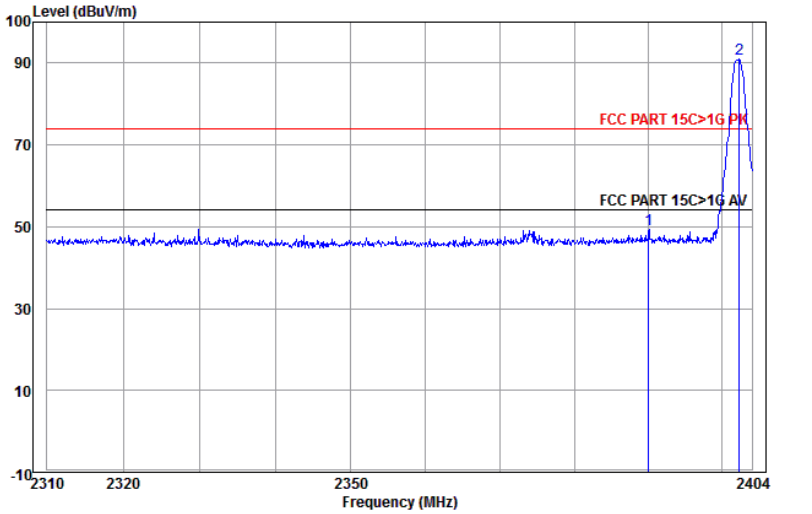
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.147	32.71	4.50	34.41	93.53	96.33	74.00	22.33	Horizontal	
2	2483.500	32.71	4.51	34.41	46.97	49.78	74.00	-24.22	Horizontal	

Worse case mode:	π/4DQPSK(2-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



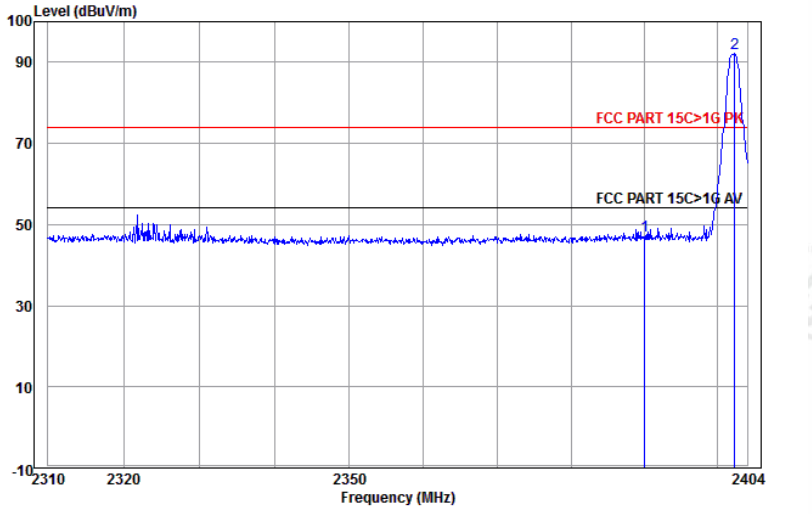
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.125	32.71	4.50	34.41	93.79	96.59	74.00	22.59	Vertical	
2	2483.500	32.71	4.51	34.41	47.16	49.97	74.00	-24.03	Vertical	

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



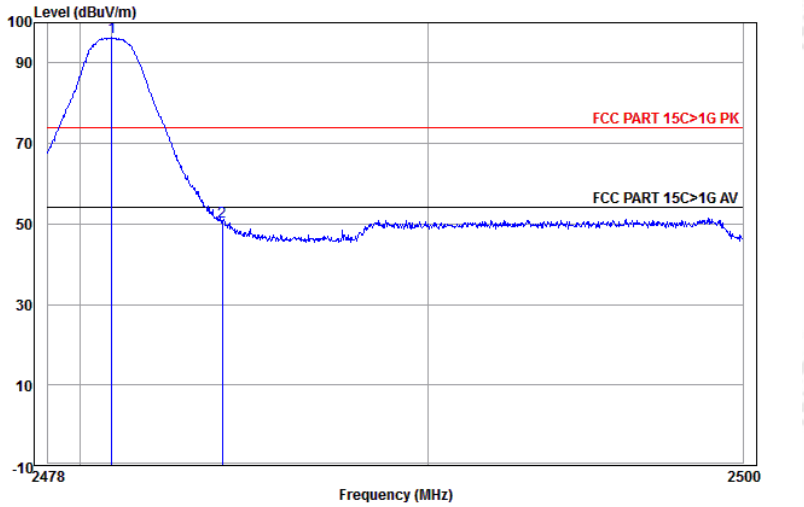
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	46.78	49.20	74.00	-24.80	Horizontal	
2 pp	2402.275	32.56	4.31	34.39	88.40	90.88	74.00	16.88	Horizontal	

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



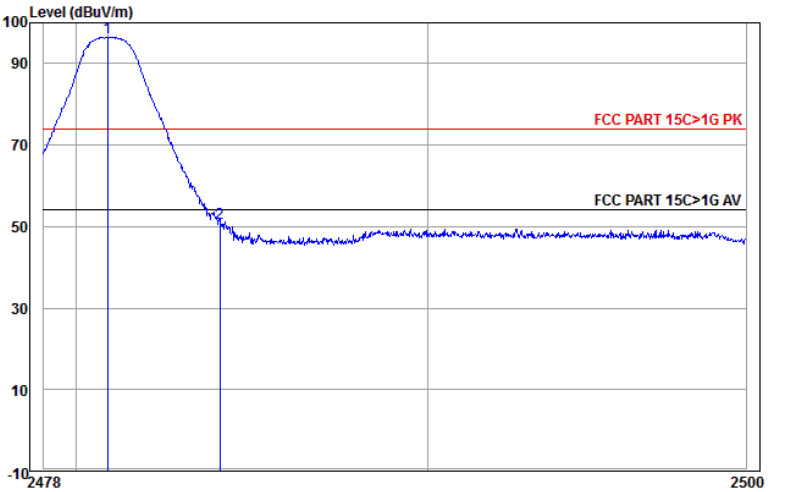
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	44.74	47.16	74.00	-26.84	Vertical	
2 pp	2402.275	32.56	4.31	34.39	89.67	92.15	74.00	18.15	Vertical	

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.016	32.71	4.50	34.41	93.51	96.31	74.00	22.31	Horizontal	
2	2483.500	32.71	4.51	34.41	47.77	50.58	74.00	-23.42	Horizontal	

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2479.994	32.71	4.50	34.41	93.70	96.50	74.00	22.50	Vertical	
2	2483.500	32.71	4.51	34.41	48.04	50.85	74.00	-23.15	Vertical	

Note:
1) Through Pre-scan transmitter mode with all kind of modulation and all kind of data type, find the 1-DH5 of data type is the worse case of GFSK modulation type, the 2-DH5 of data type is the worse case of π/4DQPSK modulation type, the 3-DH5 of data type is the worse case of 8DPSKmodulation type in transmitter mode.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading -Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix K): Radiated Spurious Emissions

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

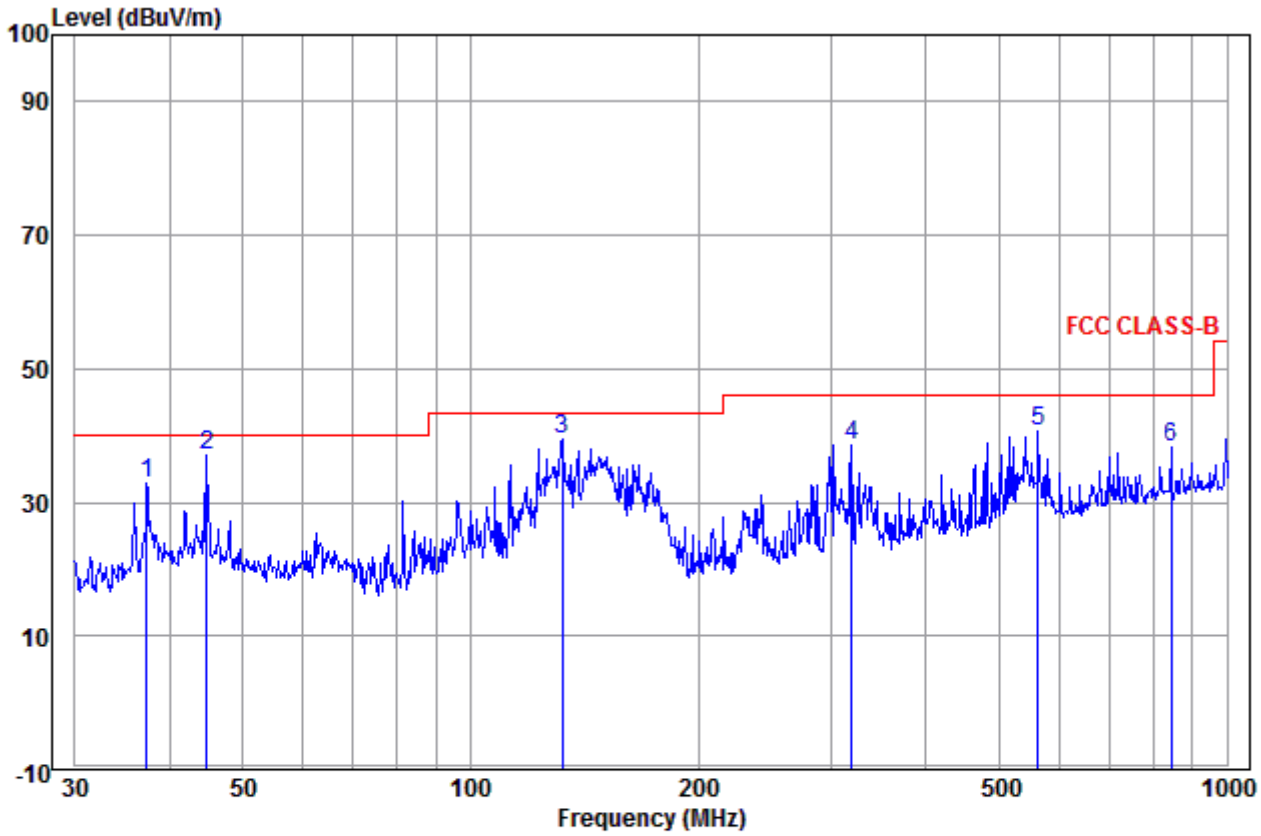
Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Radiated Spurious Emissions test Data:

