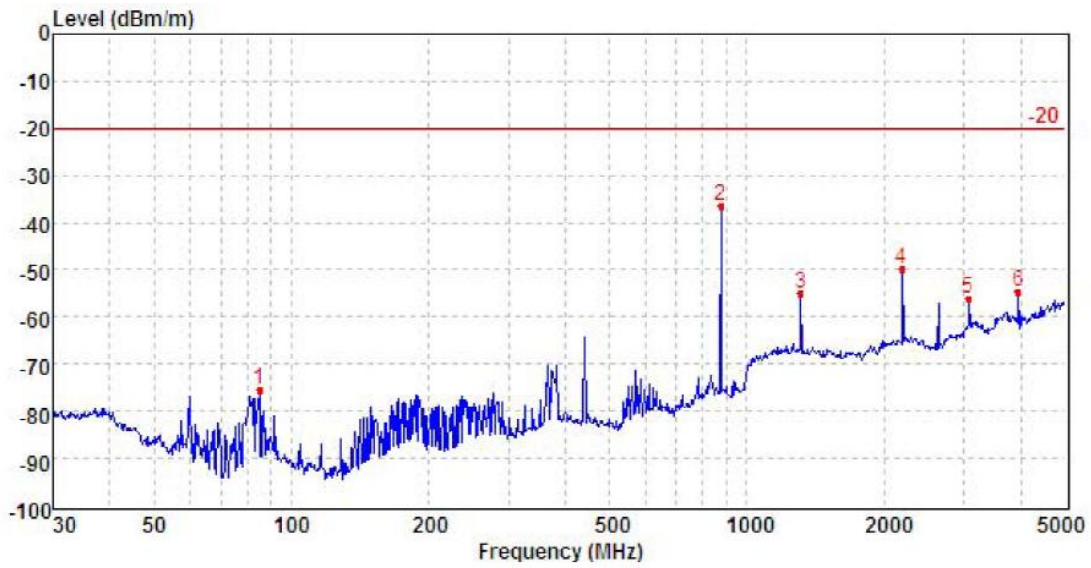
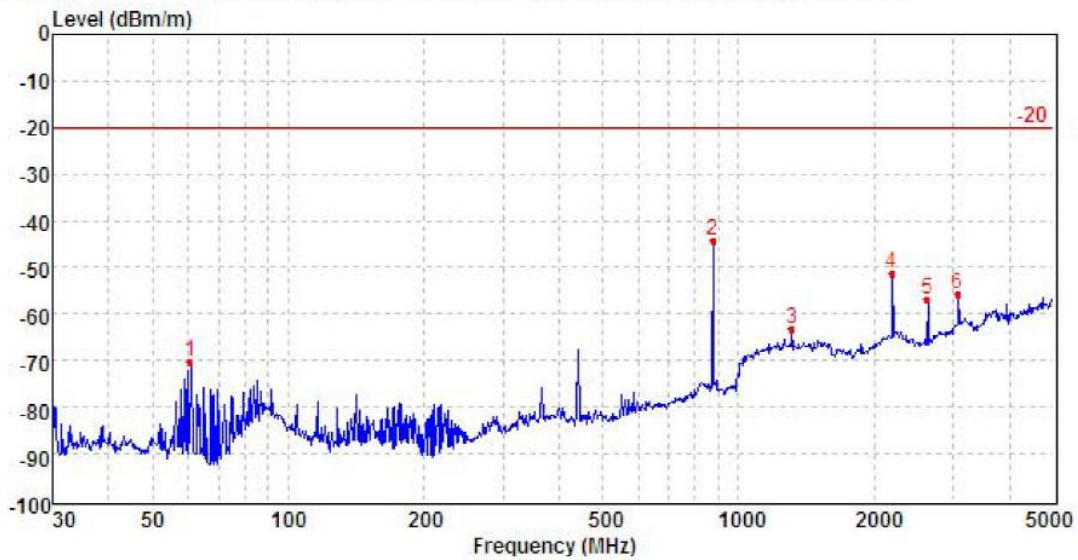


TEST MODE	TX-DNH	Test Channel:	CH _{M3}	Polarity:	Horizontal
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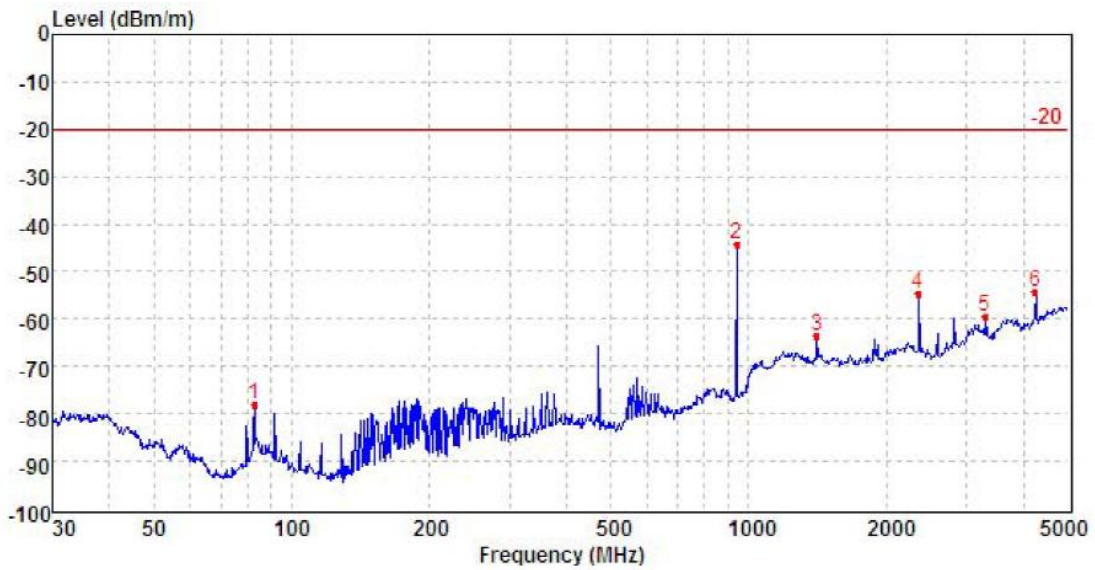
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	85.25	-65.05	19.29	1.05	30.69	-75.40	-20.00	-55.40	Peak
2	877.47	-40.73	29.97	3.68	29.39	-36.47	-20.00	-16.47	Peak
3	1312.58	-59.65	36.98	4.85	37.16	-54.98	-20.00	-34.98	Peak
4	2189.77	-59.60	40.88	6.43	37.60	-49.89	-20.00	-29.89	Peak
5	3065.37	-67.15	41.15	7.56	37.52	-55.96	-20.00	-35.96	Peak
6	3946.58	-68.06	41.48	8.71	36.80	-54.67	-20.00	-34.67	Peak

TEST MODE	TX-DNH	Test Channel:	CH _{M3}	Polarity:	Vertical
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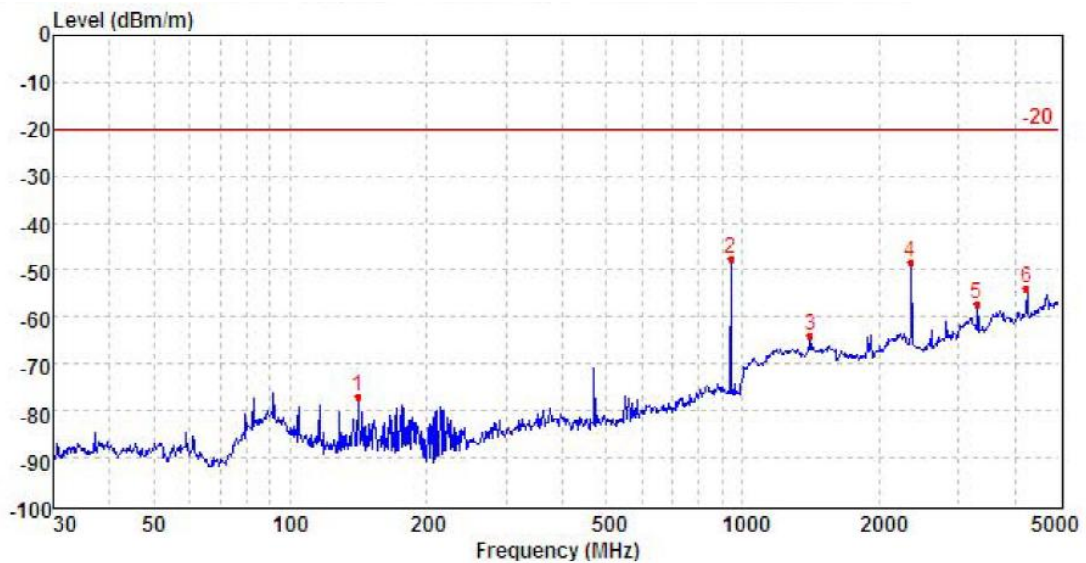
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	60.61	-60.17	19.50	0.92	30.66	-70.41	-20.00	-50.41	Peak
2	877.47	-48.67	30.10	3.68	29.39	-44.28	-20.00	-24.28	Peak
3	1312.58	-68.23	37.38	4.85	37.16	-63.16	-20.00	-43.16	Peak
4	2189.77	-61.80	41.56	6.43	37.60	-51.41	-20.00	-31.41	Peak
5	2626.53	-65.75	39.36	6.97	37.59	-57.01	-20.00	-37.01	Peak
6	3065.37	-67.15	41.17	7.56	37.52	-55.94	-20.00	-35.94	Peak

