

# FCC §2.1051 & §22.861 & §74.462 & § 80.211 & §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

## Applicable Standard

FCC §2.1051, §22.861, §74.462, §80.211, and §90.210

## Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.

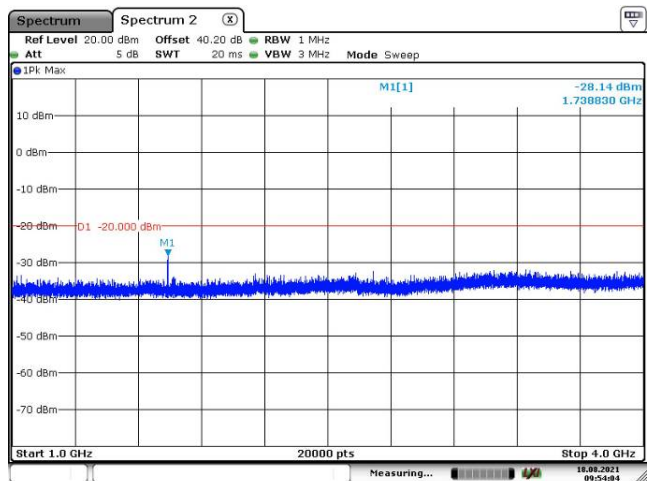
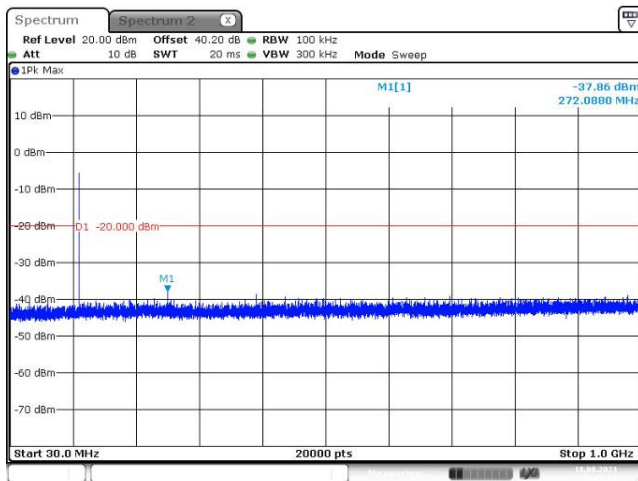
## Test Data

Test Mode: Transmitting

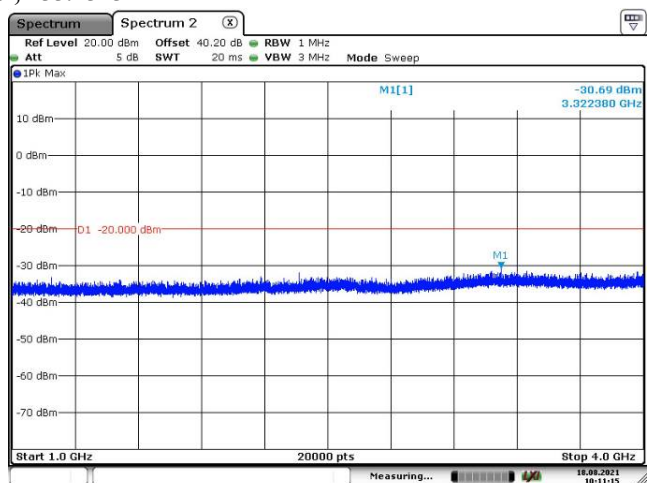
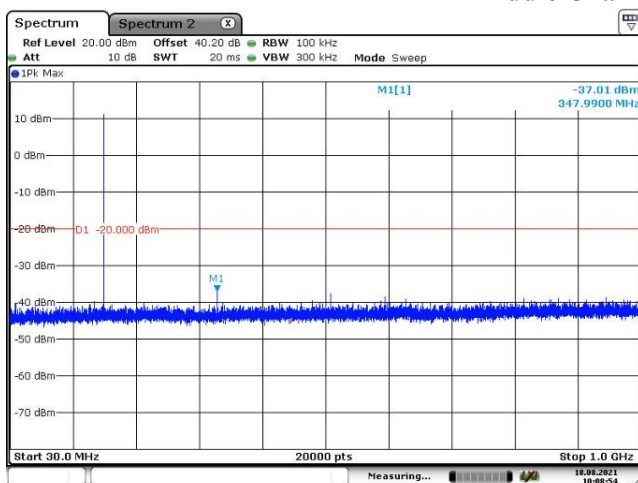
**Test Result: Compliance.** Test performed at high power level with Band Rejector Filter, *please refer to the following table.*