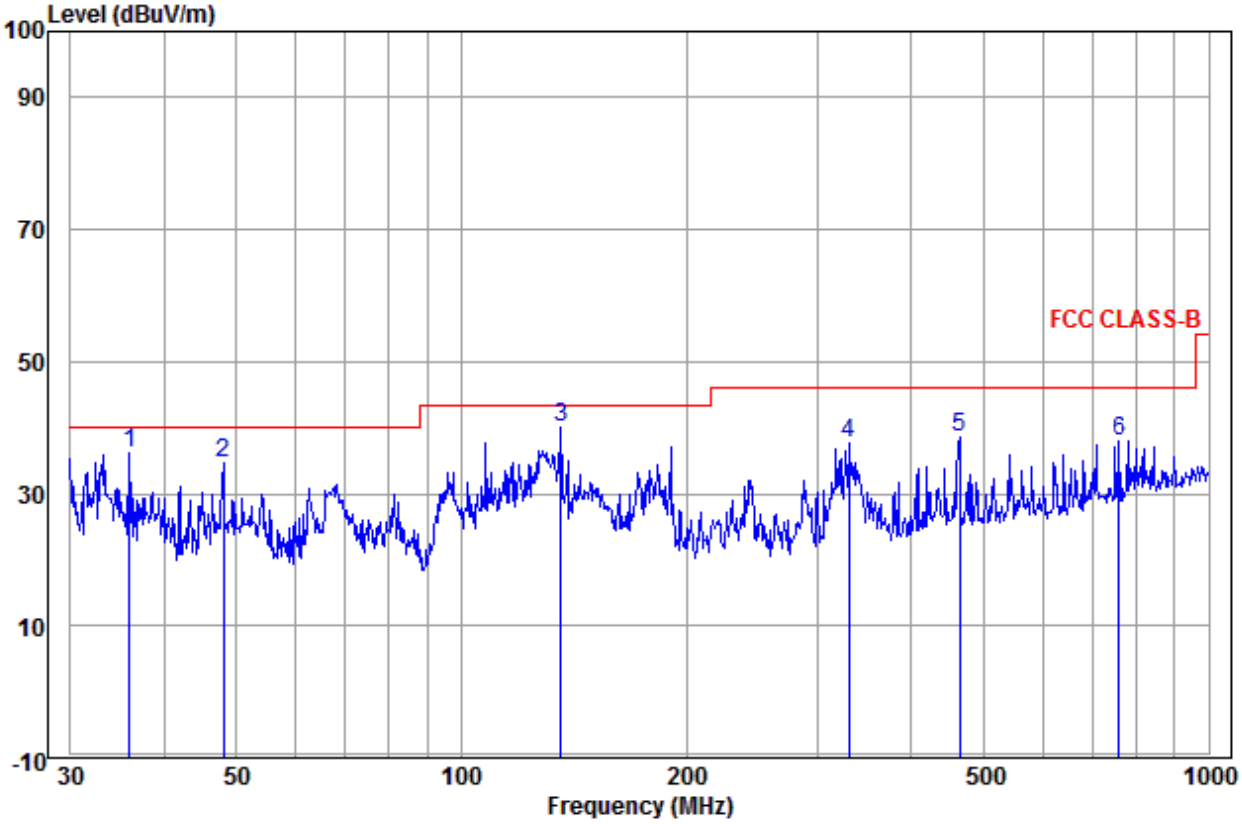
Radiated Emission below 1GHz

30MHz~1GHz (QP)		
Test mode:	Transmitting	Horizontal



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	37.285	13.78	0.69	18.33	32.80	40.00	-7.20	Horizontal	
2 pp	44.743	14.65	0.97	21.34	36.96	40.00	-3.04	Horizontal	
3	132.221	10.79	1.58	27.09	39.46	43.50	-4.04	Horizontal	
4	318.817	14.01	2.51	22.06	38.58	46.00	-7.42	Horizontal	
5	562.662	18.65	3.29	18.82	40.76	46.00	-5.24	Horizontal	
6	845.088	21.87	4.15	12.13	38.15	46.00	-7.85	Horizontal	

Test mode:	Transmitting	Vertical



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	36.001	13.58	0.77	21.73	36.08	40.00	-3.92	Vertical	
2	47.994	14.93	1.24	18.38	34.55	40.00	-5.45	Vertical	
3 pp	135.982	10.55	1.58	28.01	40.14	43.50	-3.36	Vertical	
4	330.195	14.31	2.59	20.78	37.68	46.00	-8.32	Vertical	
5	463.970	17.48	3.03	17.99	38.50	46.00	-7.50	Vertical	
6	758.041	21.10	3.98	12.90	37.98	46.00	-8.02	Vertical	

Transmitter Emission above 1GHz

Worse case mode:		GFSK(1-DH5)		Test channel:		Lowest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1115.673	30.02	2.41	35.06	45.94	43.31	74.00	-30.69	Pass	H
1333.284	30.53	2.66	34.83	48.04	46.40	74.00	-27.60	Pass	H
1668.044	31.18	2.98	34.54	45.57	45.19	74.00	-28.81	Pass	H
4804.000	34.69	5.11	34.35	44.22	49.67	74.00	-24.33	Pass	H
7206.000	36.42	6.66	34.90	37.59	45.77	74.00	-28.23	Pass	H
9608.000	37.88	7.73	35.08	36.26	46.79	74.00	-27.21	Pass	H
1057.599	29.86	2.34	35.13	49.25	46.32	74.00	-27.68	Pass	V
1222.743	30.28	2.54	34.94	47.46	45.34	74.00	-28.66	Pass	V
1617.862	31.09	2.93	34.58	46.01	45.45	74.00	-28.55	Pass	V
4804.000	34.69	5.11	34.35	40.23	45.68	74.00	-28.32	Pass	V
7206.000	36.42	6.66	34.90	39.42	47.60	74.00	-26.40	Pass	V
9608.000	37.88	7.73	35.08	38.65	49.18	74.00	-24.82	Pass	V

Worse case mode:		GFSK(1-DH5)		Test channel:		Middle	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1112.837	30.01	2.41	35.06	47.10	44.46	74.00	-29.54	Pass	H
1326.513	30.52	2.66	34.83	46.79	45.14	74.00	-28.86	Pass	H
2076.259	31.88	3.45	34.32	45.12	46.13	74.00	-27.87	Pass	H
4882.000	34.85	5.08	34.33	40.98	46.58	74.00	-27.42	Pass	H
7323.000	36.43	6.77	34.90	37.39	45.69	74.00	-28.31	Pass	H
9764.000	38.05	7.60	35.05	37.52	48.12	74.00	-25.88	Pass	H
1195.049	30.21	2.51	34.97	48.42	46.17	74.00	-27.83	Pass	V
1476.193	30.82	2.81	34.69	44.52	43.46	74.00	-30.54	Pass	V
1918.716	31.58	3.17	34.35	44.24	44.64	74.00	-29.36	Pass	V
4882.000	34.85	5.08	34.33	39.97	45.57	74.00	-28.43	Pass	V
7357.326	36.44	6.80	34.90	37.52	45.86	74.00	-28.14	Pass	V
9764.000	38.05	7.60	35.05	36.20	46.80	74.00	-27.20	Pass	V

Worse case mode:		GFSK(1-DH5)		Test channel:		Highest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1210.356	30.25	2.53	34.95	47.19	45.02	74.00	-28.98	Pass	H
1655.354	31.15	2.97	34.55	45.69	45.26	74.00	-28.74	Pass	H
2081.550	31.89	3.47	34.32	44.74	45.78	74.00	-28.22	Pass	H
4960.000	35.02	5.05	34.31	39.73	45.49	74.00	-28.51	Pass	H
7440.000	36.45	6.88	34.90	41.02	49.45	74.00	-24.55	Pass	H
9920.000	38.22	7.47	35.02	37.46	48.13	74.00	-25.87	Pass	H
1057.599	29.86	2.34	35.13	48.41	45.48	74.00	-28.52	Pass	V
1276.818	30.41	2.60	34.88	47.32	45.45	74.00	-28.55	Pass	V
1958.189	31.64	3.20	34.33	44.81	45.32	74.00	-28.68	Pass	V
4960.000	35.02	5.05	34.31	44.29	50.05	74.00	-23.95	Pass	V
7440.000	36.45	6.88	34.90	40.85	49.28	74.00	-24.72	Pass	V
9920.000	38.22	7.47	35.02	37.38	48.05	74.00	-25.95	Pass	V

Worse case mode:		π/4DQPSK(2-DH5)		Test channel:		Lowest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1057.599	29.86	2.34	35.13	47.18	44.25	74.00	-29.75	Pass	H
1399.353	30.67	2.73	34.76	45.82	44.46	74.00	-29.54	Pass	H
1828.125	31.44	3.10	34.42	45.19	45.31	74.00	-28.69	Pass	H
4804.000	34.69	5.11	34.35	43.53	48.98	74.00	-25.02	Pass	H
7206.000	36.42	6.66	34.90	41.75	49.93	74.00	-24.07	Pass	H
9608.000	37.88	7.73	35.08	37.69	48.22	74.00	-25.78	Pass	H
1057.599	29.86	2.34	35.13	48.56	45.63	74.00	-28.37	Pass	V
1273.572	30.40	2.60	34.89	46.51	44.62	74.00	-29.38	Pass	V
1899.278	31.55	3.16	34.37	46.68	47.02	74.00	-26.98	Pass	V
4804.000	34.69	5.11	34.35	43.38	48.83	74.00	-25.17	Pass	V
7206.000	36.42	6.66	34.90	40.95	49.13	74.00	-24.87	Pass	V
9608.000	37.88	7.73	35.08	38.34	48.87	74.00	-25.13	Pass	V

Worse case mode:		π/4DQPSK(2-DH5)		Test channel:		Middle	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1135.731	30.07	2.44	35.03	46.37	43.85	74.00	-30.15	Pass	H
1329.894	30.52	2.66	34.83	47.75	46.10	74.00	-27.90	Pass	H
2024.074	31.76	3.30	34.31	44.30	45.05	74.00	-28.95	Pass	H
4882.000	34.85	5.08	34.33	45.16	50.76	74.00	-23.24	Pass	H
7323.000	36.43	6.77	34.90	41.94	50.24	74.00	-23.76	Pass	H
9764.000	38.05	7.60	35.05	38.34	48.94	74.00	-25.06	Pass	H
1195.049	30.21	2.51	34.97	46.87	44.62	74.00	-29.38	Pass	V
1561.221	30.99	2.88	34.62	45.54	44.79	74.00	-29.21	Pass	V
1993.395	31.69	3.23	34.30	45.27	45.89	74.00	-28.11	Pass	V
4882.000	34.85	5.08	34.33	42.25	47.85	74.00	-26.15	Pass	V
7323.000	36.43	6.77	34.90	41.74	50.04	74.00	-23.96	Pass	V
9764.000	38.05	7.60	35.05	37.13	47.73	74.00	-26.27	Pass	V