TEST MODE	TX-DNH	Test Channel:	CH _H	Polarity:	Horizontal
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	82.89	-67.04	18.74	1.04	30.66	-77.92	-20.00	-57.92	Peak
2	941.41	-47.90	29.29	3.78	29.30	-44.13	-20.00	-24.13	Peak
3	1408.90	-68.59	37.10	5.03	37.11	-63.57	-20.00	-43.57	Peak
4	2350.46	-63.85	40.10	6.69	37.59	-54.65	-20.00	-34.65	Peak
5	3290.32	-70.59	40.55	7.83	37.32	-59.53	-20.00	-39.53	Peak
6	4236.20	-69.02	42.40	8.97	36.53	-54.18	-20.00	-34.18	Peak

TEST MODE	TX-DNH	Test Channel:	CH _H	Polarity:	Vertical
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	141.45	-69.46	21.66	1.36	30.42	-76.86	-20.00	-56.86	Peak
2	941.41	-51.17	29.00	3.78	29.30	-47.69	-20.00	-27.69	Peak
3	1408.90	-69.69	37.76	5.03	37.11	-64.01	-20.00	-44.01	Peak
4	2350.46	-57.50	39.90	6.69	37.59	-48.50	-20.00	-28.50	Peak
5	3290.32	-68.52	40.60	7.83	37.32	-57.41	-20.00	-37.41	Peak
6	4236.20	-68.92	42.62	8.97	36.53	-53.86	-20.00	-33.86	Peak

5.11 AC Power Line Conducted Emission

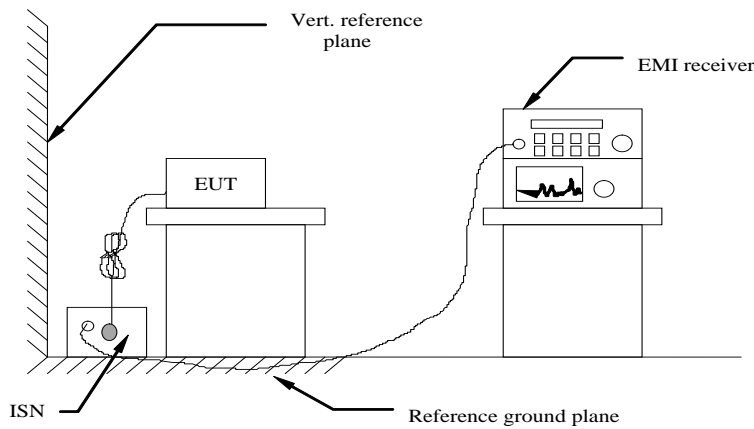
The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u Henry as specified by section 5.1 of ANSI C63.4. Cables and peripherals were moved to find the maximum emission levels for each frequency.

Limit

FCC part 15.107(a)

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user’s manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4
- 2 Support equipment, if needed, was placed as per ANSI C63.4
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 If a EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

TEST MODE

Please reference to the section 3.4

TEST RESULTS

Passed Not Applicable

5.12 Radiated Emission

LIMIT

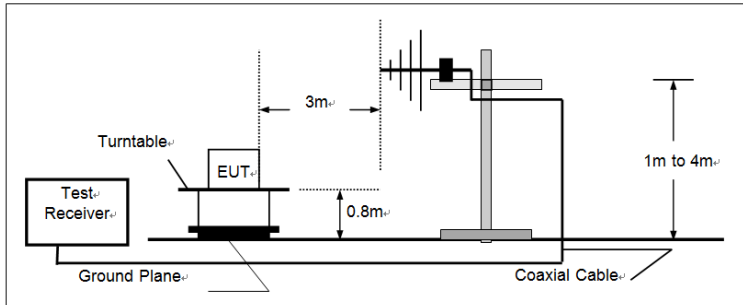
For unintentional device, according to § 15.109(a) except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

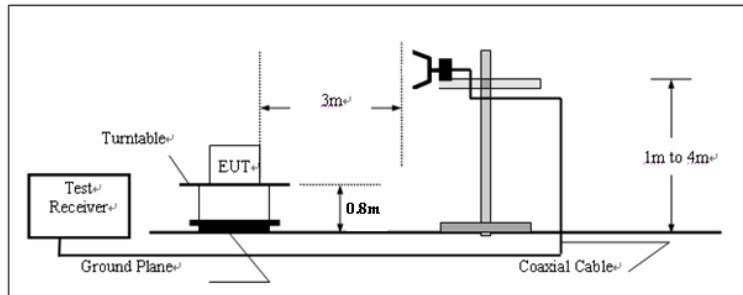
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

TEST CONFIGURATION

(A) Radiated Emission Test Set-Up, Frequency below 1000MHz



(B) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
- 2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
- 3 And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4 Repeat above procedures until all frequency measurements have been completed.

TEST MODE

Please reference to the section 3.4

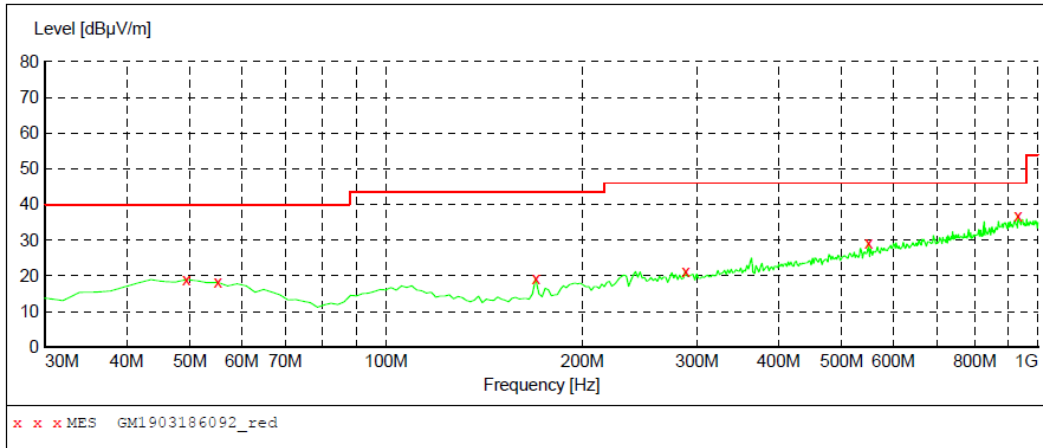
TEST RESULTS

Passed **Not Applicable**

Note:

The EUT shall be scanned from 30 MHz to the 5th harmonic of the highest oscillator frequency in the digital devices or 1 GHz whichever is higher.