### FM, 12.5kHz:

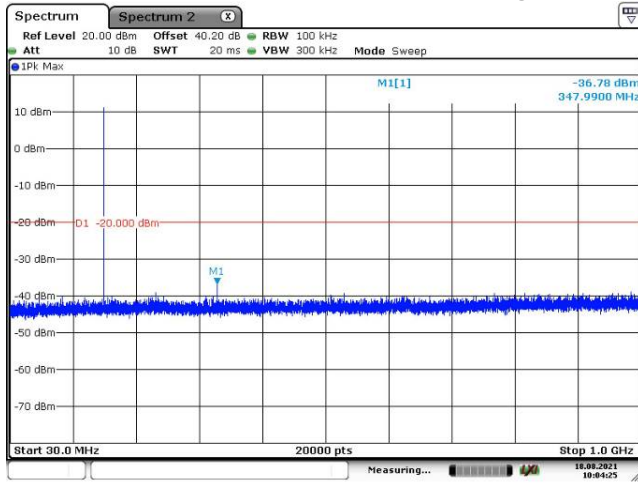
#### Low Channel, 136.0125 MHz



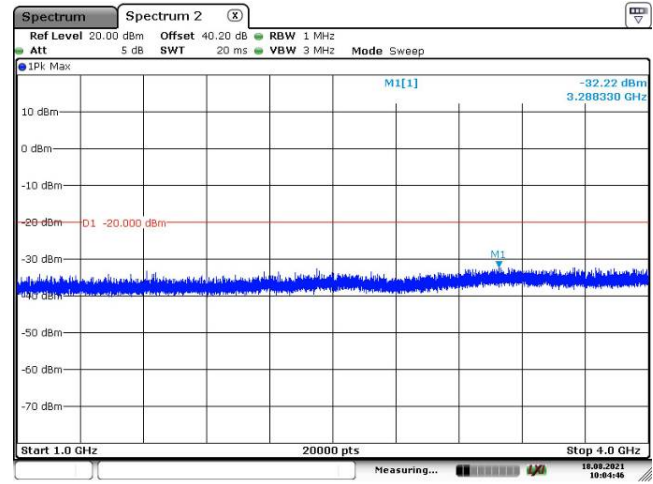
#### Middle Channel, 155.7525 MHz



### High Channel, 173.9875 MHz



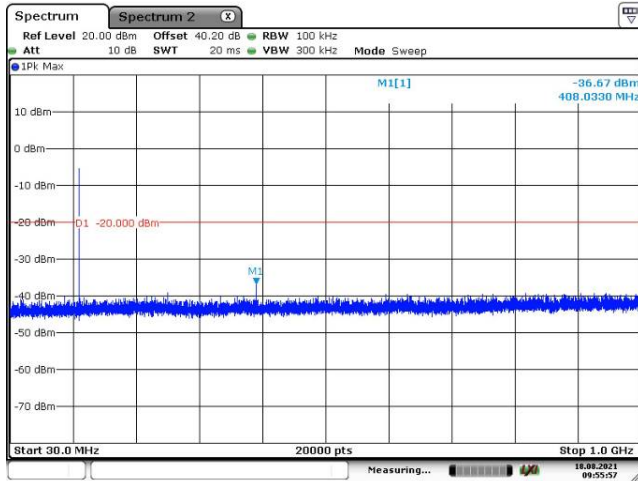
Date: 18.AUG.2021 10:04:25



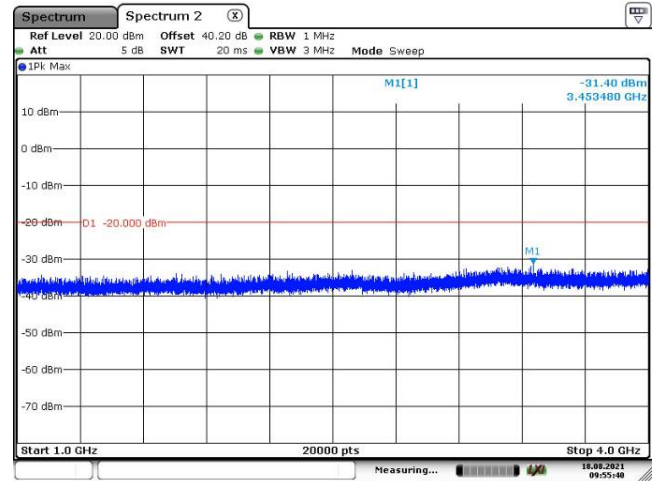
Date: 18.AUG.2021 10:04:47

### 4FSK, 12.5kHz:

### Low Channel, 136.0125 MHz

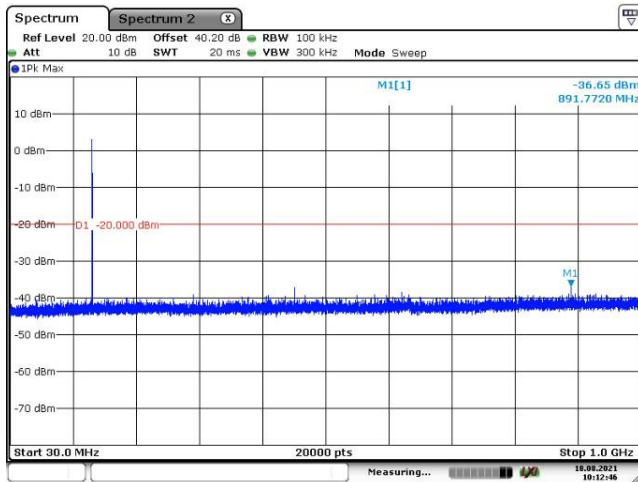


Date: 18.AUG.2021 09:55:57

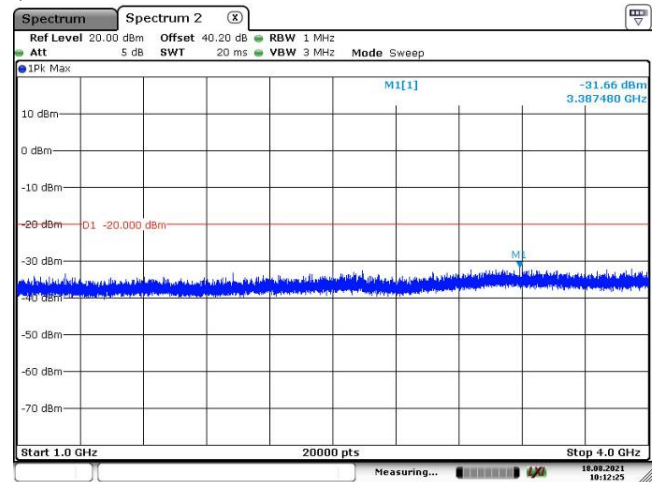


Date: 18.AUG.2021 09:55:40

### Middle Channel, 155.7525 MHz

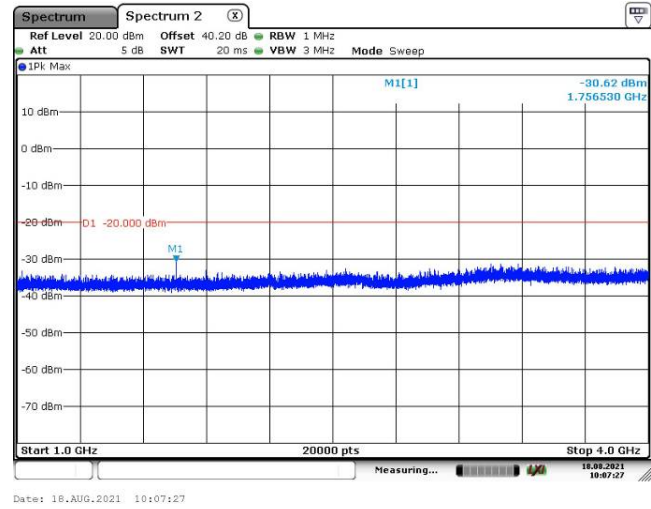
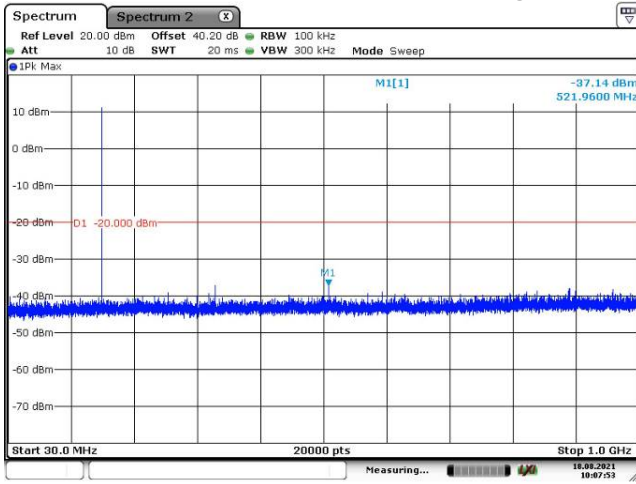


Date: 18.AUG.2021 10:12:46



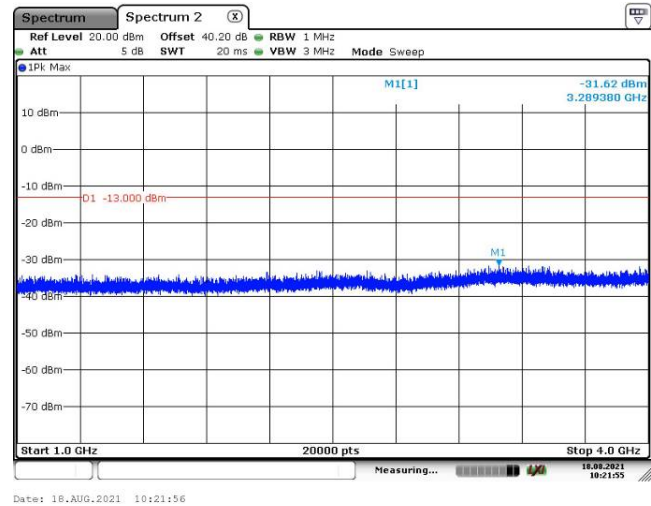
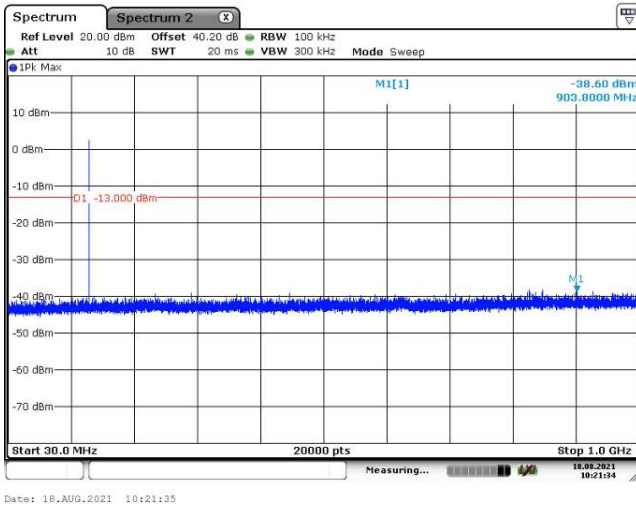
Date: 18.AUG.2021 10:12:25