Worse case mode:		π/4DQPSK(2-DH5)		Test channel:		Highest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1079.357	29.92	2.37	35.10	47.39	44.58	74.00	-29.42	Pass	H
1329.894	30.52	2.66	34.83	45.48	43.83	74.00	-30.17	Pass	H
1988.327	31.68	3.22	34.31	45.56	46.15	74.00	-27.85	Pass	H
4960.000	35.02	5.05	34.31	42.30	48.06	74.00	-25.94	Pass	H
7440.000	36.45	6.88	34.90	41.72	50.15	74.00	-23.85	Pass	H
9920.000	38.22	7.47	35.02	38.71	49.38	74.00	-24.62	Pass	H
1057.599	29.86	2.34	35.13	48.54	45.61	74.00	-28.39	Pass	V
1343.505	30.55	2.67	34.82	45.25	43.65	74.00	-30.35	Pass	V
2065.715	31.85	3.42	34.32	44.15	45.10	74.00	-28.90	Pass	V
4960.000	35.02	5.05	34.31	42.78	48.54	74.00	-25.46	Pass	V
7440.000	36.45	6.88	34.90	41.11	49.54	74.00	-24.46	Pass	V
9920.000	38.22	7.47	35.02	38.72	49.39	74.00	-24.61	Pass	V

Worse case mode:		8DPSK(3-DH5)		Test channel:		Lowest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1110.008	30.00	2.41	35.06	48.43	45.78	74.00	-28.22	Pass	H
1333.284	30.53	2.66	34.83	47.80	46.16	74.00	-27.84	Pass	H
1918.716	31.58	3.17	34.35	45.12	45.52	74.00	-28.48	Pass	H
4804.000	34.69	5.11	34.35	43.43	48.88	74.00	-25.12	Pass	H
7206.000	36.42	6.66	34.90	41.93	50.11	74.00	-23.89	Pass	H
9608.000	37.88	7.73	35.08	39.83	50.36	74.00	-23.64	Pass	H
1060.295	29.87	2.34	35.12	49.26	46.35	74.00	-27.65	Pass	V
1222.743	30.28	2.54	34.94	47.59	45.47	74.00	-28.53	Pass	V
4804.000	34.69	5.11	34.35	40.78	46.23	74.00	-27.77	Pass	V
6017.064	35.91	7.41	34.31	40.89	49.90	74.00	-24.10	Pass	V
7206.000	36.42	6.66	34.90	42.82	51.00	74.00	-23.00	Pass	V
9608.000	37.88	7.73	35.08	38.55	49.08	74.00	-24.92	Pass	V

Worse case mode:		8DPSK(3-DH5)		Test channel:		Middle	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1095.969	29.96	2.39	35.08	48.56	45.83	74.00	-28.17	Pass	H
1378.143	30.63	2.71	34.78	46.12	44.68	74.00	-29.32	Pass	H
1823.477	31.43	3.10	34.42	47.28	47.39	74.00	-26.61	Pass	H
4882.000	34.85	5.08	34.33	43.90	49.50	74.00	-24.50	Pass	H
7323.000	36.43	6.77	34.90	41.71	50.01	74.00	-23.99	Pass	H
9764.000	38.05	7.60	35.05	37.85	48.45	74.00	-25.55	Pass	H
1060.295	29.87	2.34	35.12	48.79	45.88	74.00	-28.12	Pass	V
1487.509	30.85	2.82	34.68	47.10	46.09	74.00	-27.91	Pass	V
1894.450	31.54	3.15	34.37	50.25	50.57	74.00	-23.43	Pass	V
4882.000	34.85	5.08	34.33	41.28	46.88	74.00	-27.12	Pass	V
7323.000	36.43	6.77	34.90	42.07	50.37	74.00	-23.63	Pass	V
9764.000	38.05	7.60	35.05	36.58	47.18	74.00	-26.82	Pass	V

Worse case mode:		8DPSK(3-DH5)		Test channel:		Highest	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final Test Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1101.563	29.98	2.40	35.07	46.61	43.92	74.00	-30.08	Pass	H
1385.177	30.64	2.72	34.78	44.81	43.39	74.00	-30.61	Pass	H
1561.221	30.99	2.88	34.62	45.15	44.40	74.00	-29.60	Pass	H
4960.000	35.02	5.05	34.31	39.38	45.14	74.00	-28.86	Pass	H
7440.000	36.45	6.88	34.90	39.34	47.77	74.00	-26.23	Pass	H
9920.000	38.22	7.47	35.02	38.09	48.76	74.00	-25.24	Pass	H
1195.049	30.21	2.51	34.97	48.31	46.06	74.00	-27.94	Pass	V
1498.912	30.87	2.83	34.67	46.08	45.11	74.00	-28.89	Pass	V
1846.834	31.47	3.12	34.40	45.29	45.48	74.00	-28.52	Pass	V
4960.000	35.02	5.05	34.31	43.28	49.04	74.00	-24.96	Pass	V
7440.000	36.45	6.88	34.90	41.85	50.28	74.00	-23.72	Pass	V
9920.000	38.22	7.47	35.02	37.52	48.19	74.00	-25.81	Pass	V

Note:

1) Pre-scan transmitting mode with all kind of modulation and all kind of data type, find the 1-DH5 of data type is the worse case of GFSK modulation type, the 2-DH5 of data type is the worse case of π/4DQPSK modulation type, the 3-DH5 of data type is the worse case of 8DPSKmodulation type in transmitter mode.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

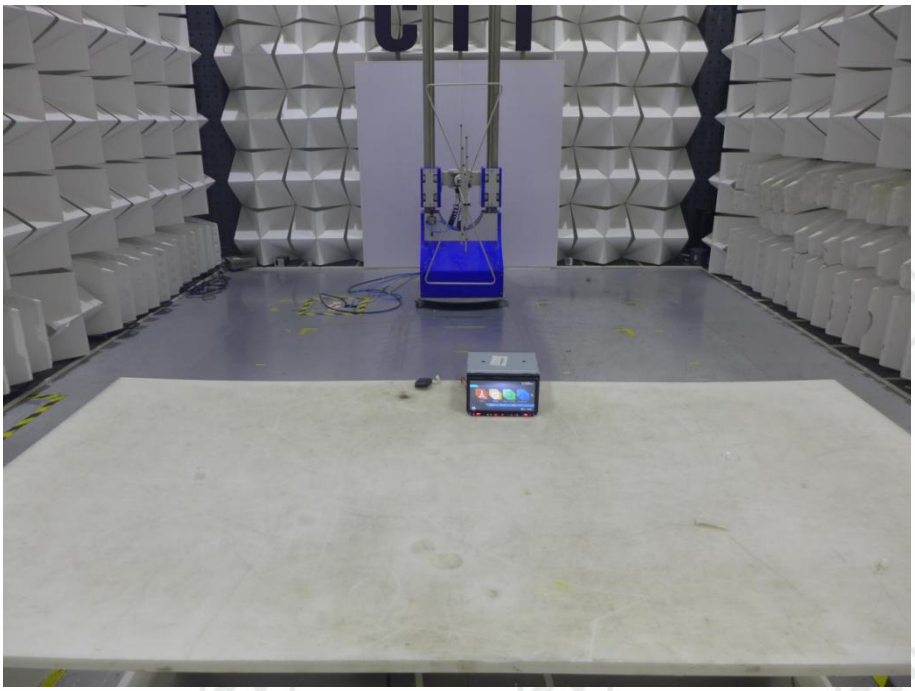
3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

4) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specifi ed above by more than 20 dB under any condition of modulation. So, only the peak values are measured.

PHOTOGRAPHS OF TEST SETUP

Test Model No.: NX807

Radiated spurious emission Test Setup-1(Below 30MHz)



Radiated spurious emission Test Setup-2(30MHz-1GHz)

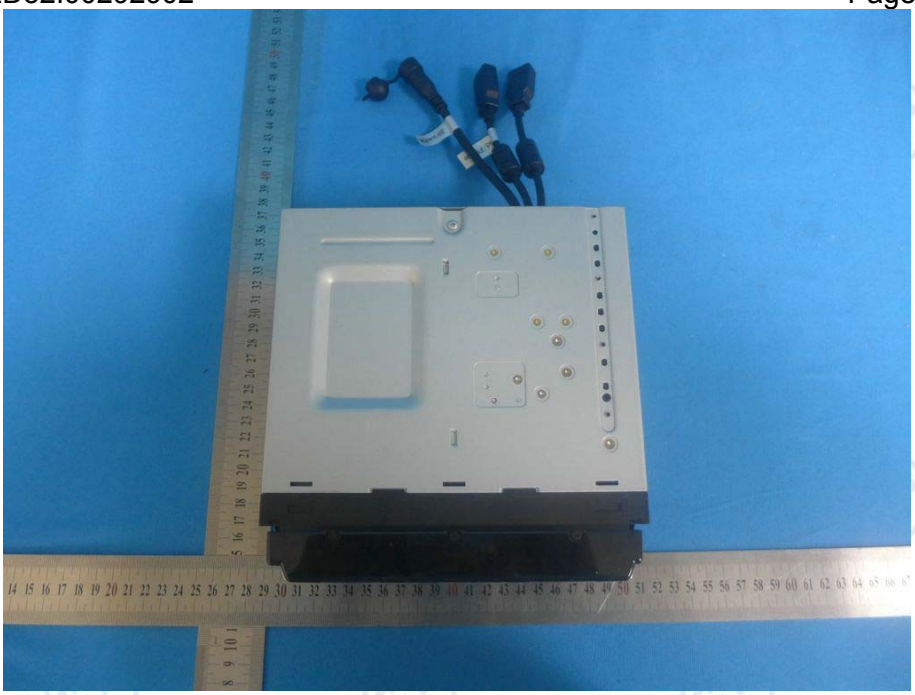
Radiated spurious emission Test Setup-3(Above 1GHz)