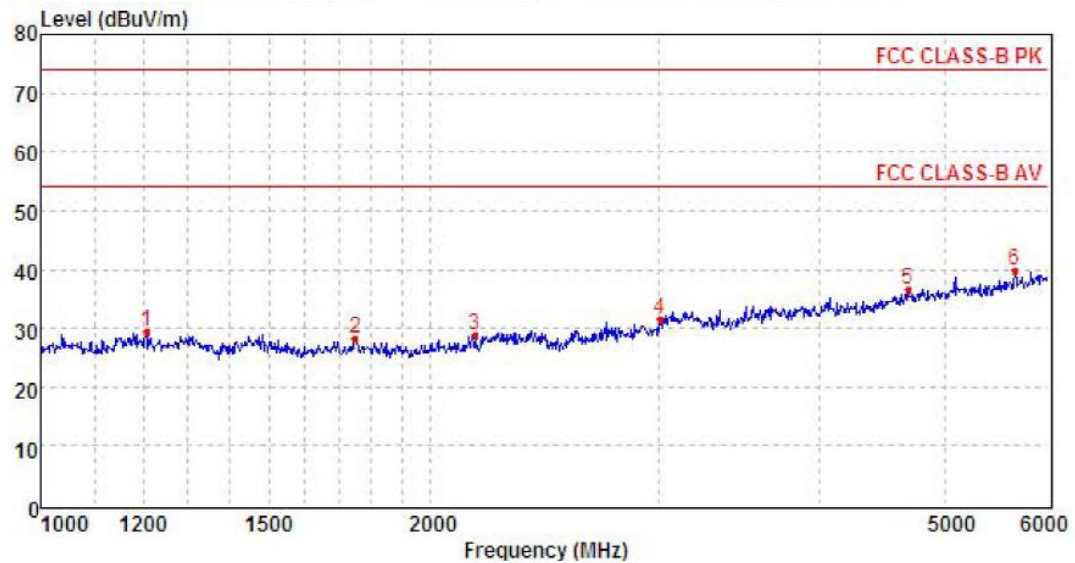
Polarity: Horizontal



MEASUREMENT RESULT: "GM1903186092_red"

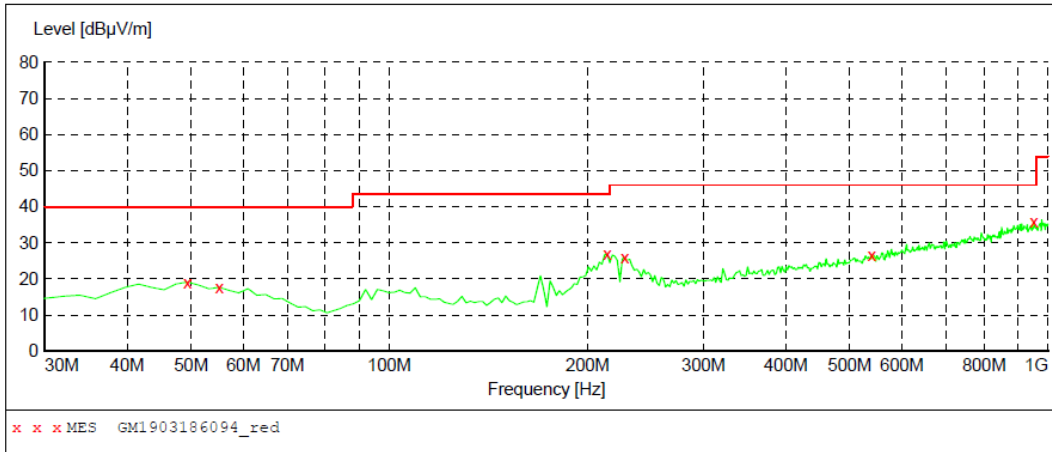
3/18/2019 4:30PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	19.00	-8.7	40.0	21.0	QP	100.0	0.00	HORIZONTAL
55.220000	18.20	-9.1	40.0	21.8	QP	300.0	208.00	HORIZONTAL
169.680000	19.30	-12.7	43.5	24.2	QP	100.0	62.00	HORIZONTAL
288.020000	21.40	-7.2	46.0	24.6	QP	100.0	37.00	HORIZONTAL
549.920000	29.30	-0.1	46.0	16.7	QP	100.0	81.00	HORIZONTAL
932.100000	37.00	8.0	46.0	9.0	QP	100.0	114.00	HORIZONTAL



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1207.00	35.76	26.29	4.67	37.22	29.50	74.00	-44.50	Peak
2	1748.97	34.43	25.30	5.86	37.35	28.24	74.00	-45.76	Peak
3	2164.63	32.68	27.22	6.41	37.60	28.71	74.00	-45.29	Peak
4	3009.98	33.10	28.62	7.49	37.57	31.64	74.00	-42.36	Peak
5	4677.23	31.84	31.13	9.49	35.96	36.50	74.00	-37.50	Peak
6	5655.52	32.20	31.69	10.36	34.33	39.92	74.00	-34.08	Peak

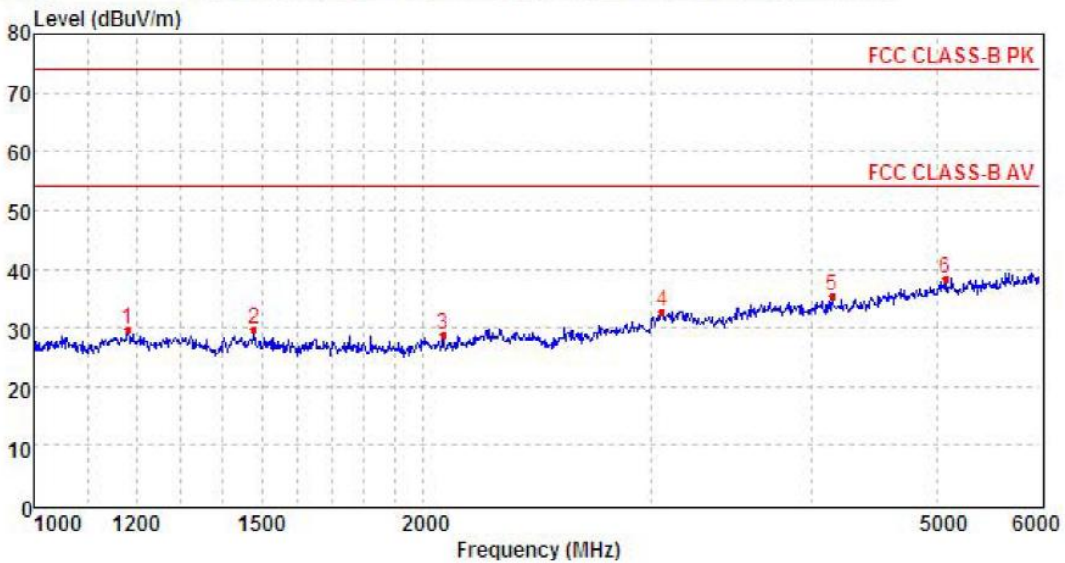
Polarity: Vertical



MEASUREMENT RESULT: "GM1903186094_red"

3/18/2019 4:34PM

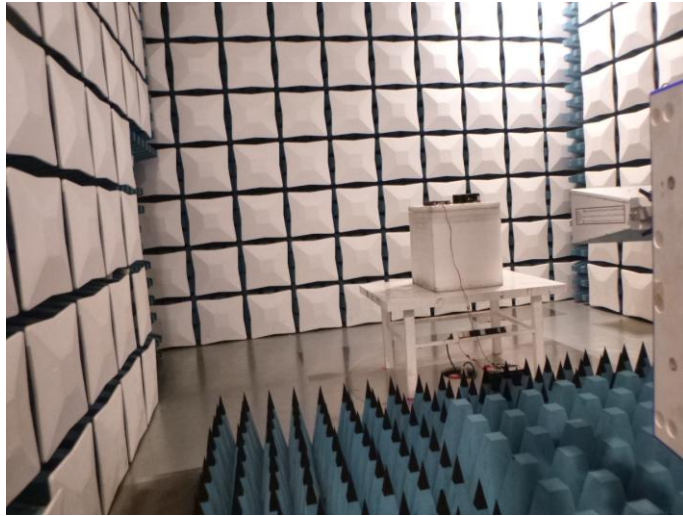
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	19.10	-8.7	40.0	20.9	QP	100.0	276.00	VERTICAL
55.220000	17.70	-9.1	40.0	22.3	QP	100.0	301.00	VERTICAL
214.300000	26.90	-10.0	43.5	16.6	QP	100.0	231.00	VERTICAL
227.880000	25.90	-9.1	46.0	20.1	QP	100.0	252.00	VERTICAL
540.220000	26.70	-0.3	46.0	19.3	QP	100.0	346.00	VERTICAL
951.500000	35.90	8.2	46.0	10.1	QP	100.0	196.00	VERTICAL