### High Channel, 173.9875 MHz



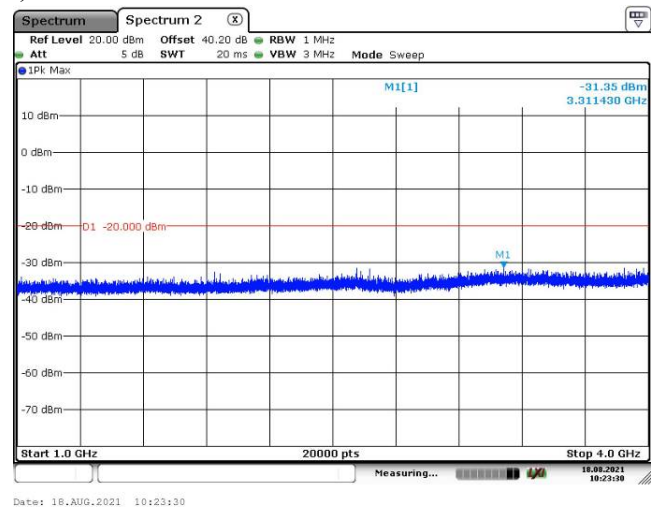
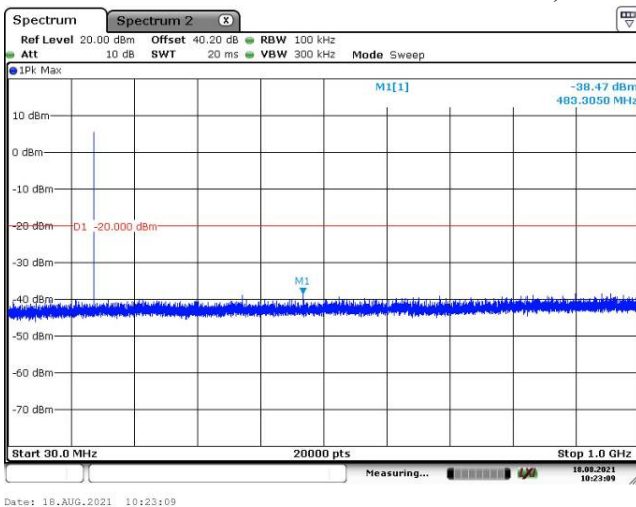
### Part 80:

### FM, 25kHz, 154.0125 MHz

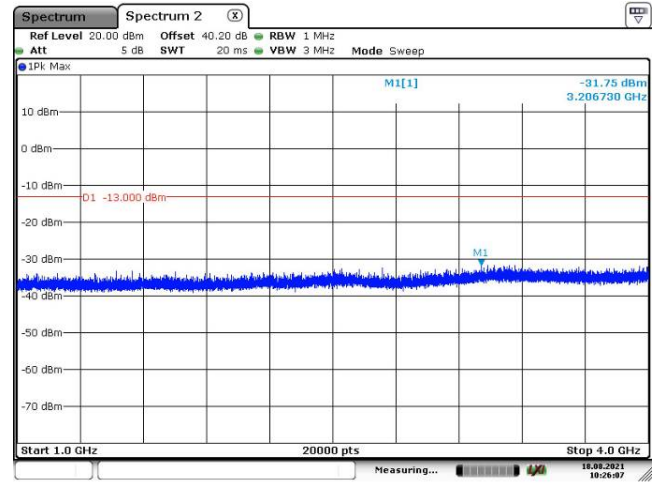
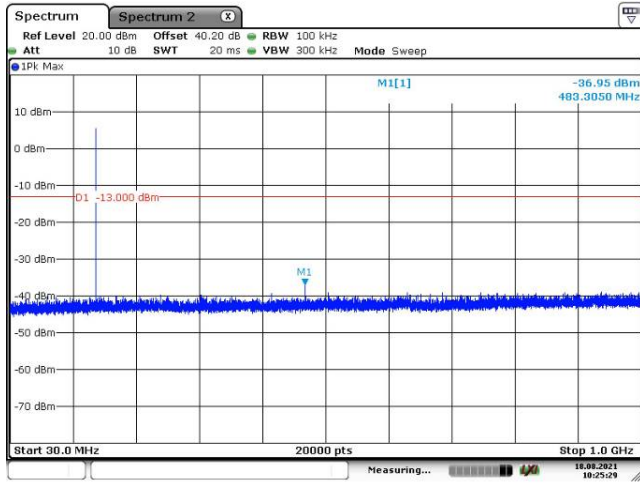


### Part 74:

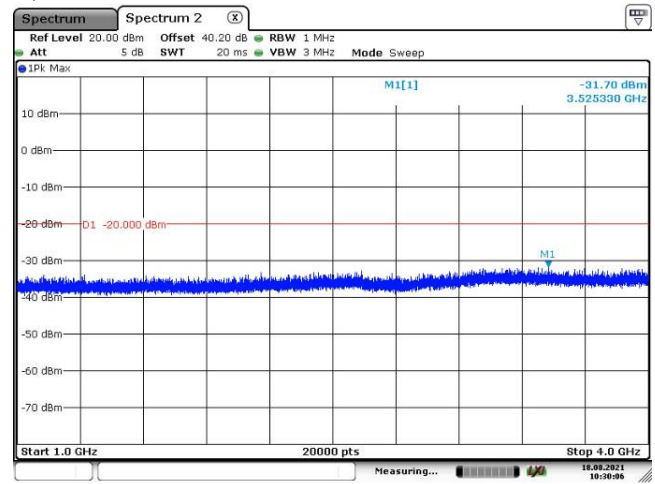
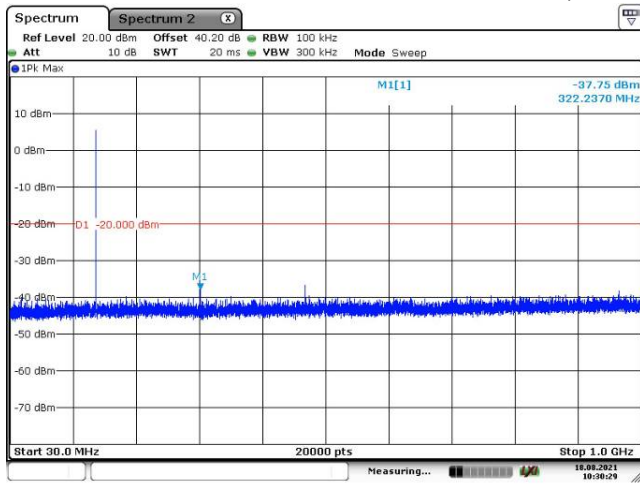
### FM, 12.5kHz, 161.1 MHz