PHOTOGRAPHS OF EUT Constructional Details

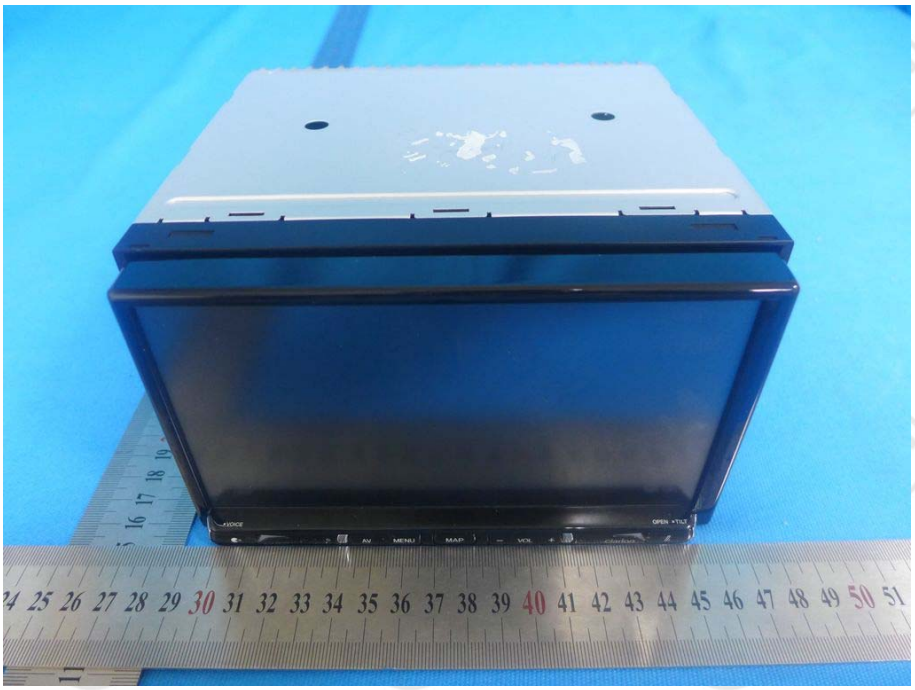
Test Model No.: NX807

View of Product-1

View of Product-2

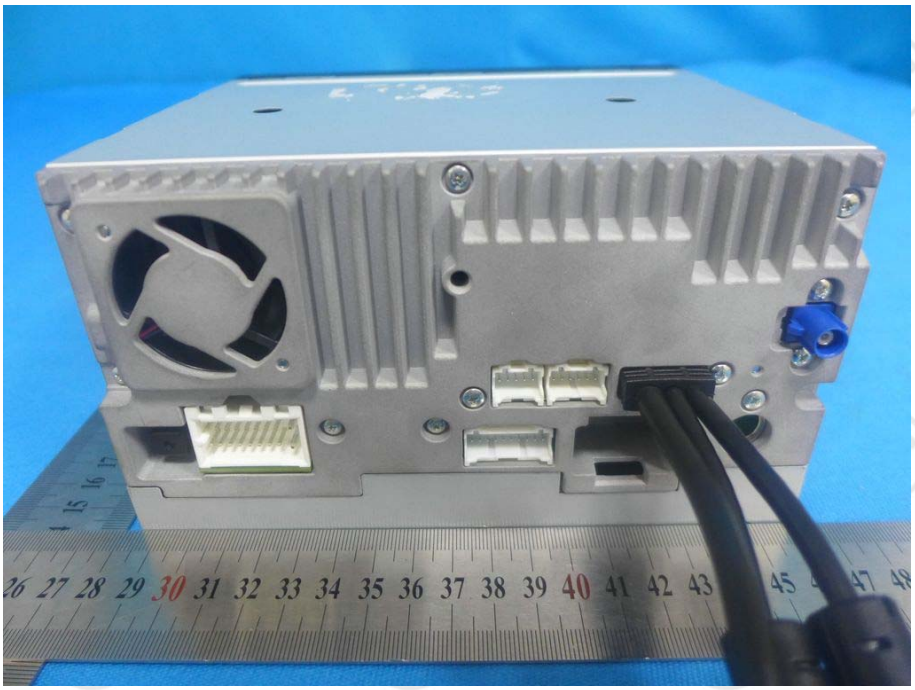


View of Product-3

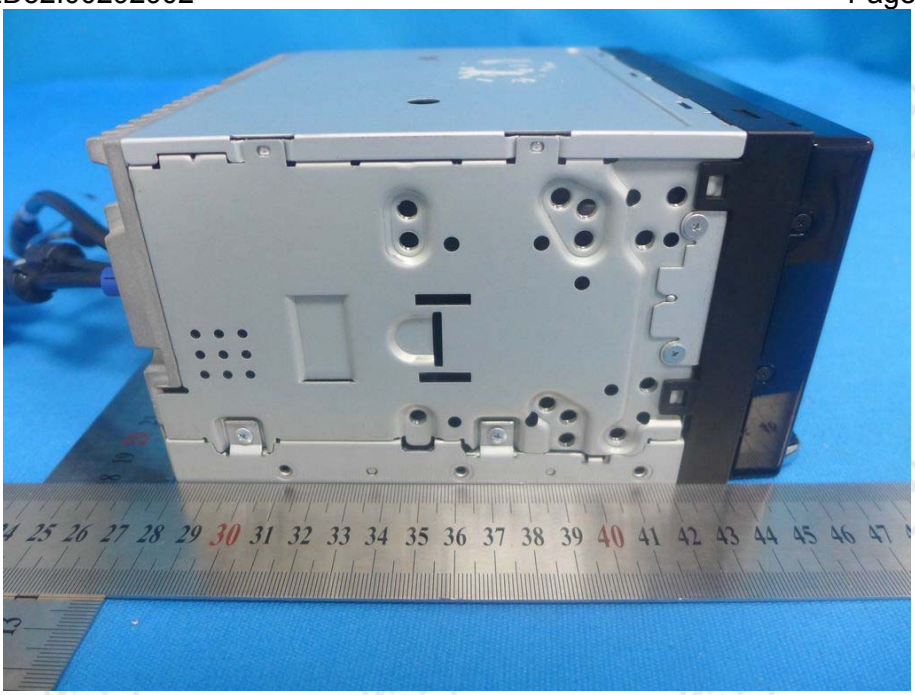


View of Product-4

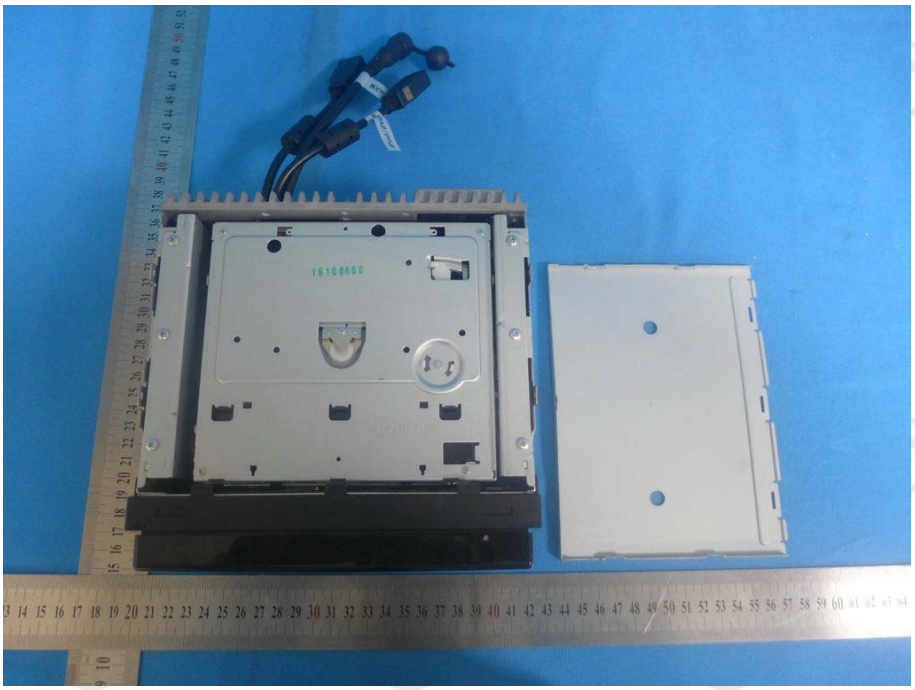
View of Product-5



View of Product-6



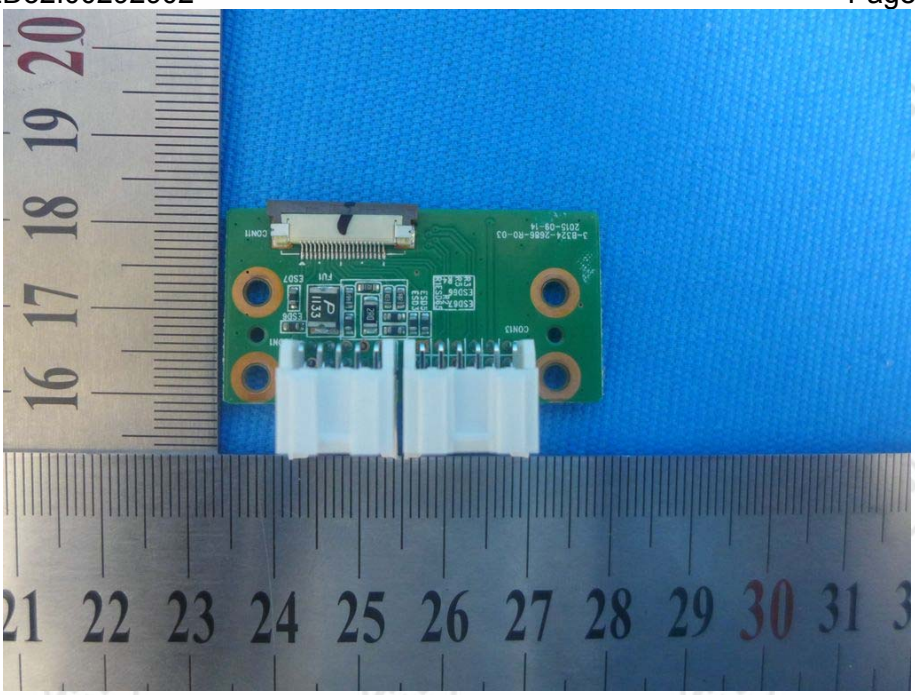