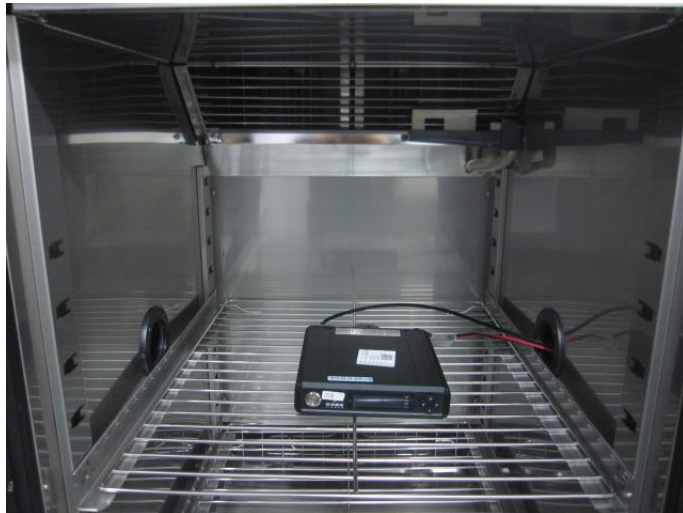
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1181.32	36.12	26.16	4.62	37.23	29.67	74.00	-44.33	Peak
2	1480.52	35.86	25.82	5.23	37.08	29.83	74.00	-44.17	Peak
3	2073.52	33.44	26.60	6.33	37.60	28.77	74.00	-45.23	Peak
4	3058.91	34.10	28.72	7.55	37.52	32.85	74.00	-41.15	Peak
5	4140.70	33.30	29.94	8.89	36.62	35.51	74.00	-38.49	Peak
6	5069.97	32.08	31.78	9.73	35.24	38.35	74.00	-35.65	Peak

6 TEST SETUP PHOTOS OF THE EUT

Transmitter Radiated Spurious Emission:



Frequency Stability:



RF Conducted Test:

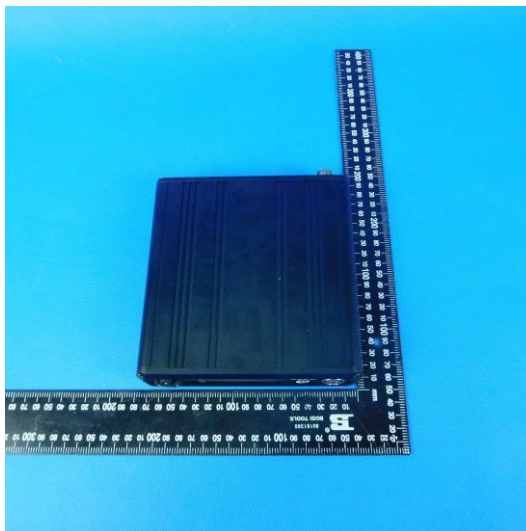
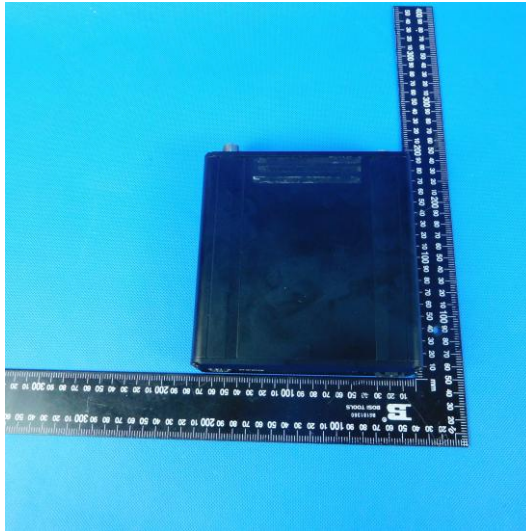


Radiated Emission:



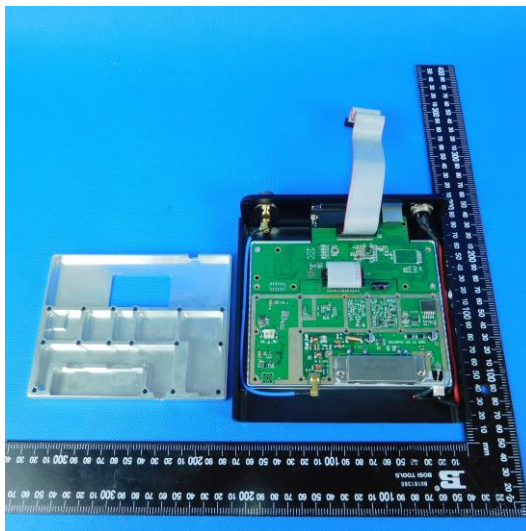
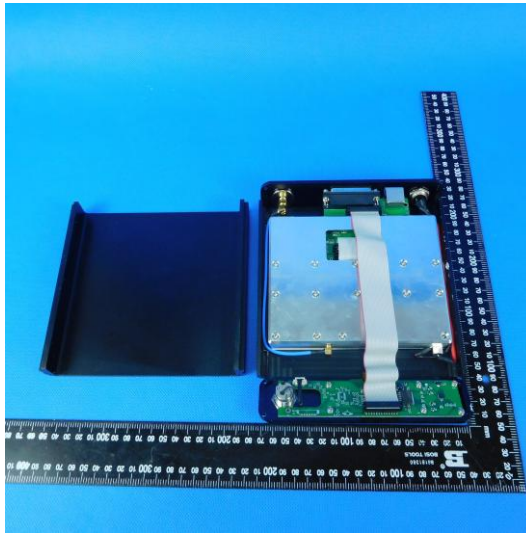
7 EXTERNAL AND INTERNAL PHOTOS OF THE EUT

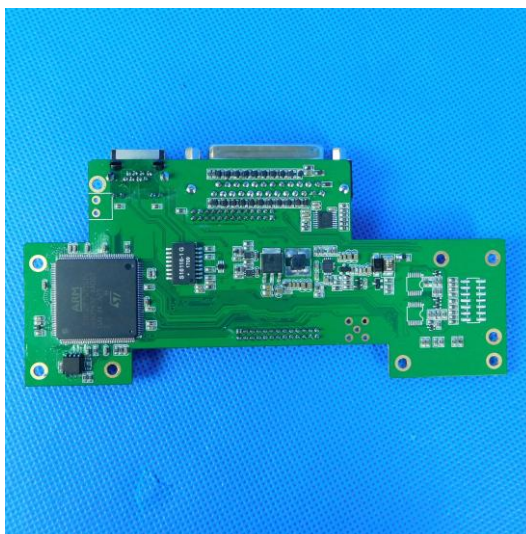
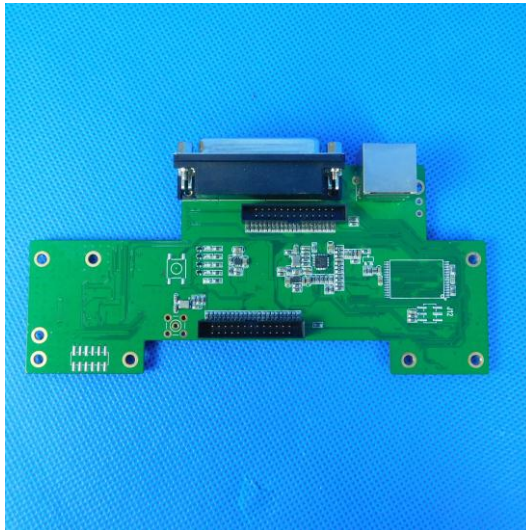
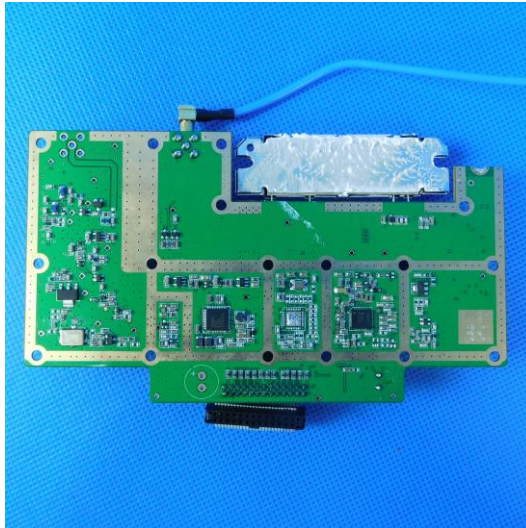
External Photos of the EUT