### FM, 25kHz, 161.1 MHz

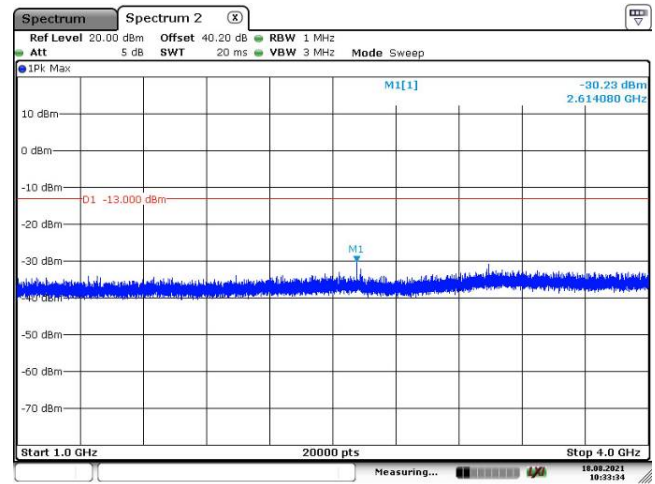
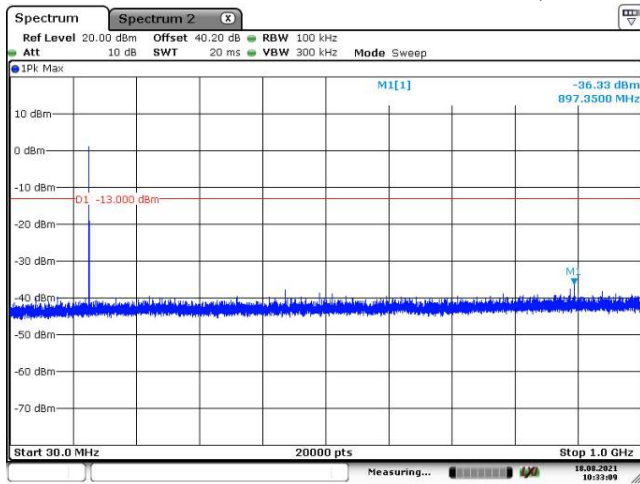


### 4FSK, 12.5kHz, 161.1 MHz

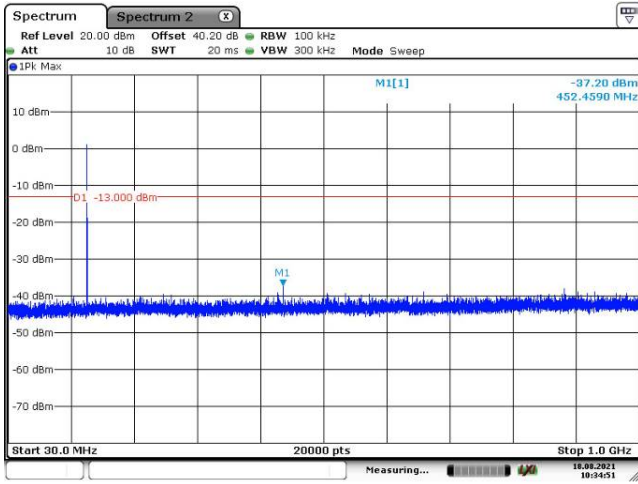


### Part 22:

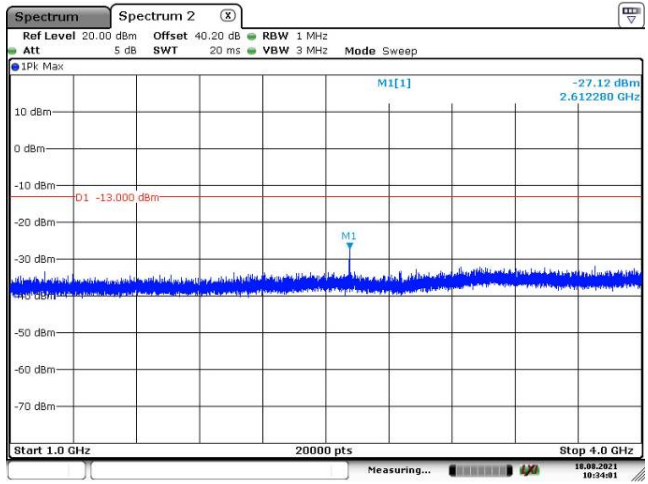
### FM, 12.5kHz, 150.8125 MHz



### FM,25kHz, 150.8125 MHz

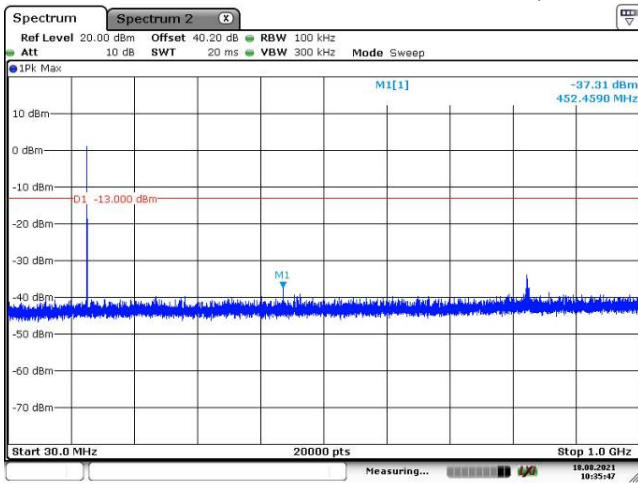


Date: 18.AUG.2021 10:34:52

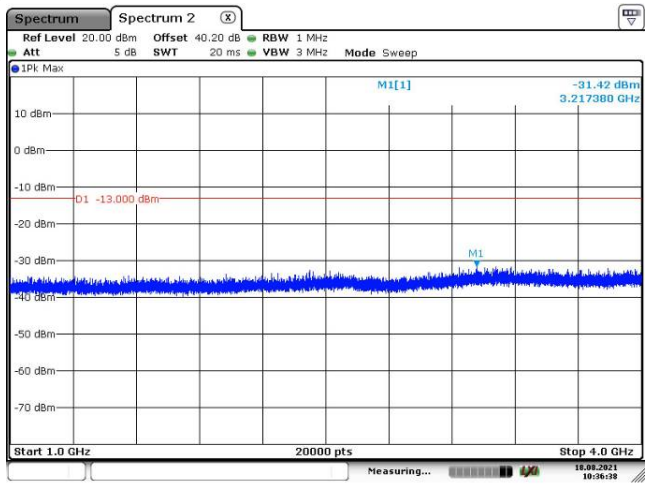


Date: 18.AUG.2021 10:34:02

### 4FSK, 12.5kHz, 150.8125 MHz



Date: 18.AUG.2021 10:35:47



Date: 18.AUG.2021 10:36:39

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**FCC §2.1053 & §22.861 & §74.462 & §80.211 & §90.210 - RADIATED SPURIOUS EMISSIONS**

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**Applicable Standard**

FCC §2.1053, §22.861, §74.462, §80.211 and §90.210

**Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001)-the absolute level

**Test Data**

Test Mode: Transmitting

**Test Result: Compliance.**

Note: Pre-scan two configuration, the worst case is advanced version.

Test performed at high power level with Band Rejector Filter, *please refer to the following table.*