View of Product-7



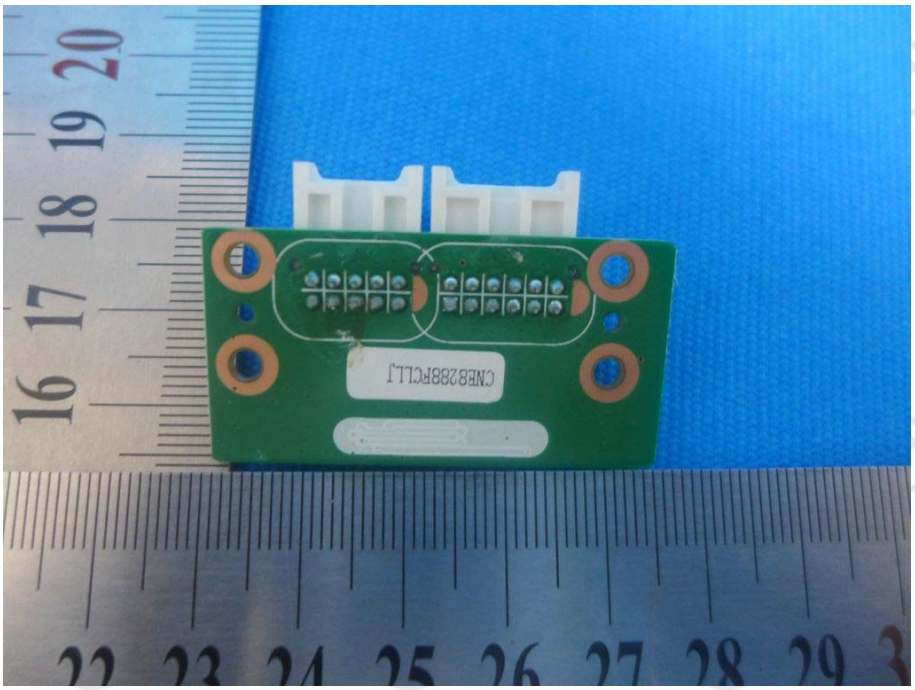
View of Product-8

View of Product-9

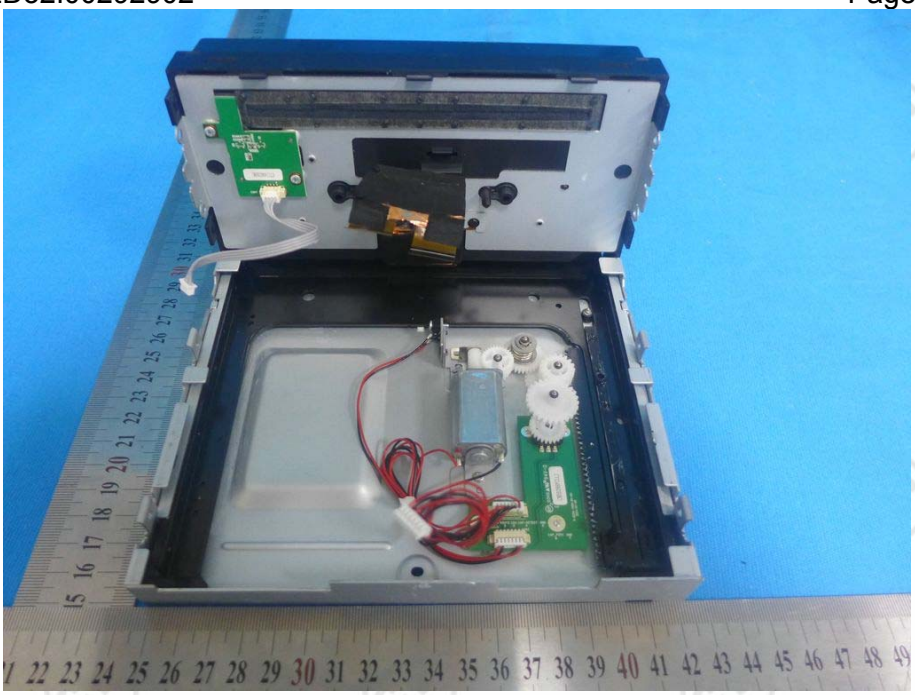
View of Product-10



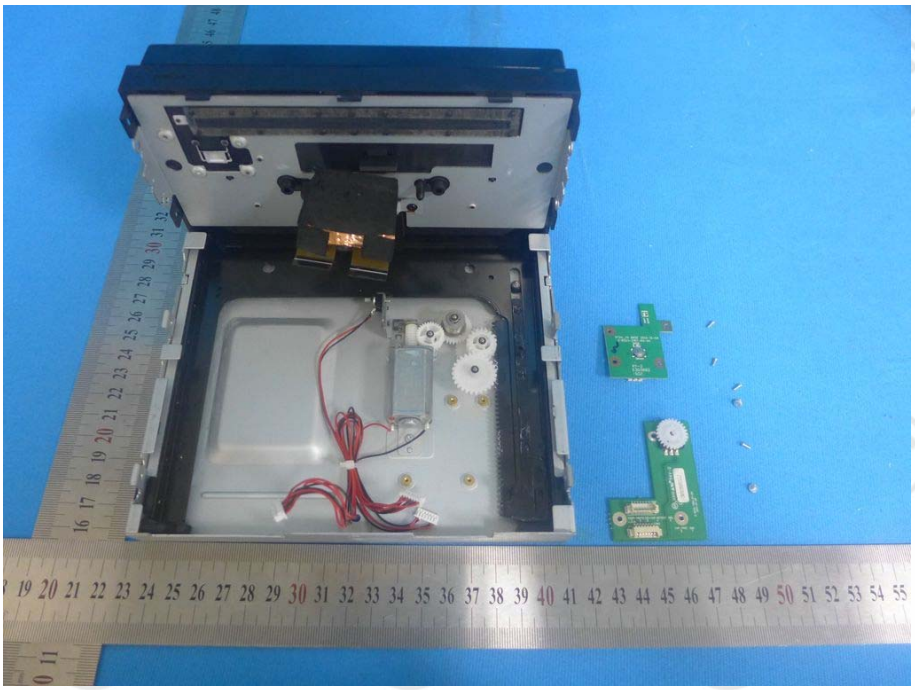
View of Product-11



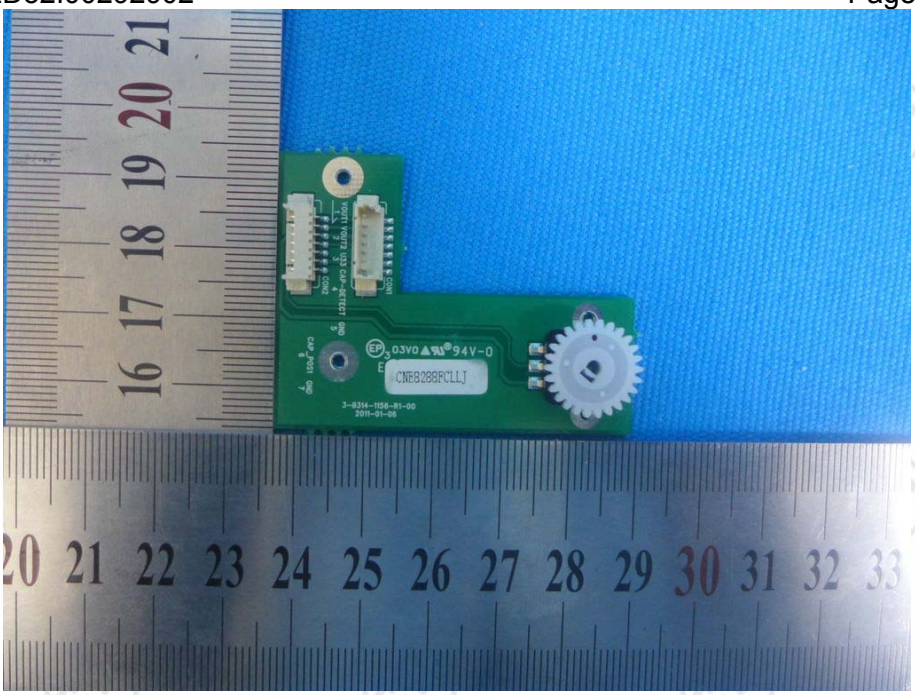
View of Product-12



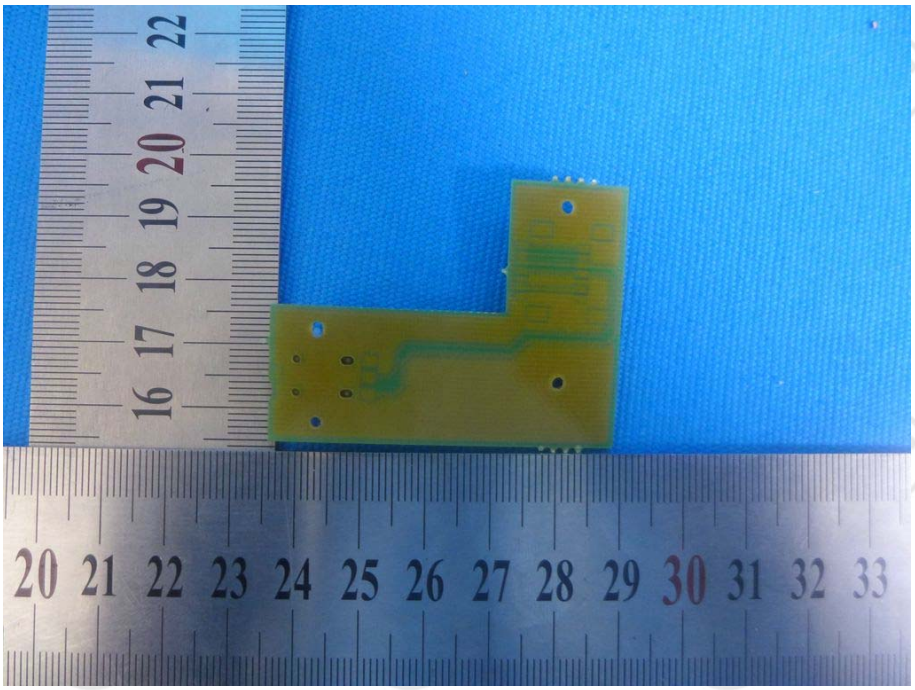
View of Product-13