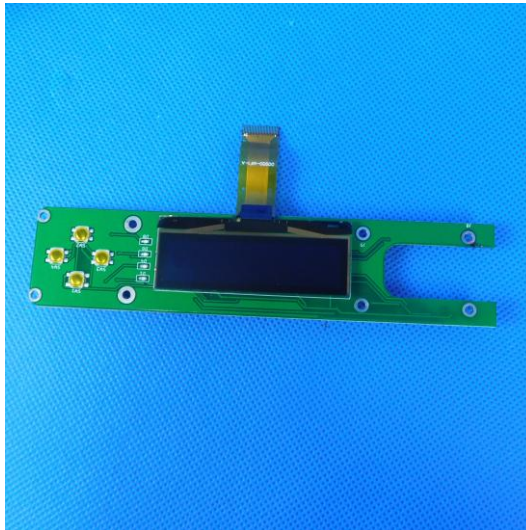
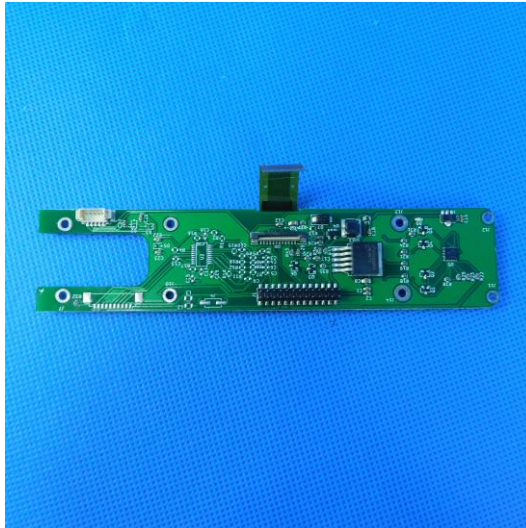




Internal Photos of the EUT







8 APPENDIX REPORT

**Appendix A:Maximum Transmitter Power**

Operation Mode	Modulation Type	Test Channel	Measured Power(dBm)	Measured Power(W)	Rated Power(W)	Percentage (%)	Limit (%)	Result
TX-DNH	4FSK	CH _L	43.1	20.42	20.00	2.1	±20	PASS
TX-DNH	4FSK	CH _{M1}	43.3	21.38	20.00	6.9	±20	PASS
TX-DNH	4FSK	CH _{M2}	43.3	21.38	20.00	6.9	±20	PASS
TX-DNH	4FSK	CH _{M3}	43.1	20.42	20.00	2.1	±20	PASS
TX-DNH	4FSK	CH _H	42.7	18.62	20.00	-6.9	±20	PASS
TX-DNL	4FSK	CH _L	36.9	4.90	5.00	-2.0	±20	PASS
TX-DNL	4FSK	CH _{M1}	37.1	5.13	5.00	2.6	±20	PASS
TX-DNL	4FSK	CH _{M2}	37.1	5.13	5.00	2.6	±20	PASS
TX-DNL	4FSK	CH _{M3}	36.8	4.79	5.00	-4.3	±20	PASS
TX-DNL	4FSK	CH _H	36.4	4.37	5.00	-12.7	±20	PASS

**Appendix B:Occupied Bandwidth**

Operation Mode	Modulation Type	Test Channel	Occupied Bandwidth		99% Limit(kHz)	Result
			99%(kHz)	26dB(kHz)		
TX-DNH	4FSK	CH _L	7.519	9.218	≤11.25	PASS
TX-DNH	4FSK	CH _{M1}	7.538	9.546	≤11.25	PASS
TX-DNH	4FSK	CH _{M2}	7.536	9.558	≤11.25	PASS
TX-DNH	4FSK	CH _{M3}	7.484	9.198	≤11.25	PASS
TX-DNH	4FSK	CH _H	7.517	9.189	≤11.25	PASS
TX-DNL	4FSK	CH _L	7.506	9.200	≤11.25	PASS
TX-DNL	4FSK	CH _{M1}	7.511	9.207	≤11.25	PASS
TX-DNL	4FSK	CH _{M2}	7.511	9.210	≤11.25	PASS
TX-DNL	4FSK	CH _{M3}	7.457	9.210	≤11.25	PASS
TX-DNL	4FSK	CH _H	7.529	9.204	≤11.25	PASS



Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _L	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 400.012500 MHz Center Freq: 400.012500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 30 dB</p> <p>10 dB/div Ref 46.64 dBm</p> <p>Center 400 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 49.1 dBm</p> <p>7.519 kHz</p> <p>Transmit Freq Error 209 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.218 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>
TX-DNH	4FSK	CH _{M1}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 405.987500 MHz Center Freq: 405.987500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 30 dB</p> <p>10 dB/div Ref 46.79 dBm</p> <p>Center 406 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 49.2 dBm</p> <p>7.538 kHz</p> <p>Transmit Freq Error 183 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.546 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>
TX-DNH	4FSK	CH _{M2}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 406.112500 MHz Center Freq: 406.112500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 30 dB</p> <p>10 dB/div Ref 46.73 dBm</p> <p>Center 406.1 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 49.2 dBm</p> <p>7.536 kHz</p> <p>Transmit Freq Error 212 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.558 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>



Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _{M3}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 438.012500 MHz Center Freq: 438.012500 MHz Radio Std: None</p> <p>Ref 46.52 dBm</p> <p>Occupied Bandwidth 7.484 kHz Total Power 48.9 dBm</p> <p>Transmit Freq Error 219 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.198 kHz x dB -26.00 dB</p>
TX-DNH	4FSK	CH _H	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 469.987500 MHz Center Freq: 469.987500 MHz Radio Std: None</p> <p>Ref 44.73 dBm</p> <p>Occupied Bandwidth 7.517 kHz Total Power 46.8 dBm</p> <p>Transmit Freq Error 236 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.189 kHz x dB -26.00 dB</p>
TX-DNL	4FSK	CH _L	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 400.012500 MHz Center Freq: 400.012500 MHz Radio Std: None</p> <p>Ref 41.52 dBm</p> <p>Occupied Bandwidth 7.506 kHz Total Power 43.6 dBm</p> <p>Transmit Freq Error 185 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.200 kHz x dB -26.00 dB</p>



Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNL	4FSK	CH _{M1}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 405.987500 MHz Center Freq: 405.987500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 26 dB</p> <p>10 dB/div Ref 42.01 dBm</p> <p>Center 406 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 44.1 dBm</p> <p>7.551 kHz</p> <p>Transmit Freq Error 186 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.207 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>
TX-DNL	4FSK	CH _{M2}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 406.112500 MHz Center Freq: 406.112500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 26 dB</p> <p>10 dB/div Ref 42.03 dBm</p> <p>Center 406.1 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 44.0 dBm</p> <p>7.551 kHz</p> <p>Transmit Freq Error 189 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.210 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>
TX-DNL	4FSK	CH _{M3}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 438.012500 MHz Center Freq: 438.012500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHld: >10/10 Radio Device: BTS</p> <p>#IFGain: Low #Atten: 24 dB</p> <p>10 dB/div Ref 41.39 dBm</p> <p>Center 438 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 44.1 dBm</p> <p>7.457 kHz</p> <p>Transmit Freq Error 253 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.210 kHz x dB -26.00 dB</p> <p>STATUS DC Coupled</p>



Appendix B:Occupied Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNL	4FSK	CH _H	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 469.987500 MHz Center Freq: 469.987500 MHz Radio Std: None</p> <p>Trig: Free Run AvgHeld: >10/10 Radio Device: BTS</p> <p>#IFGain:Low #Atten: 24 dB</p> <p>10 dB/div Ref 41.34 dBm</p> <p>Center 470 MHz Span 50 kHz</p> <p>#Res BW 100 Hz #VBW 300 Hz Sweep FFT</p> <p>Occupied Bandwidth Total Power 43.7 dBm</p> <p>7.529 kHz</p> <p>Transmit Freq Error 234 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.204 kHz x dB -26.00 dB</p> <p>Frequency: 469.987500 MHz</p> <p>CF Step: 5.000 kHz</p> <p>Freq Offset: 0 Hz</p> <p>STATUS DC Coupled</p>



Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _L	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep 40 dBm 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm MASK_0 M1[1] 37.41 dBm 400.0134190 MHz CF 400.0125 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 11:29:47</p>
TX-DNH	4FSK	CH _{M1}	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep 40 dBm 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm MASK_0 M1[1] 37.53 dBm 405.9884190 MHz CF 405.9875 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 11:31:22</p>
TX-DNH	4FSK	CH _{M2}	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep 40 dBm 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm MASK_0 M1[1] 37.42 dBm 406.1134190 MHz CF 406.1125 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 11:32:51</p>