**30MHz - 2GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4FSK, Frequency: 136.0125MHz-12.5 kHz								
272.03	H	25.89	-58.60	0.00	0.29	-58.89	-20.00	38.89
272.03	V	26.43	-55.73	0.00	0.29	-56.02	-20.00	36.02
408.04	H	26.33	-55.88	0.00	0.38	-56.26	-20.00	36.26
408.04	V	26.75	-52.87	0.00	0.38	-53.25	-20.00	33.25
544.05	H	26.85	-51.93	0.00	0.35	-52.28	-20.00	32.28
544.05	V	26.86	-50.03	0.00	0.35	-50.38	-20.00	30.38
680.06	H	26.57	-49.73	0.00	0.38	-50.11	-20.00	30.11
680.06	V	26.59	-47.12	0.00	0.38	-47.50	-20.00	27.50
816.08	H	26.41	-48.14	0.00	0.49	-48.63	-20.00	28.63
816.08	V	26.56	-45.10	0.00	0.49	-45.59	-20.00	25.59
952.09	H	26.16	-45.72	0.00	0.51	-46.23	-20.00	26.23
952.09	V	26.09	-42.62	0.00	0.51	-43.13	-20.00	23.13
1088.10	H	38.48	-65.36	7.46	0.99	-58.89	-20.00	38.89
1088.10	V	38.28	-65.98	7.46	0.99	-59.51	-20.00	39.51
1224.11	H	38.60	-64.58	7.54	1.11	-58.15	-20.00	38.15
1224.11	V	37.71	-66.52	7.54	1.11	-60.09	-20.00	40.09
1360.13	H	38.57	-64.98	8.72	1.20	-57.46	-20.00	37.46
1360.13	V	38.29	-65.98	8.72	1.20	-58.46	-20.00	38.46
4FSK, Frequency: 136.0125MHz-12.5 kHz								
272.03	H	26.76	-57.73	0.00	0.29	-58.02	-20.00	38.02
272.03	V	26.12	-56.04	0.00	0.29	-56.33	-20.00	36.33
408.04	H	26.89	-55.32	0.00	0.38	-55.70	-20.00	35.70
408.04	V	26.54	-53.08	0.00	0.38	-53.46	-20.00	33.46
544.05	H	27.03	-51.75	0.00	0.35	-52.10	-20.00	32.10
544.05	V	27.19	-49.70	0.00	0.35	-50.05	-20.00	30.05
680.06	H	26.93	-49.37	0.00	0.38	-49.75	-20.00	29.75
680.06	V	16.97	-56.74	0.00	0.38	-57.12	-20.00	37.12
816.08	H	27.15	-47.40	0.00	0.49	-47.89	-20.00	27.89
816.08	V	27.20	-44.46	0.00	0.49	-44.95	-20.00	24.95
952.09	H	27.51	-44.37	0.00	0.51	-44.88	-20.00	24.88
952.09	V	27.56	-41.15	0.00	0.51	-41.66	-20.00	21.66
1088.10	H	38.39	-65.45	7.46	0.99	-58.98	-20.00	38.98
1088.10	V	37.61	-66.65	7.46	0.99	-60.18	-20.00	40.18
1224.11	H	38.72	-64.46	7.54	1.11	-58.03	-20.00	38.03
1224.11	V	37.71	-66.52	7.54	1.11	-60.09	-20.00	40.09
1360.13	H	38.40	-65.15	8.72	1.20	-57.63	-20.00	37.63
1360.13	V	38.73	-65.54	8.72	1.20	-58.02	-20.00	38.02

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 155.7525MHz-12.5 kHz								
311.51	H	26.06	-57.70	0.00	0.32	-58.02	-20.00	38.02
311.51	V	27.60	-54.61	0.00	0.32	-54.93	-20.00	34.93
467.26	H	26.53	-54.17	0.00	0.36	-54.53	-20.00	34.53
467.26	V	27.34	-50.93	0.00	0.36	-51.29	-20.00	31.29
623.01	H	27.09	-49.99	0.00	0.36	-50.35	-20.00	30.35
623.01	V	28.13	-47.28	0.00	0.36	-47.64	-20.00	27.64
778.76	H	27.52	-47.54	0.00	0.47	-48.01	-20.00	28.01
778.76	V	28.07	-44.14	0.00	0.47	-44.61	-20.00	24.61
934.52	H	28.12	-44.22	0.00	0.51	-44.73	-20.00	24.73
934.52	V	29.00	-40.15	0.00	0.51	-40.66	-20.00	20.66
1090.27	H	37.51	-66.33	7.45	0.99	-59.87	-20.00	39.87
1090.27	V	38.49	-65.77	7.45	0.99	-59.31	-20.00	39.31
1246.02	H	37.65	-65.71	7.76	1.14	-59.09	-20.00	39.09
1246.02	V	37.92	-66.45	7.76	1.14	-59.83	-20.00	39.83
1401.77	H	37.63	-65.79	9.01	1.20	-57.98	-20.00	37.98
1401.77	V	38.46	-65.55	9.01	1.20	-57.74	-20.00	37.74
1557.53	H	38.26	-66.47	9.85	0.96	-57.58	-20.00	37.58
1557.53	V	37.68	-67.44	9.85	0.96	-58.55	-20.00	38.55
4FSK, Frequency:155.7525MHz-12.5 kHz								
311.51	H	26.98	-56.78	0.00	0.32	-57.10	-20.00	37.10
311.51	V	26.79	-55.42	0.00	0.32	-55.74	-20.00	35.74
467.26	H	26.12	-54.58	0.00	0.36	-54.94	-20.00	34.94
467.26	V	27.02	-51.25	0.00	0.36	-51.61	-20.00	31.61
623.01	H	28.58	-48.50	0.00	0.36	-48.86	-20.00	28.86
623.01	V	27.29	-48.12	0.00	0.36	-48.48	-20.00	28.48
778.76	H	27.62	-47.44	0.00	0.47	-47.91	-20.00	27.91
778.76	V	27.14	-45.07	0.00	0.47	-45.54	-20.00	25.54
934.52	H	28.47	-43.87	0.00	0.51	-44.38	-20.00	24.38
934.52	V	27.83	-41.32	0.00	0.51	-41.83	-20.00	21.83
1090.27	H	38.23	-65.61	7.45	0.99	-59.15	-20.00	39.15
1090.27	V	37.65	-66.61	7.45	0.99	-60.15	-20.00	40.15
1246.02	H	37.64	-65.72	7.76	1.14	-59.10	-20.00	39.10
1246.02	V	37.50	-66.87	7.76	1.14	-60.25	-20.00	40.25
1401.77	H	37.68	-65.74	9.01	1.20	-57.93	-20.00	37.93
1401.77	V	38.06	-65.95	9.01	1.20	-58.14	-20.00	38.14
1557.53	H	37.86	-66.87	9.85	0.96	-57.98	-20.00	37.98
1557.53	V	37.50	-67.62	9.85	0.96	-58.73	-20.00	38.73
311.51	H	26.98	-56.78	0.00	0.32	-57.10	-20.00	37.10
311.51	V	26.79	-55.42	0.00	0.32	-55.74	-20.00	35.74