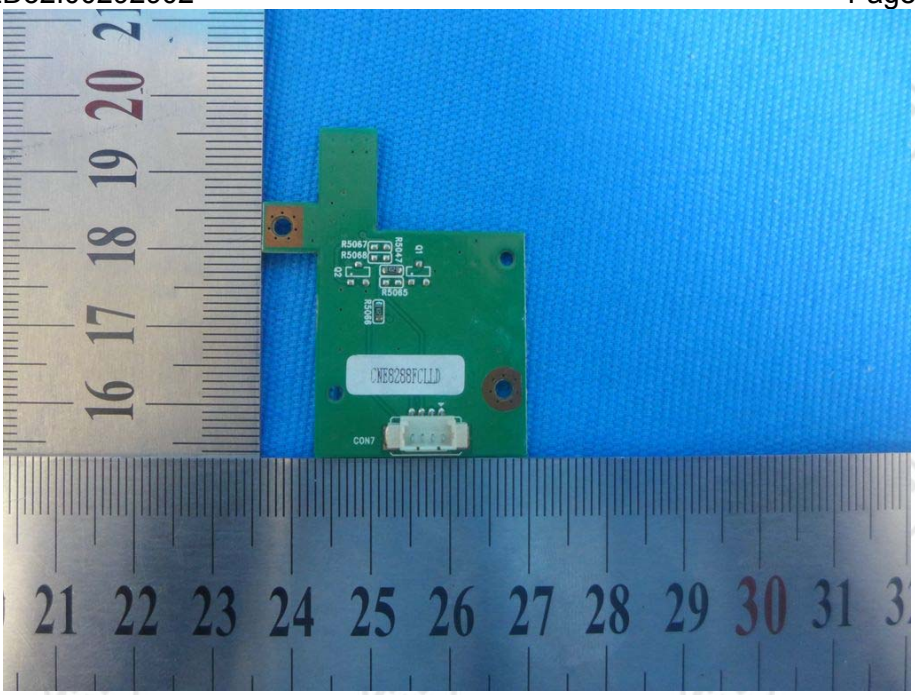
View of Product-14



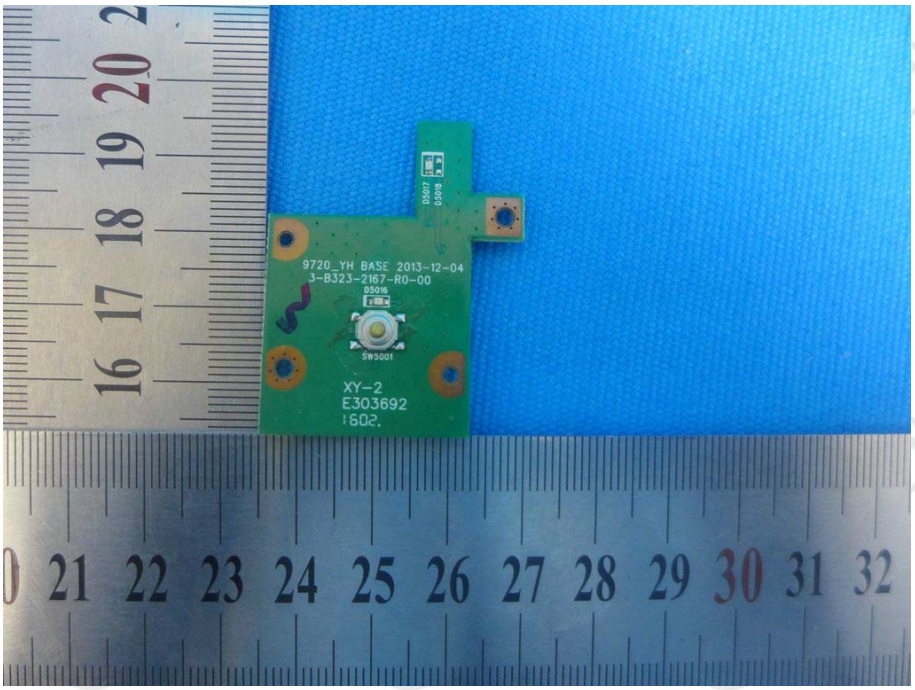
View of Product-15



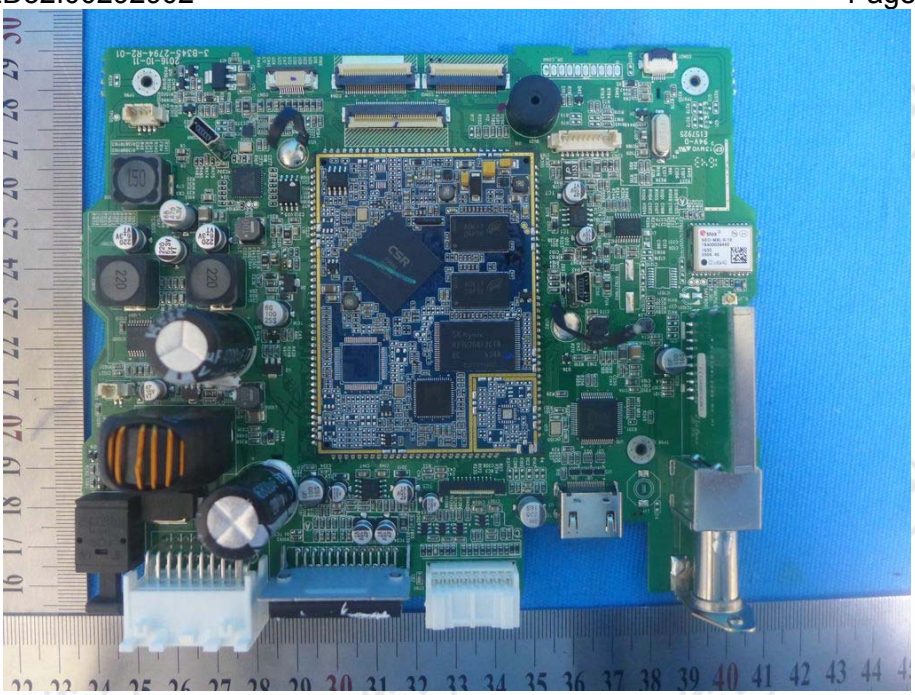
View of Product-16



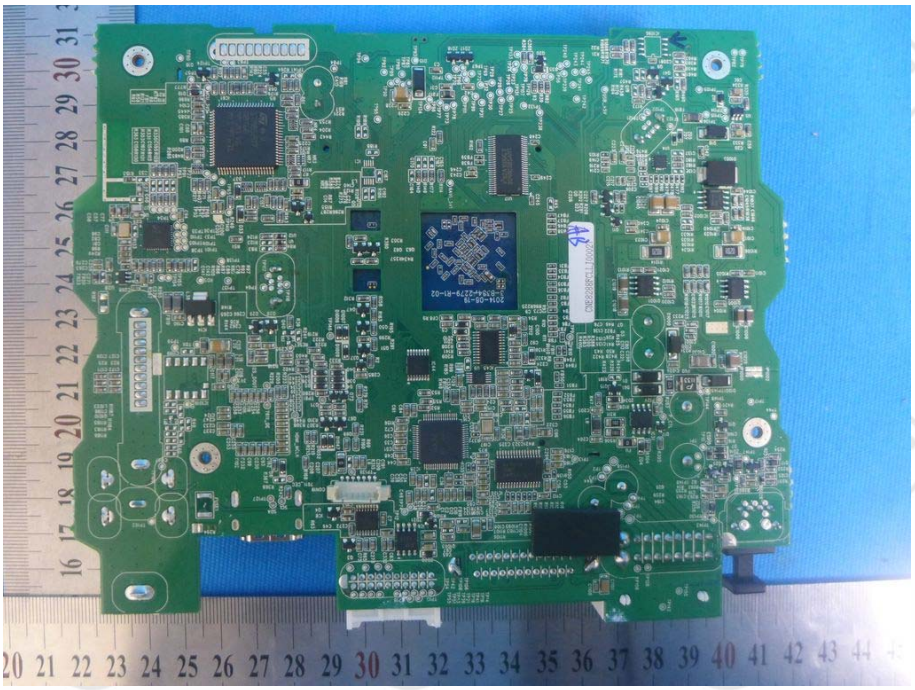
View of Product-17



View of Product-18

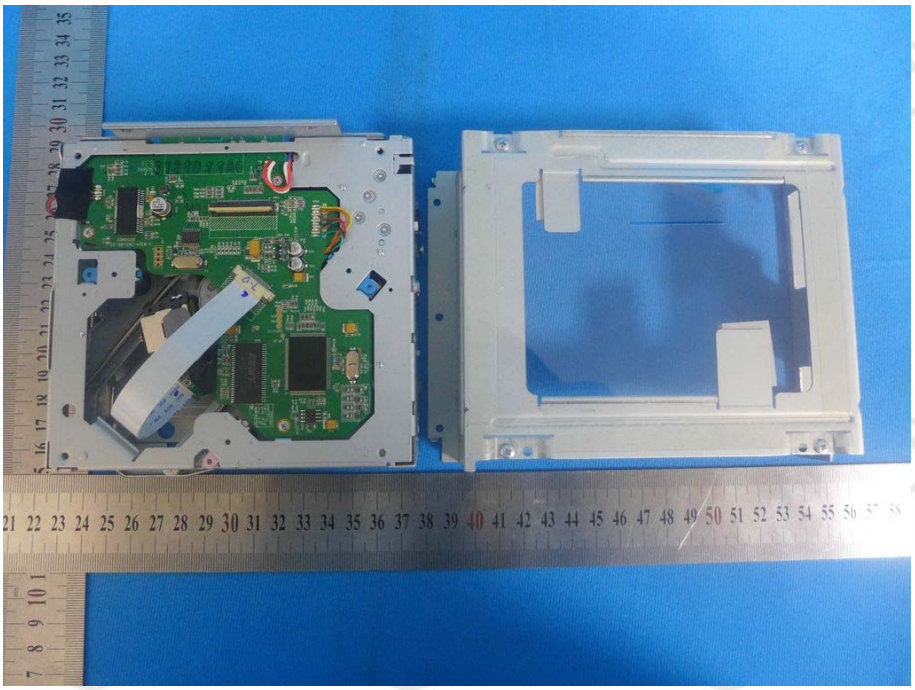


View of Product-19

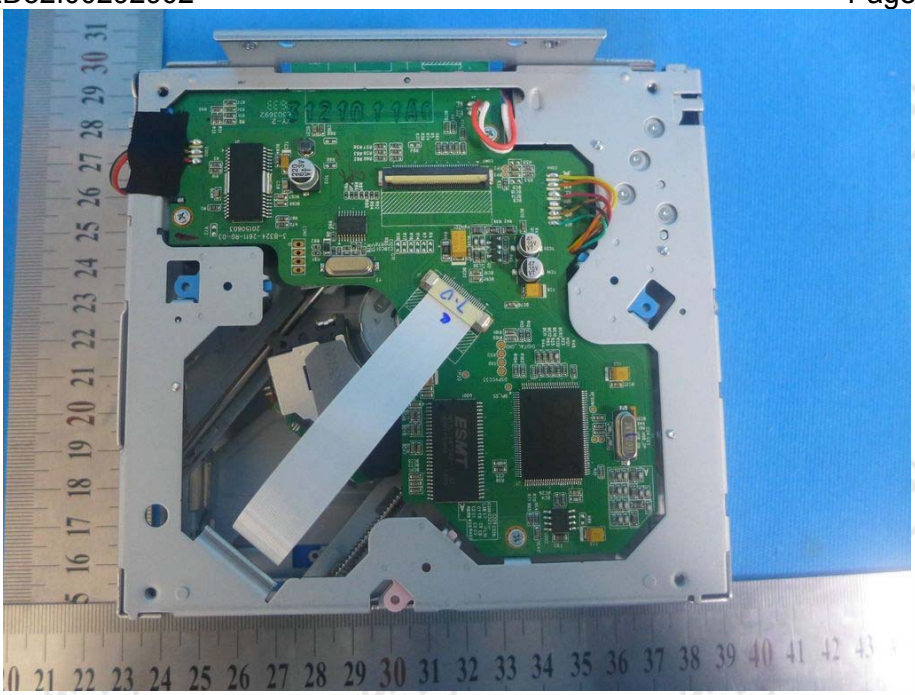