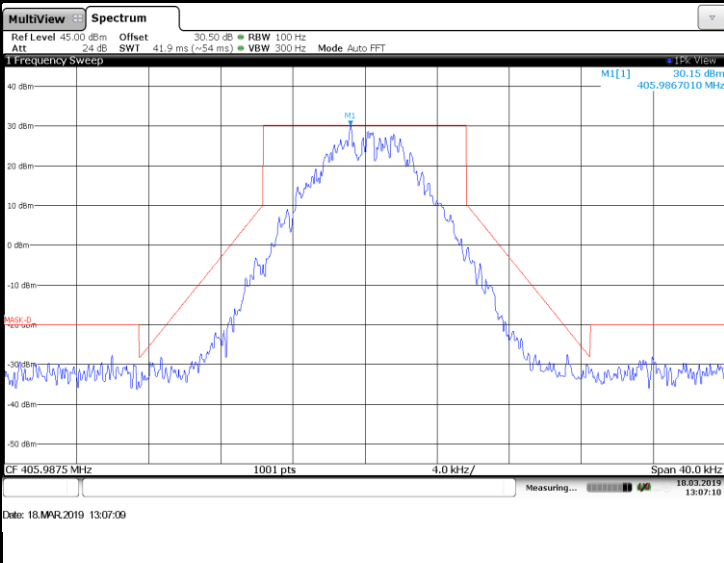
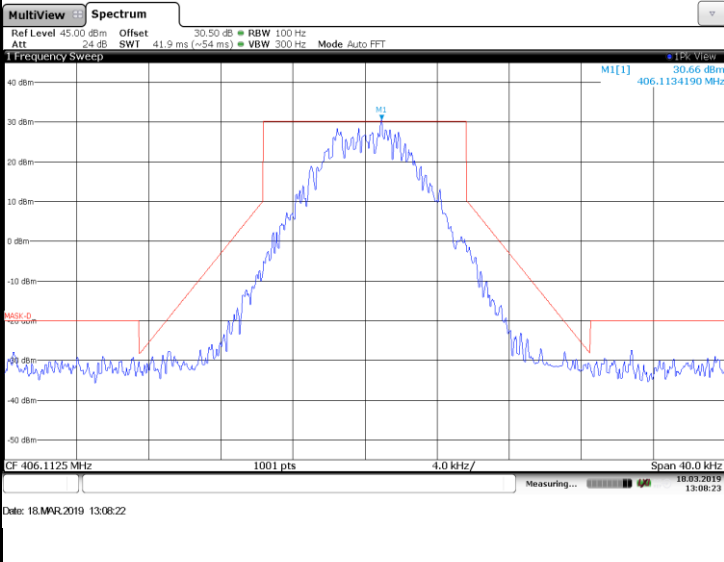
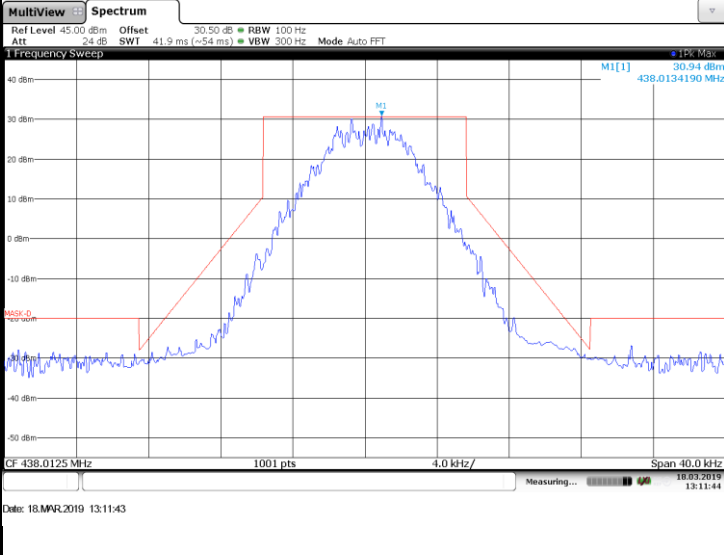


Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _{M3}	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep M1[1] 37.55 dBm 438.0134190 MHz Mask_0 CF 438.0125 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 11:35:00</p>
TX-DNH	4FSK	CH _H	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep M1[1] 35.61 dBm 469.9884590 MHz Mask_0 CF 469.9875 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 11:37:50</p>
TX-DNL	4FSK	CH _L	<p>MultiView Spectrum Ref Level 45.00 dBm Offset 30.50 dB RBW 100 Hz Att 24 dB SWI 41.9 ms (-54 ms) VBW 300 Hz Mode Auto FFT 1 Frequency Sweep M1[1] 30.33 dBm 400.0133790 MHz Mask_0 CF 400.0125 MHz 1001 pts 4.0 kHz/ Span 40.0 kHz Date: 18.MAR.2019 13:05:56</p>

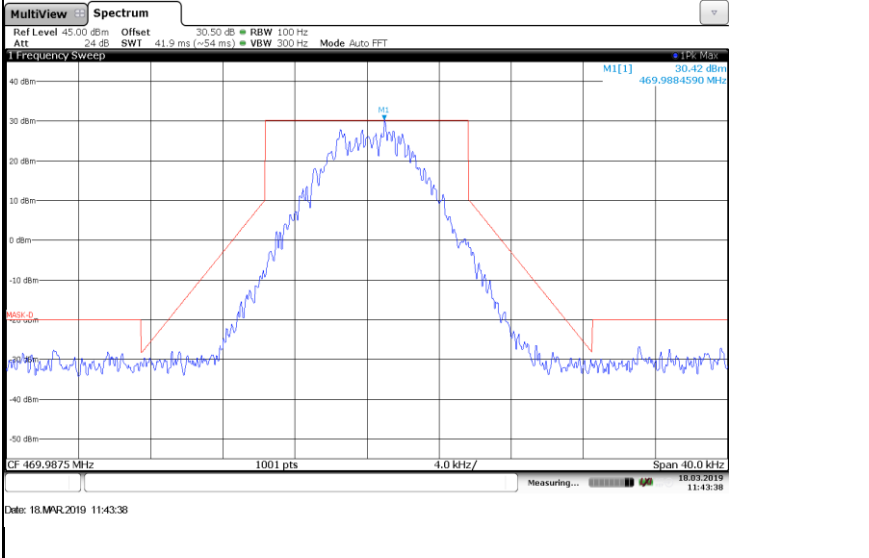


Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNL	4FSK	CH _{M1}	
TX-DNL	4FSK	CH _{M2}	
TX-DNL	4FSK	CH _{M3}	