Frequency (MHz)	Polar (H/V)	Receiver Reading (dBuV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 173.9875MHz-12.5 kHz								
347.98	H	26.43	-56.77	0.00	0.34	-57.11	-20.00	37.11
347.98	V	27.07	-54.15	0.00	0.34	-54.49	-20.00	34.49
521.96	H	27.01	-52.32	0.00	0.35	-52.67	-20.00	32.67
521.96	V	27.58	-49.63	0.00	0.35	-49.98	-20.00	29.98
695.95	H	26.27	-49.81	0.00	0.38	-50.19	-20.00	30.19
695.95	V	26.78	-46.46	0.00	0.38	-46.84	-20.00	26.84
869.94	H	27.35	-46.35	0.00	0.50	-46.85	-20.00	26.85
869.94	V	27.64	-42.97	0.00	0.50	-43.47	-20.00	23.47
1043.93	H	38.79	-65.04	7.68	0.86	-58.22	-20.00	38.22
1043.93	V	37.87	-66.47	7.68	0.86	-59.65	-20.00	39.65
1217.91	H	38.67	-64.46	7.48	1.11	-58.09	-20.00	38.09
1217.91	V	38.43	-65.76	7.48	1.11	-59.39	-20.00	39.39
1391.90	H	37.92	-65.50	8.94	1.20	-57.76	-20.00	37.76
1391.90	V	38.05	-66.00	8.94	1.20	-58.26	-20.00	38.26
1565.89	H	37.94	-66.77	9.90	0.91	-57.78	-20.00	37.78
1565.89	V	38.59	-66.55	9.90	0.91	-57.56	-20.00	37.56
1739.88	H	37.79	-66.13	10.92	0.72	-55.93	-20.00	35.93
1739.88	V	38.68	-65.84	10.92	0.72	-55.64	-20.00	35.64
4FSK, Frequency:173.9875MHz-12.5 kHz								
347.98	H	26.23	-56.97	0.00	0.34	-57.31	-20.00	37.31
347.98	V	26.85	-54.37	0.00	0.34	-54.71	-20.00	34.71
521.96	H	26.89	-52.44	0.00	0.35	-52.79	-20.00	32.79
521.96	V	27.14	-50.07	0.00	0.35	-50.42	-20.00	30.42
695.95	H	26.52	-49.56	0.00	0.38	-49.94	-20.00	29.94
695.95	V	26.93	-46.31	0.00	0.38	-46.69	-20.00	26.69
869.94	H	27.35	-46.35	0.00	0.50	-46.85	-20.00	26.85
869.94	V	27.59	-43.02	0.00	0.50	-43.52	-20.00	23.52
1043.93	H	38.19	-65.64	7.68	0.86	-58.82	-20.00	38.82
1043.93	V	37.58	-66.76	7.68	0.86	-59.94	-20.00	39.94
1217.91	H	38.42	-64.71	7.48	1.11	-58.34	-20.00	38.34
1217.91	V	38.58	-65.61	7.48	1.11	-59.24	-20.00	39.24
1391.90	H	37.97	-65.45	8.94	1.20	-57.71	-20.00	37.71
1391.90	V	38.01	-66.04	8.94	1.20	-58.30	-20.00	38.30
1565.89	H	37.66	-67.05	9.90	0.91	-58.06	-20.00	38.06
1565.89	V	37.85	-67.29	9.90	0.91	-58.30	-20.00	38.30
1739.88	H	37.93	-65.99	10.92	0.72	-55.79	-20.00	35.79
1739.88	V	38.31	-66.21	10.92	0.72	-56.01	-20.00	36.01

## Part 80

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 154.0125MHz-25 kHz								
308.03	H	27.47	-56.34	0.00	0.32	-56.66	-13.00	43.66
308.03	V	27.38	-54.92	0.00	0.32	-55.24	-13.00	42.24
462.04	H	27.39	-53.44	0.00	0.36	-53.80	-13.00	40.80
462.04	V	26.49	-51.90	0.00	0.36	-52.26	-13.00	39.26
616.05	H	27.91	-49.27	0.00	0.36	-49.63	-13.00	36.63
616.05	V	26.22	-49.40	0.00	0.36	-49.76	-13.00	36.76
770.06	H	28.42	-46.75	0.00	0.46	-47.21	-13.00	34.21
770.06	V	27.26	-45.05	0.00	0.46	-45.51	-13.00	32.51
924.08	H	28.02	-44.59	0.00	0.51	-45.10	-13.00	32.10
924.08	V	27.53	-41.88	0.00	0.51	-42.39	-13.00	29.39
1078.09	H	37.98	-65.86	7.51	0.96	-59.31	-13.00	46.31
1078.09	V	37.96	-66.32	7.51	0.96	-59.77	-13.00	46.77
1232.10	H	37.84	-65.40	7.62	1.12	-58.90	-13.00	45.90
1232.10	V	38.73	-65.55	7.62	1.12	-59.05	-13.00	46.05
1386.11	H	37.99	-65.46	8.90	1.20	-57.76	-13.00	44.76
1386.11	V	37.78	-66.31	8.90	1.20	-58.61	-13.00	45.61
1540.13	H	38.45	-66.32	9.74	1.08	-57.66	-13.00	44.66
1540.13	V	38.01	-67.06	9.74	1.08	-58.40	-13.00	45.40

Part 74

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 161.1MHz-12.5 kHz								
322.20	H	26.89	-56.70	0.00	0.33	-57.03	-20.00	37.03
322.20	V	26.57	-55.35	0.00	0.33	-55.68	-20.00	35.68
483.30	H	27.64	-52.65	0.00	0.36	-53.01	-20.00	33.01
483.30	V	27.31	-50.59	0.00	0.36	-50.95	-20.00	30.95
644.40	H	27.00	-49.79	0.00	0.37	-50.16	-20.00	30.16
644.40	V	27.03	-47.75	0.00	0.37	-48.12	-20.00	28.12
805.50	H	27.43	-47.28	0.00	0.49	-47.77	-20.00	27.77
805.50	V	27.57	-44.29	0.00	0.49	-44.78	-20.00	24.78
966.60	H	26.19	-45.32	0.00	0.51	-45.83	-20.00	25.83
966.60	V	26.33	-42.01	0.00	0.51	-42.52	-20.00	22.52
1127.70	H	37.77	-65.83	7.37	1.04	-59.50	-20.00	39.50
1127.70	V	38.47	-65.73	7.37	1.04	-59.40	-20.00	39.40
1288.80	H	38.71	-65.00	8.19	1.18	-57.99	-20.00	37.99
1288.80	V	38.28	-66.35	8.19	1.18	-59.34	-20.00	39.34
1449.90	H	37.67	-66.45	9.25	1.27	-58.47	-20.00	38.47
1449.90	V	38.58	-65.89	9.25	1.27	-57.91	-20.00	37.91
1611.00	H	37.76	-66.77	10.18	0.69	-57.28	-20.00	37.28
1611.00	V	37.72	-67.41	10.18	0.69	-57.92	-20.00	37.92
FM, Frequency: 161.1MHz-25 kHz								
322.20	H	26.77	-56.82	0.00	0.33	-57.15	-13.00	44.15
322.20	V	26.16	-55.76	0.00	0.33	-56.09	-13.00	43.09
483.30	H	26.80	-53.49	0.00	0.36	-53.85	-13.00	40.85
483.30	V	26.54	-51.36	0.00	0.36	-51.72	-13.00	38.72
644.40	H	26.10	-50.69	0.00	0.37	-51.06	-13.00	38.06
644.40	V	26.31	-48.47	0.00	0.37	-48.84	-13.00	35.84
805.50	H	27.06	-47.65	0.00	0.49	-48.14	-13.00	35.14
805.50	V	27.22	-44.64	0.00	0.49	-45.13	-13.00	32.13
966.60	H	26.57	-44.94	0.00	0.51	-45.45	-13.00	32.45
966.60	V	26.30	-42.04	0.00	0.51	-42.55	-13.00	29.55
1127.70	H	37.98	-65.62	7.37	1.04	-59.29	-13.00	46.29
1127.70	V	38.36	-65.84	7.37	1.04	-59.51	-13.00	46.51
1288.80	H	37.64	-66.07	8.19	1.18	-59.06	-13.00	46.06
1288.80	V	38.01	-66.62	8.19	1.18	-59.61	-13.00	46.61
1449.90	H	37.58	-66.54	9.25	1.27	-58.56	-13.00	45.56
1449.90	V	38.12	-66.35	9.25	1.27	-58.37	-13.00	45.37
1611.00	H	37.69	-66.84	10.18	0.69	-57.35	-13.00	44.35
1611.00	V	38.61	-66.52	10.18	0.69	-57.03	-13.00	44.03