View of Product-20

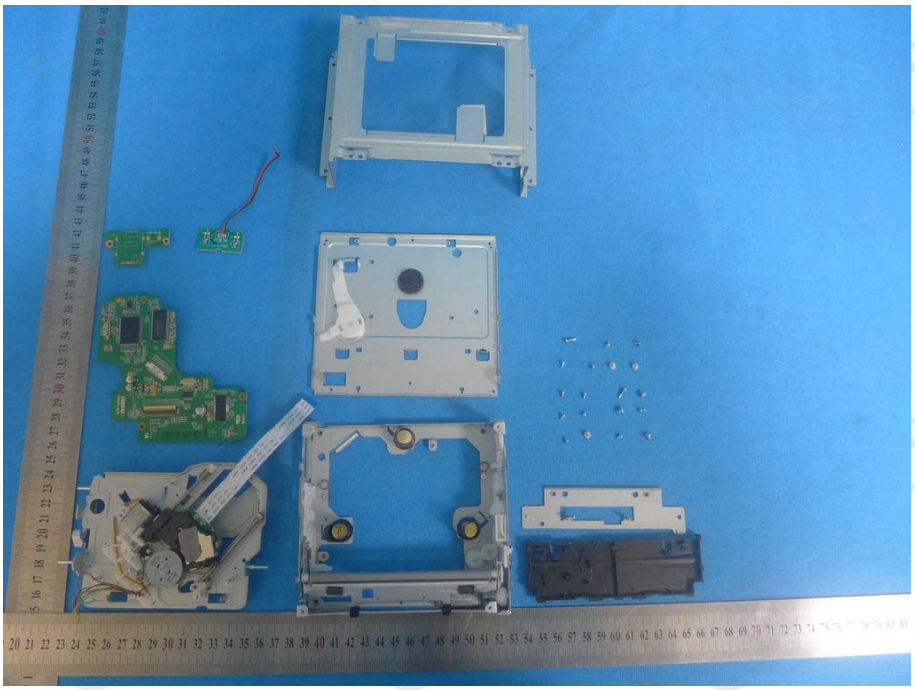
View of Product-21



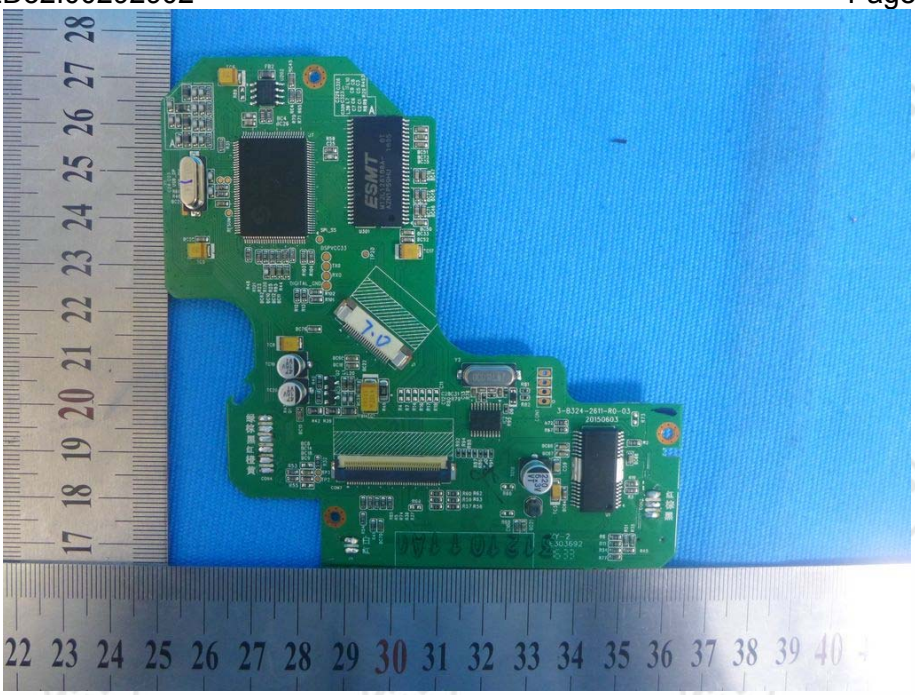
View of Product-22



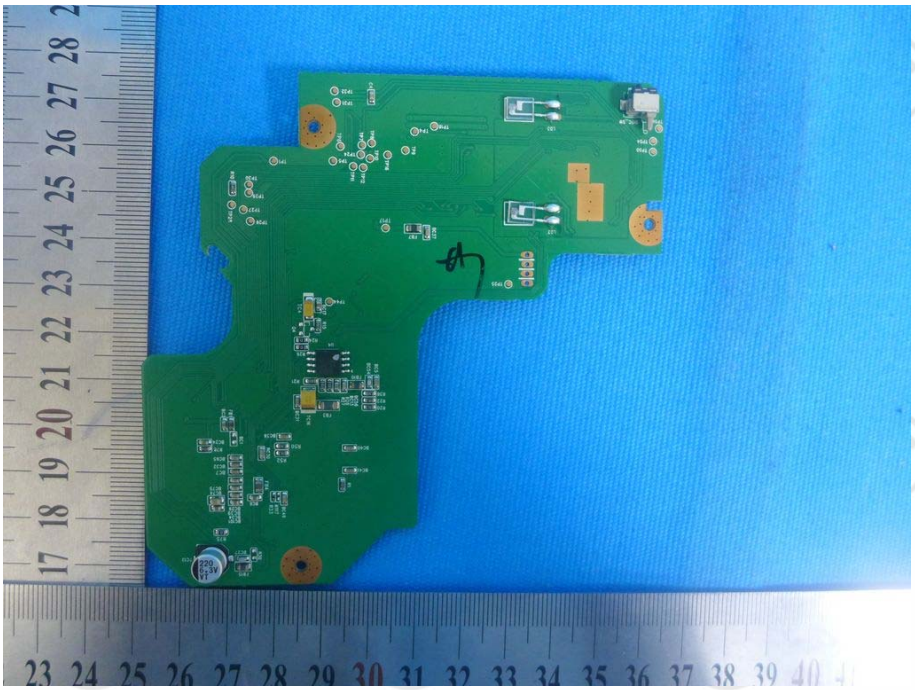
View of Product-23



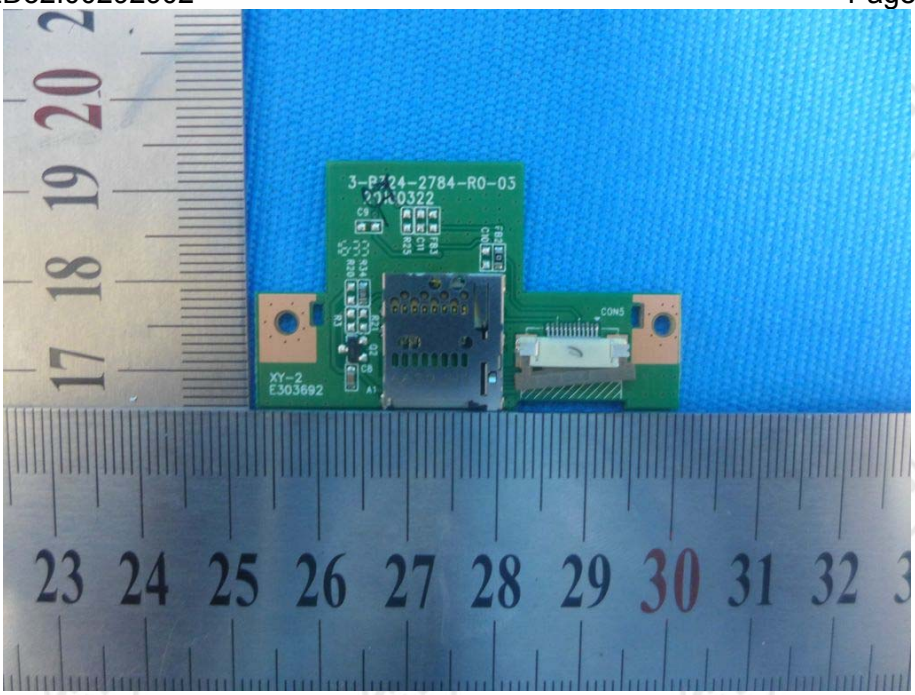
View of Product-24



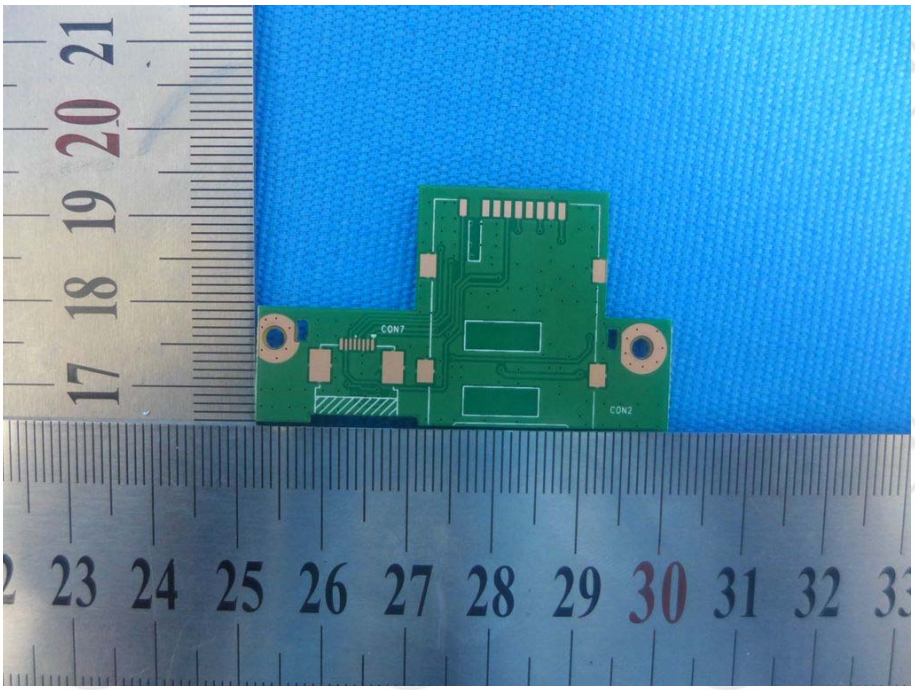
View of Product-25



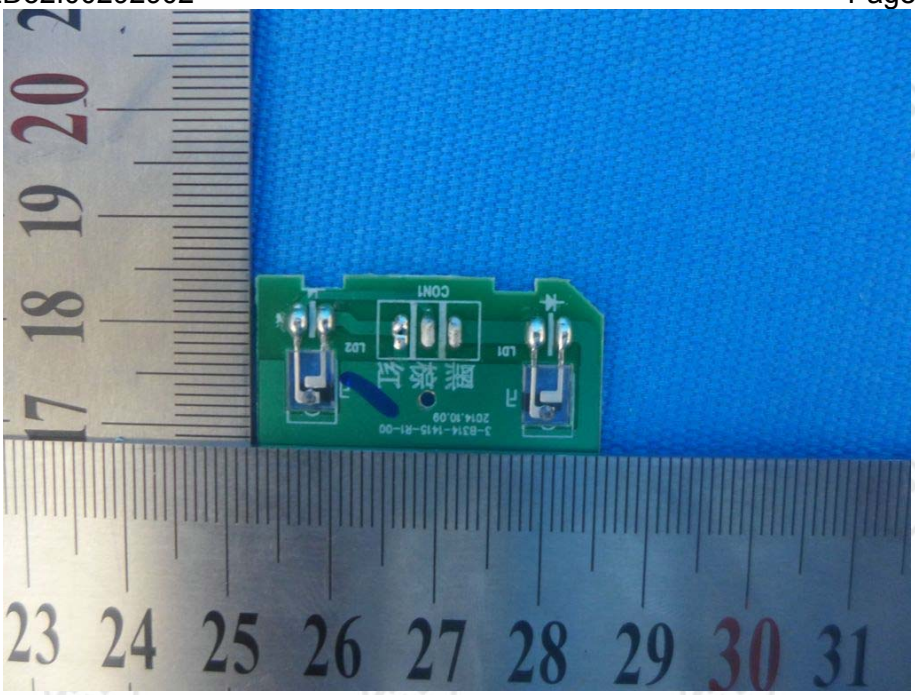
