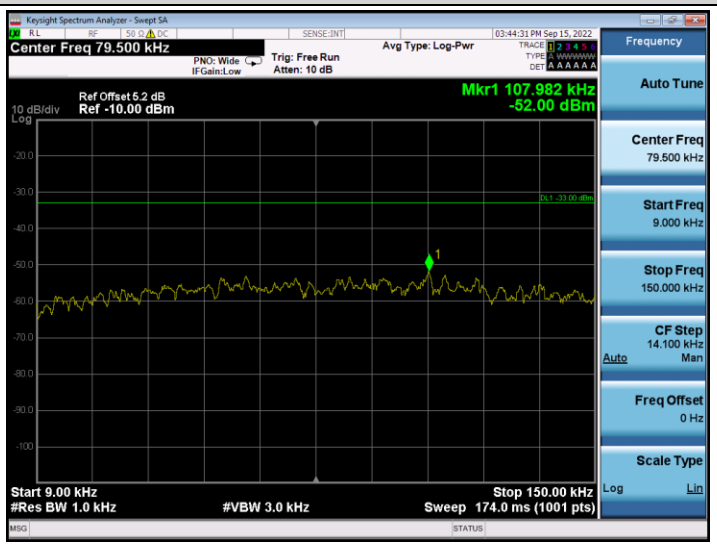
Appendix F Spurious Emission at Antenna Terminals

Test Result

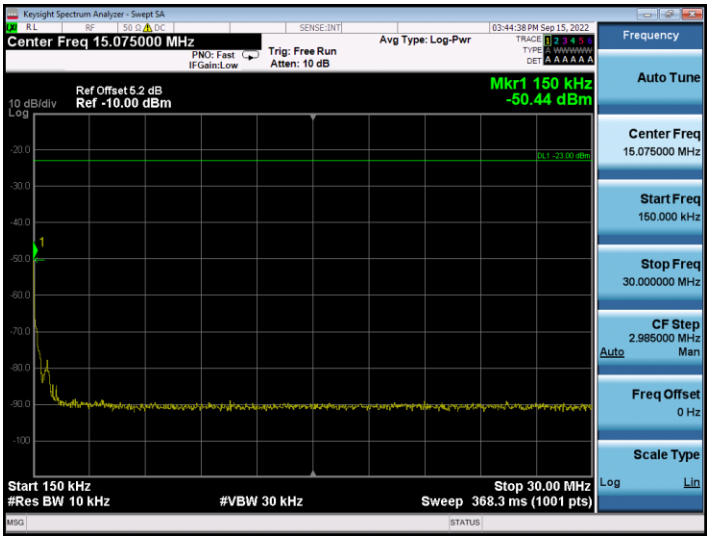
Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Result (dBm)	Verdict
Band5	1.4MHz	QPSK	20175	1RB#0	Range1: 0.009~0.15MHz	-52.00	PASS
Band5	1.4MHz	QPSK	20175	1RB#0	Range2: 0.15~30MHz	-50.44	PASS
Band5	1.4MHz	QPSK	20175	1RB#0	Range3: 30~18800MHz	-26.35	PASS
Band5	3MHz	QPSK	20175	1RB#0	Range1: 0.009~0.15MHz	-52.68	PASS
Band5	3MHz	QPSK	20175	1RB#0	Range2: 0.15~30MHz	-48.94	PASS
Band5	3MHz	QPSK	20175	1RB#0	Range3: 30~18800MHz	-26.86	PASS
Band5	5MHz	QPSK	20175	1RB#0	Range1: 0.009~0.15MHz	-52.09	PASS
Band5	5MHz	QPSK	20175	1RB#0	Range2: 0.15~30MHz	-49.43	PASS
Band5	5MHz	QPSK	20175	1RB#0	Range3: 30~18800MHz	-27.09	PASS
Band5	10MHz	QPSK	20175	1RB#0	Range1: 0.009~0.15MHz	-50.89	PASS
Band5	10MHz	QPSK	20175	1RB#0	Range2: 0.15~30MHz	-49.57	PASS
Band5	10MHz	QPSK	20175	1RB#0	Range3: 30~18800MHz	-25.68	PASS