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4FSK, Frequency: 161.1MHz-12.5 kHz								
322.20	H	26.41	-57.18	0.00	0.33	-57.51	-20.00	37.51
322.20	V	25.77	-56.15	0.00	0.33	-56.48	-20.00	36.48
483.30	H	26.24	-54.05	0.00	0.36	-54.41	-20.00	34.41
483.30	V	25.94	-51.96	0.00	0.36	-52.32	-20.00	32.32
644.40	H	27.13	-49.66	0.00	0.37	-50.03	-20.00	30.03
644.40	V	27.47	-47.31	0.00	0.37	-47.68	-20.00	27.68
805.50	H	26.77	-47.94	0.00	0.49	-48.43	-20.00	28.43
805.50	V	26.52	-45.34	0.00	0.49	-45.83	-20.00	25.83
966.60	H	27.59	-43.92	0.00	0.51	-44.43	-20.00	24.43
966.60	V	27.23	-41.11	0.00	0.51	-41.62	-20.00	21.62
1127.70	H	37.84	-65.76	7.37	1.04	-59.43	-20.00	39.43
1127.70	V	37.79	-66.41	7.37	1.04	-60.08	-20.00	40.08
1288.80	H	38.16	-65.55	8.19	1.18	-58.54	-20.00	38.54
1288.80	V	38.28	-66.35	8.19	1.18	-59.34	-20.00	39.34
1449.90	H	38.43	-65.69	9.25	1.27	-57.71	-20.00	37.71
1449.90	V	38.38	-66.09	9.25	1.27	-58.11	-20.00	38.11
1611.00	H	38.78	-65.75	10.18	0.69	-56.26	-20.00	36.26
1611.00	V	38.72	-66.41	10.18	0.69	-56.92	-20.00	36.92

Part 22

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 150.8125MHz-12.5 kHz								
301.63	H	26.73	-57.18	0.00	0.31	-57.49	-13.00	44.49
301.63	V	26.34	-56.14	0.00	0.31	-56.45	-13.00	43.45
452.44	H	27.05	-54.03	0.00	0.36	-54.39	-13.00	41.39
452.44	V	26.15	-52.45	0.00	0.36	-52.81	-13.00	39.81
603.25	H	27.66	-49.70	0.00	0.36	-50.06	-13.00	37.06
603.25	V	26.99	-49.01	0.00	0.36	-49.37	-13.00	36.37
754.06	H	27.85	-47.51	0.00	0.44	-47.95	-13.00	34.95
754.06	V	26.88	-45.62	0.00	0.44	-46.06	-13.00	33.06
904.88	H	27.16	-45.94	0.00	0.51	-46.45	-13.00	33.45
904.88	V	38.16	-53.92	0.00	0.51	-54.43	-13.00	41.43
1055.69	H	38.46	-65.37	7.62	0.90	-58.65	-13.00	45.65
1055.69	V	37.92	-66.40	7.62	0.90	-59.68	-13.00	46.68
1206.50	H	37.64	-65.39	7.37	1.10	-59.12	-13.00	46.12
1206.50	V	37.56	-66.56	7.37	1.10	-60.29	-13.00	47.29
1357.31	H	38.06	-65.51	8.70	1.20	-58.01	-13.00	45.01
1357.31	V	38.11	-66.18	8.70	1.20	-58.68	-13.00	45.68
1508.13	H	38.09	-66.74	9.55	1.30	-58.49	-13.00	45.49
1508.13	V	37.76	-67.21	9.55	1.30	-58.96	-13.00	45.96
FM, Frequency: 150.8125MHz-25 kHz								
301.63	H	26.92	-56.99	0.00	0.31	-57.30	-13.00	44.30
301.63	V	26.77	-55.71	0.00	0.31	-56.02	-13.00	43.02
452.44	H	27.13	-53.95	0.00	0.36	-54.31	-13.00	41.31
452.44	V	26.85	-51.75	0.00	0.36	-52.11	-13.00	39.11
603.25	H	27.26	-50.10	0.00	0.36	-50.46	-13.00	37.46
603.25	V	27.31	-48.69	0.00	0.36	-49.05	-13.00	36.05
754.06	H	27.15	-48.21	0.00	0.44	-48.65	-13.00	35.65
754.06	V	27.26	-45.24	0.00	0.44	-45.68	-13.00	32.68
904.88	H	26.37	-46.73	0.00	0.51	-47.24	-13.00	34.24
904.88	V	26.11	-43.79	0.00	0.51	-44.30	-13.00	31.30
1055.69	H	38.10	-65.73	7.62	0.90	-59.01	-13.00	46.01
1055.69	V	37.90	-66.42	7.62	0.90	-59.70	-13.00	46.70
1206.50	H	38.71	-64.32	7.37	1.10	-58.05	-13.00	45.05
1206.50	V	38.54	-65.58	7.37	1.10	-59.31	-13.00	46.31
1357.31	H	38.56	-65.01	8.70	1.20	-57.51	-13.00	44.51
1357.31	V	37.56	-66.73	8.70	1.20	-59.23	-13.00	46.23
1508.13	H	38.20	-66.63	9.55	1.30	-58.38	-13.00	45.38
1508.13	V	37.88	-67.09	9.55	1.30	-58.84	-13.00	45.84

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4FSK, Frequency: 150.8125MHz-12.5 kHz								
301.63	H	26.13	-57.78	0.00	0.31	-58.09	-13.00	45.09
301.63	V	26.35	-56.13	0.00	0.31	-56.44	-13.00	43.44
452.44	H	26.57	-54.51	0.00	0.36	-54.87	-13.00	41.87
452.44	V	26.86	-51.74	0.00	0.36	-52.10	-13.00	39.10
603.25	H	27.22	-50.14	0.00	0.36	-50.50	-13.00	37.50
603.25	V	27.84	-48.16	0.00	0.36	-48.52	-13.00	35.52
754.06	H	27.06	-48.30	0.00	0.44	-48.74	-13.00	35.74
754.06	V	27.35	-45.15	0.00	0.44	-45.59	-13.00	32.59
904.88	H	27.56	-45.54	0.00	0.51	-46.05	-13.00	33.05
904.88	V	27.29	-42.61	0.00	0.51	-43.12	-13.00	30.12
1055.69	H	38.21	-65.62	7.62	0.90	-58.90	-13.00	45.90
1055.69	V	38.59	-65.73	7.62	0.90	-59.01	-13.00	46.01
1206.50	H	38.04	-64.99	7.37	1.10	-58.72	-13.00	45.72
1206.50	V	38.62	-65.50	7.37	1.10	-59.23	-13.00	46.23
1357.31	H	37.92	-65.65	8.70	1.20	-58.15	-13.00	45.15
1357.31	V	38.61	-65.68	8.70	1.20	-58.18	-13.00	45.18
1508.13	H	38.05	-66.78	9.55	1.30	-58.53	-13.00	45.53
1508.13	V	38.56	-66.41	9.55	1.30	-58.16	-13.00	45.16

Note 1: The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

Note 2:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit - Absolute Level

**FCC §2.1055 & § 22.355 & §74.464& §80.209 & §90.213 - FREQUENCY STABILITY**

**Applicable Standard**

FCC §2.1055, § 22.355, §74.464, §80.209 and §90.213

**Test Procedure**

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.

**Test Data**

Test Mode: Transmitting

**Test Result: Compliance.** *Please refer to following tables.*

**FCC Part 90:**

FM,12.5kHz, Reference Frequency: 155.7525 MHz, Limit: ±2.5 ppm			
Temperature (°C)	Voltage Supplied (V <sub>AC</sub> )	Measured Frequency (MHz)	Frequency Error (ppm)
-30	120	155.7527195	1.41
-20		155.7525878	0.56
-10		155.7526579	1.01
0		155.7526996	1.28
10		155.7526235	0.79
20		155.7525000	0.00
30		155.7524686	-0.20
40		155.7524758	-0.16
50		155.7524794	-0.13
20		102	155.7524569
20	138	155.7524503	-0.32

4FSK, 12.5kHz, Reference Frequency: 155.7525MHz, Limit: ±2.5 ppm			
Temperature (°C)	Voltage Supplied (V <sub>AC</sub> )	Measured Frequency (MHz)	Frequency Error (ppm)
-30	120	155.7526704	1.09
-20		155.7526875	1.20
-10		155.7527189	1.41
0		155.7526622	1.04
10		155.7527680	1.72
20		155.7526450	0.93
30		155.7525072	0.05
40		155.7524998	0.00
50		155.7525036	0.02
20		102	155.7525266
20	138	155.7525254	0.16