Appendix C:Emission Mask

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNL	4FSK	CH _H	

**Appendix D:Frequency Stability Test & Temperature**

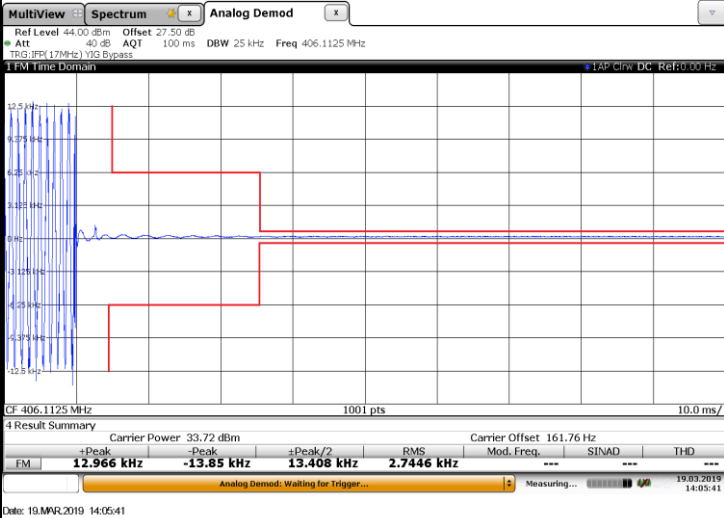
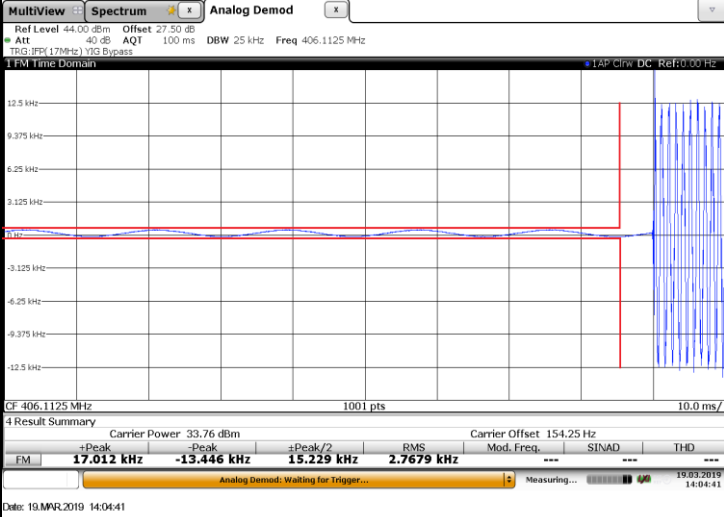
Operation Mode	Modulation Type	Test Conditions		Frequency error (ppm)					Limit (ppm)	Result
		Voltage	Temperature	CH _L	CH _{M1}	CH _{M2}	CH _{M3}	CH _H		
TX-DNH	4FSK	V _N	-30	0.210	0.198	0.201	0.216	0.243	±5.0	PASS
TX-DNH	4FSK	V _N	-20	0.206	0.192	0.194	0.210	0.238	±5.0	PASS
TX-DNH	4FSK	V _N	-10	0.200	0.187	0.189	0.208	0.229	±5.0	PASS
TX-DNH	4FSK	V _N	0	0.196	0.183	0.185	0.201	0.224	±5.0	PASS
TX-DNH	4FSK	V _N	10	0.193	0.178	0.182	0.195	0.222	±5.0	PASS
TX-DNH	4FSK	V _N	20	0.181	0.169	0.171	0.187	0.211	±5.0	PASS
TX-DNH	4FSK	V _N	30	0.190	0.179	0.180	0.193	0.217	±5.0	PASS
TX-DNH	4FSK	V _N	40	0.197	0.183	0.184	0.204	0.223	±5.0	PASS
TX-DNH	4FSK	V _N	55	0.201	0.187	0.190	0.209	0.230	±5.0	PASS
TX-DNL	4FSK	V _N	-30	0.204	0.195	0.216	0.222	0.174	±5.0	PASS
TX-DNL	4FSK	V _N	-20	0.200	0.191	0.211	0.218	0.170	±5.0	PASS
TX-DNL	4FSK	V _N	-10	0.190	0.184	0.206	0.215	0.168	±5.0	PASS
TX-DNL	4FSK	V _N	0	0.189	0.179	0.202	0.211	0.160	±5.0	PASS
TX-DNL	4FSK	V _N	10	0.183	0.172	0.196	0.202	0.155	±5.0	PASS
TX-DNL	4FSK	V _N	20	0.172	0.163	0.185	0.194	0.145	±5.0	PASS
TX-DNL	4FSK	V _N	30	0.177	0.169	0.190	0.201	0.153	±5.0	PASS
TX-DNL	4FSK	V _N	40	0.189	0.179	0.197	0.210	0.159	±5.0	PASS
TX-DNL	4FSK	V _N	55	0.192	0.183	0.203	0.214	0.167	±5.0	PASS

**Appendix E: Frequency Stability Test & Voltage**

Operation Mode	Modulation Type	Test Conditions		Frequency error (ppm)					Limit (ppm)	Result
		Voltage	Temperature	CH _L	CH _{M1}	CH _{M2}	CH _{M3}	CH _H		
TX-DNH	4FSK	V _N	T _N	0.181	0.169	0.171	0.187	0.211	±5.0	PASS
TX-DNH	4FSK	V _L	T _N	0.198	0.184	0.195	0.204	0.234	±5.0	PASS
TX-DNH	4FSK	V _H	T _N	0.191	0.175	0.182	0.199	0.224	±5.0	PASS
TX-DNL	4FSK	V _N	T _N	0.172	0.163	0.185	0.194	0.145	±5.0	PASS
TX-DNL	4FSK	V _L	T _N	0.189	0.181	0.206	0.217	0.169	±5.0	PASS
TX-DNL	4FSK	V _H	T _N	0.183	0.175	0.194	0.205	0.153	±5.0	PASS

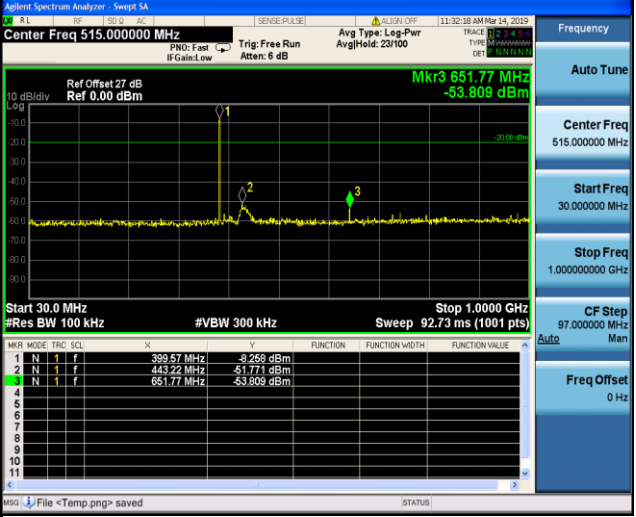
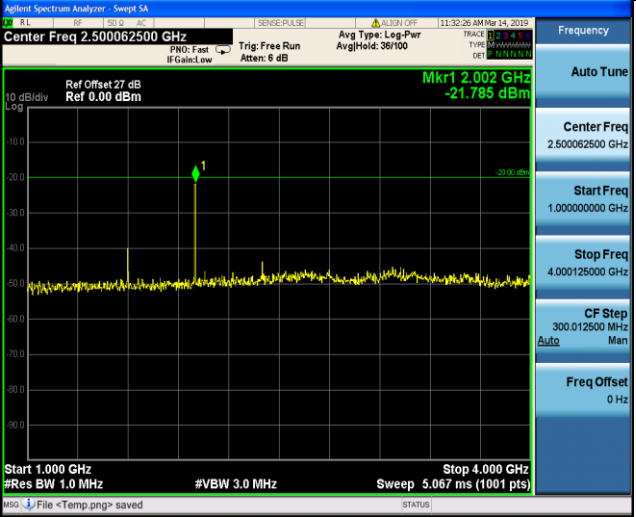
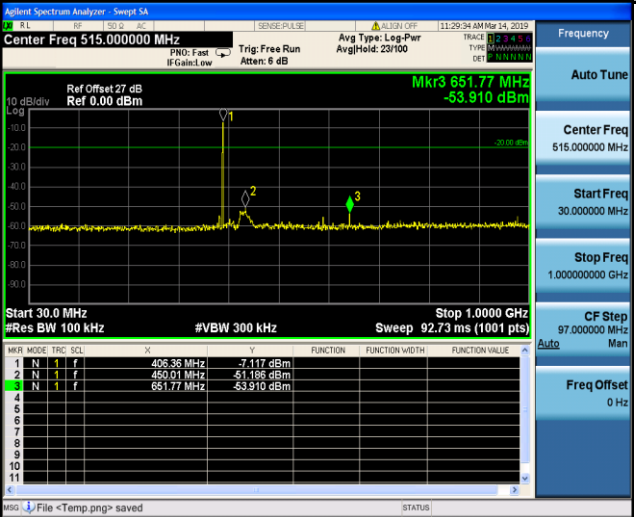


Appendix F:Transmitter Frequency Behavior

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT										
TX-DNH	4FSK	CH _{M2}	 <p>Carrier Power 33.72 dBm Carrier Offset 161.76 Hz</p> <table border="1"> <thead> <tr> <th></th> <th>+Peak</th> <th>-Peak</th> <th>+Peak/2</th> <th>RMS</th> </tr> </thead> <tbody> <tr> <td>FM</td> <td>12.966 kHz</td> <td>-13.85 kHz</td> <td>13.408 kHz</td> <td>2.7446 kHz</td> </tr> </tbody> </table> <p>OFF~ON</p>		+Peak	-Peak	+Peak/2	RMS	FM	12.966 kHz	-13.85 kHz	13.408 kHz	2.7446 kHz
	+Peak	-Peak	+Peak/2	RMS									
FM	12.966 kHz	-13.85 kHz	13.408 kHz	2.7446 kHz									
TX-DNH	4FSK	CH _{M2}	 <p>Carrier Power 33.76 dBm Carrier Offset 154.25 Hz</p> <table border="1"> <thead> <tr> <th></th> <th>+Peak</th> <th>-Peak</th> <th>+Peak/2</th> <th>RMS</th> </tr> </thead> <tbody> <tr> <td>FM</td> <td>17.012 kHz</td> <td>-13.446 kHz</td> <td>15.229 kHz</td> <td>2.7679 kHz</td> </tr> </tbody> </table> <p>ON-OFF</p>		+Peak	-Peak	+Peak/2	RMS	FM	17.012 kHz	-13.446 kHz	15.229 kHz	2.7679 kHz
	+Peak	-Peak	+Peak/2	RMS									
FM	17.012 kHz	-13.446 kHz	15.229 kHz	2.7679 kHz									