View of Product-26



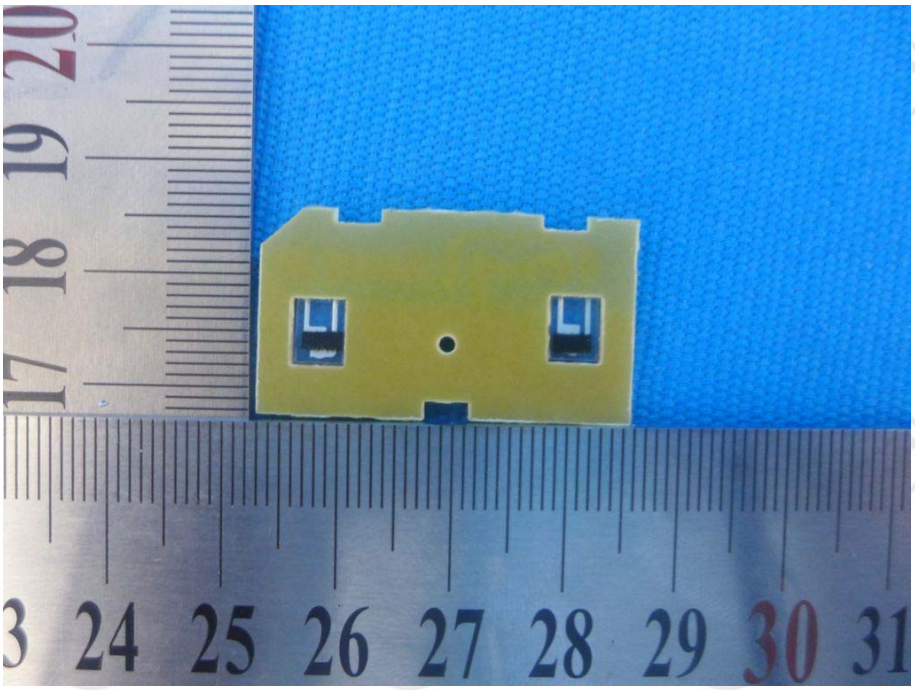
View of Product-27



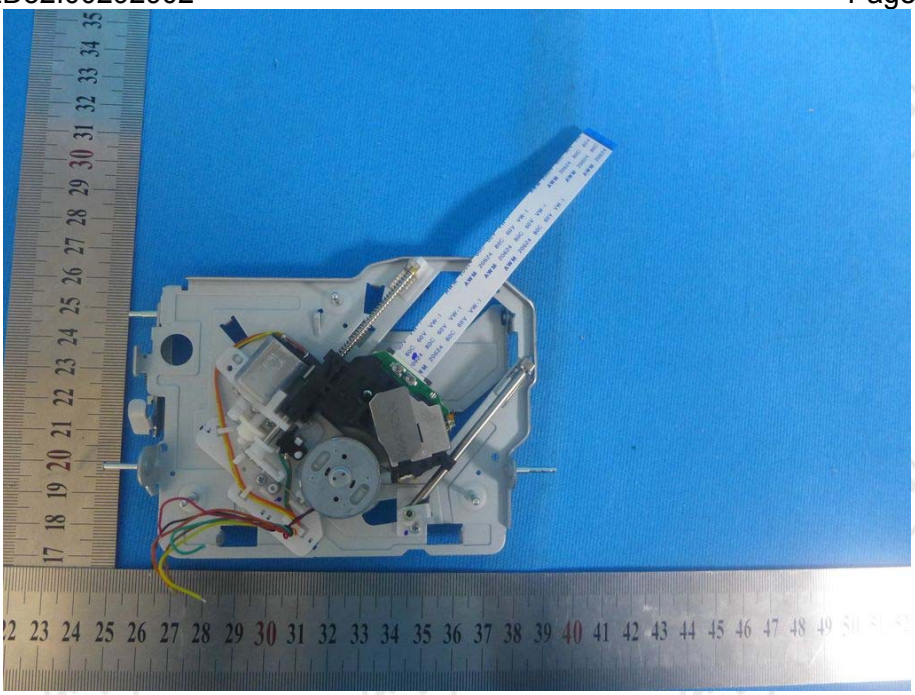
View of Product-28



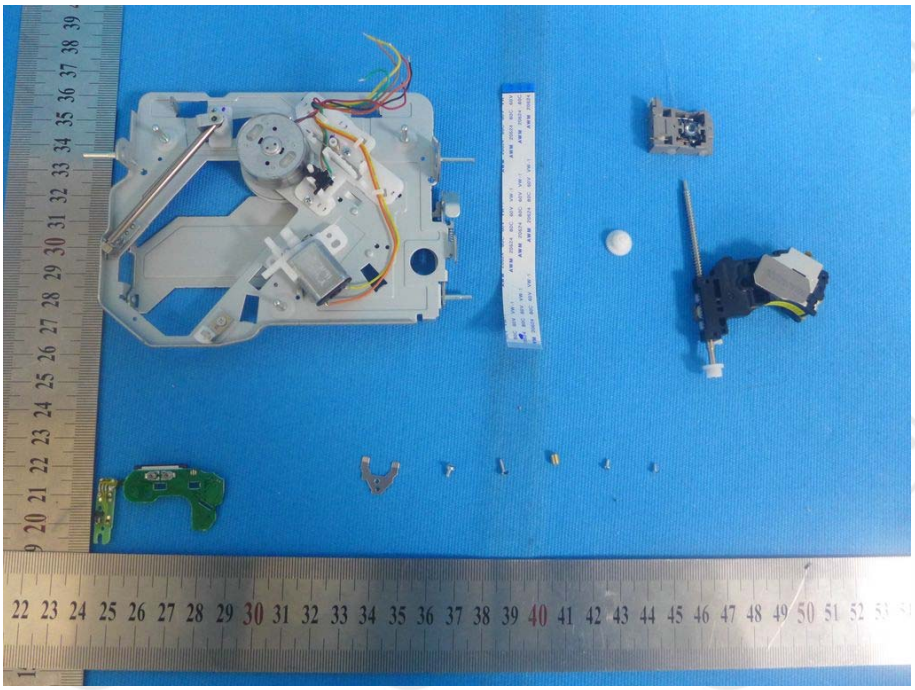
View of Product-29



View of Product-30

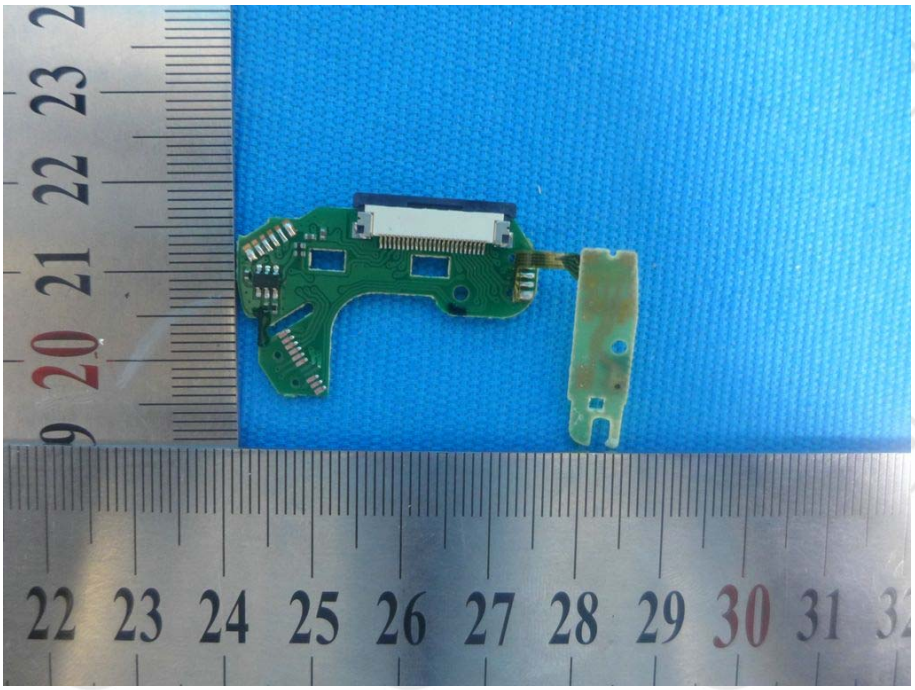


View of Product-31



View of Product-32

View of Product-33



View of Product-34

*** End of Report ***