**FCC Part 80:**

<b>FM,25kHz, Reference Frequency: 154.0125MHz,Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>AC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	120	154.012565	0.42
-20		154.012675	1.13
-10		154.012774	1.78
0		154.012828	2.13
10		154.012786	1.86
20		154.012500	0.00
30		154.012497	-0.02
40		154.012466	-0.22
50		154.012490	-0.06
20		102	154.012500
20	138	154.012494	-0.04

**FCC Part 74:**

<b>FM, 12.5kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>AC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	120	161.1003057	1.90
-20		161.1000747	0.46
-10		161.1001503	0.93
0		161.1002260	1.40
10		161.1002679	1.66
20		161.1000000	0.00
30		161.0998089	-1.19
40		161.0999602	-0.25
50		161.0996868	-1.94
20		102	161.0998464
20	138	161.0996285	-2.31

<b>4FSK, 12.5kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>AC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	120	161.1003818	2.37
-20		161.1000960	0.60
-10		161.1001647	1.02
0		161.1003727	2.31
10		161.1002467	1.53
20		161.1000950	0.59
30		161.0999911	-0.06
40		161.0997853	-1.33
50		161.0999344	-0.41
20		102	161.0998525
20	138	161.0998168	-1.14



<b>FM, 25kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>AC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	120	161.1001205	0.75
-20		161.1002554	1.59
-10		161.1000858	0.53
0		161.1000468	0.29
10		161.1002154	1.34
20		161.1000000	0.00
30		161.0997203	-1.74
40		161.0998005	-1.24
50		161.0998948	-0.65
20		102	161.0996698
20	138	161.0997313	-1.67

**FCC Part 22:**

<b>FM, 12.5kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>AC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	13.6	150.8127152	1.43
-20		150.8125393	0.26
-10		150.8126654	1.10
0		150.8125507	0.34
10		150.8125727	0.48
20		150.8125000	0.00
30		150.8124945	-0.04
40		150.8124760	-0.16
50		150.8124506	-0.33
20		11.56	150.8124978
20	15.64	150.8124639	-0.24

<b>4FSK, 12.5kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	13.6	150.8126410	0.93
-20		150.8125993	0.66
-10		150.8126815	1.20
0		150.8125715	0.47
10		150.8125975	0.65
20		150.8125950	0.63
30		150.8124995	0.00
40		150.8125238	0.16
50		150.8125171	0.11
20		11.56	150.8125249
20	15.64	150.8125103	0.07

<b>FM, 25kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm</b>			
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	13.6	150.8127056	1.36
-20		150.8125830	0.55
-10		150.8126557	1.03
0		150.8125718	0.48
10		150.8126985	1.32
20		150.8125000	0.00
30		150.8124896	-0.07
40		150.8124812	-0.12
50		150.8124544	-0.30
20		11.56	150.8124624
20	15.64	150.8124609	-0.26

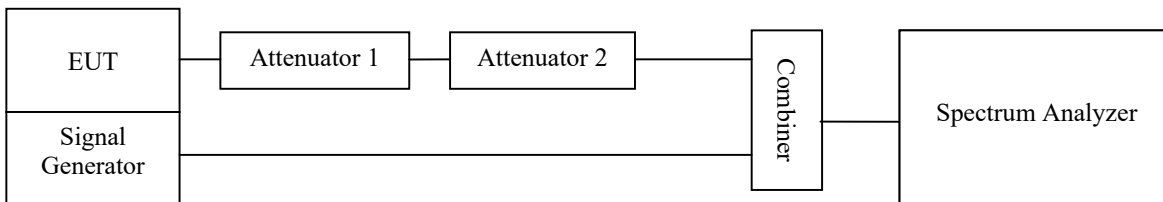
**FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR**

**Applicable Standard**

Regulations: FCC §90.214

**Test Procedure**

- a) Connect the EUT and test equipment as shown on the following block diagram.
- b) Set the Spectrum Analyzer to measure FM deviation, and tune the RF frequency to the transmitter assigned frequency.
- c) Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±12.5 kHz deviation and set its output level to -100dBm.
- d) Turn on the transmitter.
- e) Supply sufficient attenuation via the RF attenuator to provide an input level to the Spectrum Analyzer that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the Spectrum Analyzer as P<sub>0</sub>.
- f) Turn off the transmitter.
- g) Adjust the RF level of the signal generator to provide RF power equal to P<sub>0</sub>. This signal generator RF level shall be maintained throughout the rest of the measurement.
- h) Remove the attenuation 1, so the input power to the Spectrum Analyzer is increased by 30 dB when the transmitter is turned on.
- i) Adjust the vertical amplitude control of the spectrum analyzer to display the 1000 Hz at ±4 divisions vertically centered on the display. Set trigger mode of the Spectrum Analyzer to “Video”, and tune the “trigger level” on suitable level. Then set the “tiger offset” to -10ms for turn on and -15ms for turn off.
- j) Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be t<sub>on</sub>. The trace should be maintained within the allowed divisions during the period t<sub>1</sub> and t<sub>2</sub>.
- k) Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum Analyzer. The trace should be maintained within the allowed divisions during the period t<sub>3</sub>.



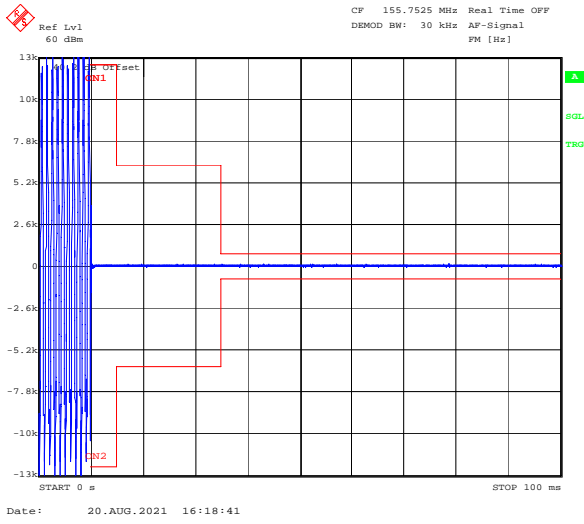
**Test Data**

Test Mode: Transmitting

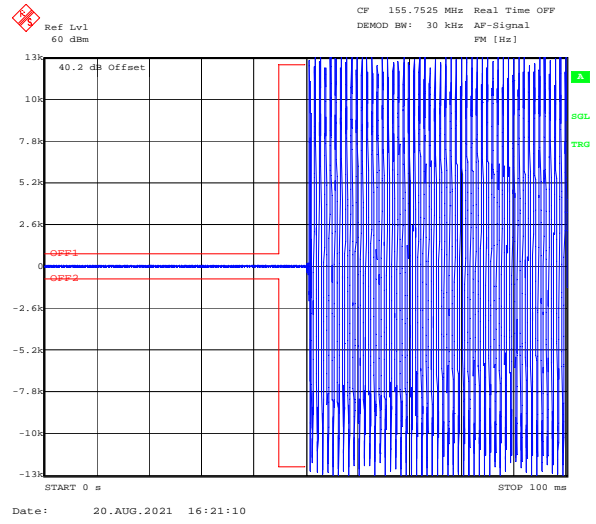
**Test Result: Compliance.** Please refer to the following table and plots.

Channel Spacing (kHz)	Transient Period (ms)	Transient Frequency	Result
12.5	5(t <sub>1</sub> )	±12.5 kHz	Pass
	20(t <sub>2</sub> )	±6.25 kHz	
	5(t <sub>3</sub> )	±12.5 kHz	

### Turn On



### Turn Off



\*\*\*\*\* END OF REPORT \*\*\*\*\*