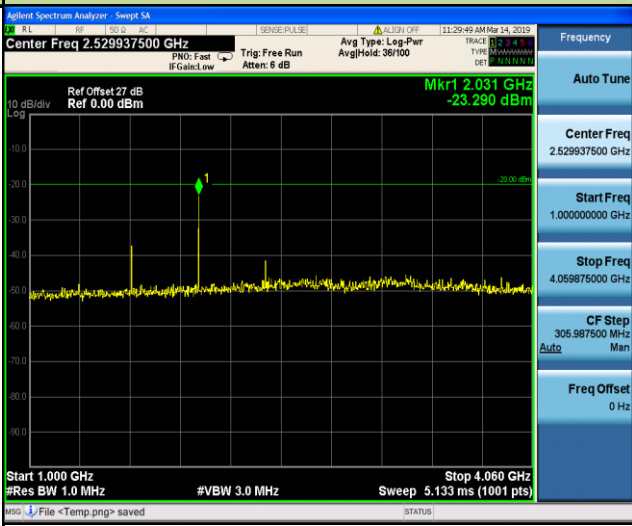
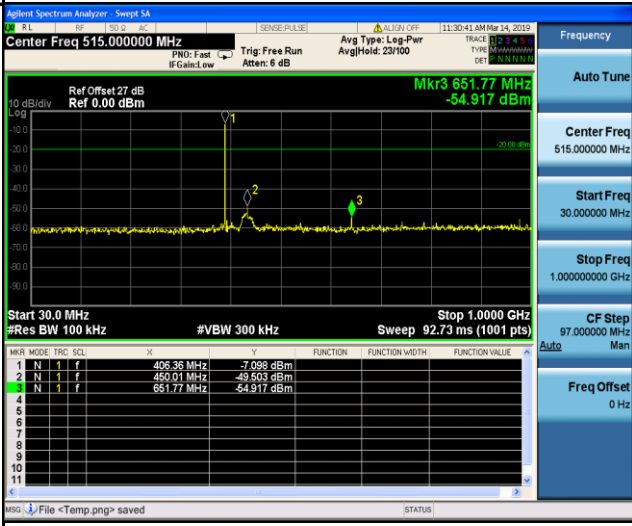
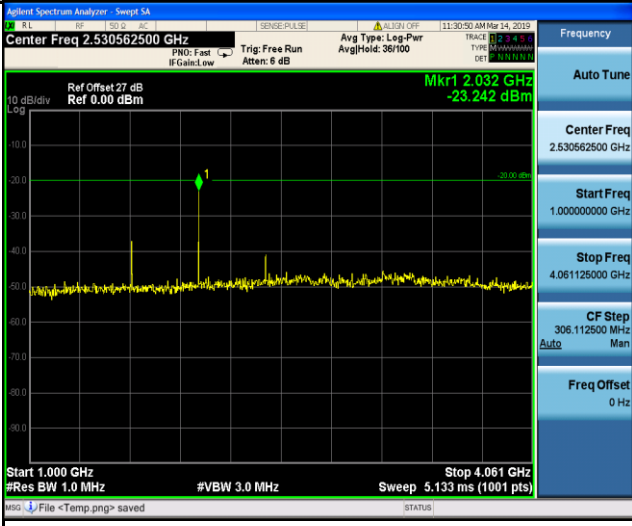


Appendix G:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																				
TX-DNH	4FSK	CHL	 <table border="1"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRG</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>399.57 MHz</td> <td>-8.269 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>443.22 MHz</td> <td>-51.771 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>651.77 MHz</td> <td>-53.809 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>30MHz~1GHz</p>	MNR	MODE	TRG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	399.57 MHz	-8.269 dBm				2	N	1	f	443.22 MHz	-51.771 dBm				3	N	1	f	651.77 MHz	-53.809 dBm			
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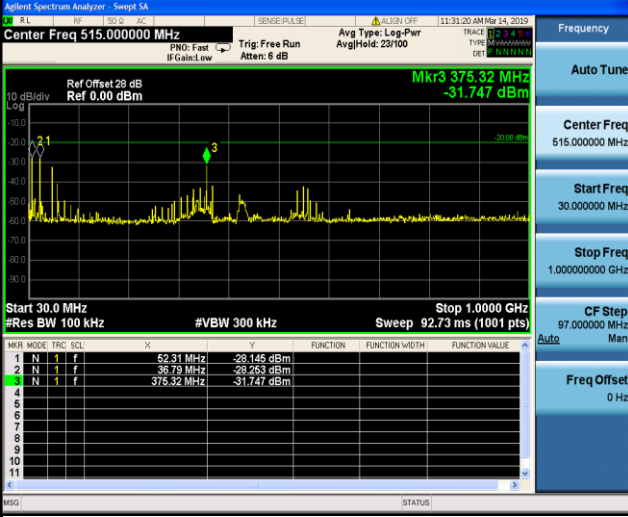
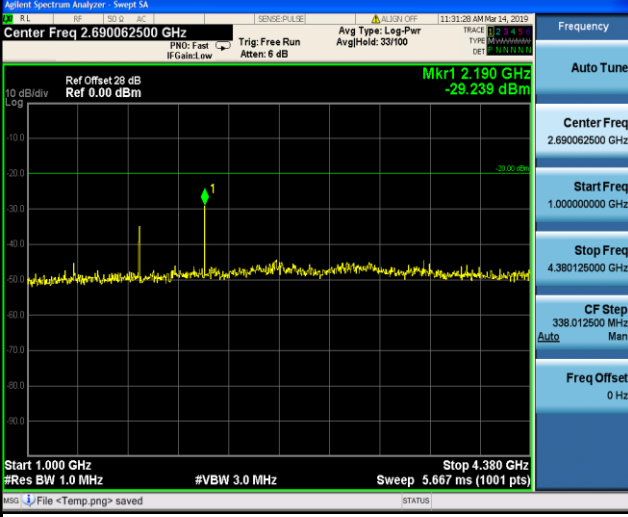



Appendix G:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT																																																																																																												
TX-DNH	4FSK	CH _{M1}	 <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.529937500 GHz Mkr1 2.031 GHz -23.290 dBm Start 1.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 5.133 ms (1001 pts)</p> <p>1GHz~10th Harmonic</p>																																																																																																												
TX-DNH	4FSK	CH _{M2}	 <p>Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Mkr3 651.77 MHz -54.917 dBm Start 30.0 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 92.73 ms (1001 pts)</p> <table border="1" data-bbox="596 1243 1230 1426"> <thead> <tr> <th>MKR</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>460.88 MHz</td> <td>-7.896 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>460.01 MHz</td> <td>-9.603 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>651.77 MHz</td> <td>-54.917 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>30MHz~1GHz</p>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	460.88 MHz	-7.896 dBm				2	N	1	f	460.01 MHz	-9.603 dBm				3	N	1	f	651.77 MHz	-54.917 dBm				4									5									6									7									8									9									10									11								
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TX-DNH	4FSK	CH _{M2}	 <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.530562500 GHz Mkr1 2.032 GHz -23.242 dBm Start 1.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 5.133 ms (1001 pts)</p> <p>1GHz~10th Harmonic</p>																																																																																																												



Appendix G:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _{M3}	 <p style="text-align: center;">30MHz~1GHz</p>
TX-DNH	4FSK	CH _{M3}	 <p style="text-align: center;">1GHz~10th Harmonic</p>
TX-DNH	4FSK	CH _H	 <p style="text-align: center;">30MHz~1GHz</p>



Appendix G:Spurious Emission On Antenna Port

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-DNH	4FSK	CH _H	<p style="text-align: center;">1GHz~10th Harmonic</p>

----End of Report----