Test Plots

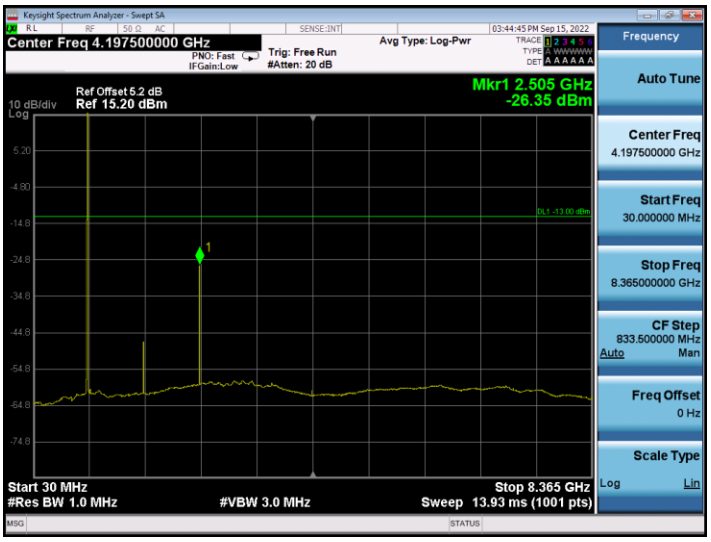
Band2-1.4MHz-QPSK-20175-1RB#0-Range1: 0.009~0.15MHz



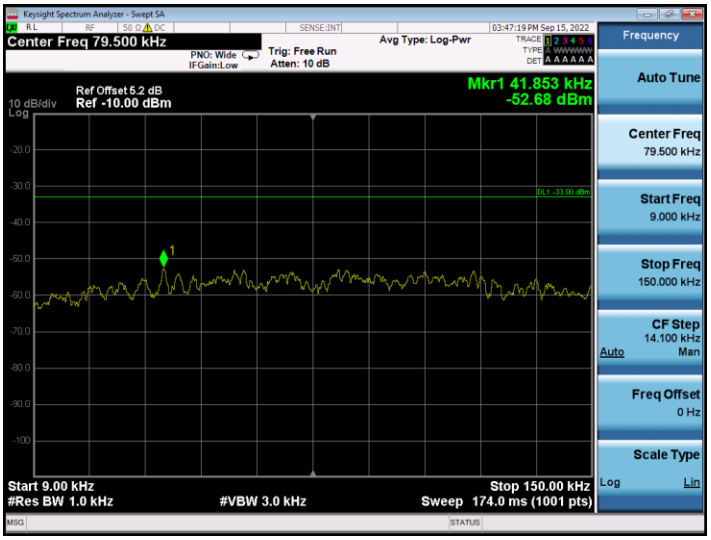
Band2-1.4MHz-QPSK-20175-1RB#0-Range2: 0.15~30MHz



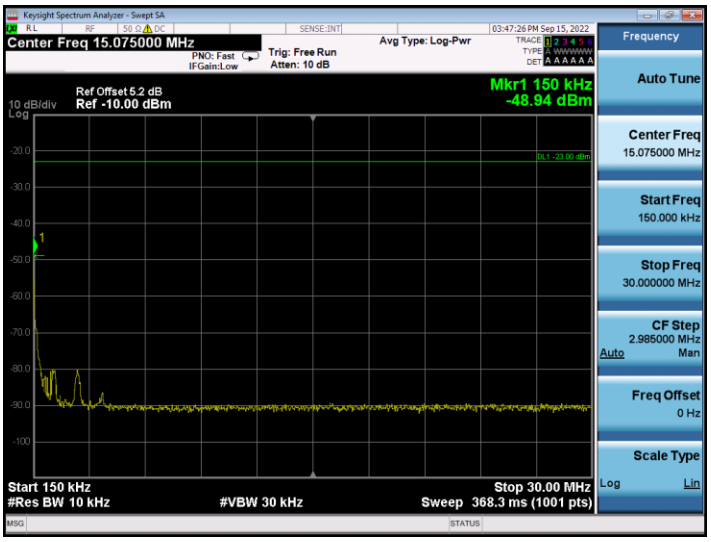
Band2-1.4MHz-QPSK-20175-1RB#0-Range3: 30~18800MHz



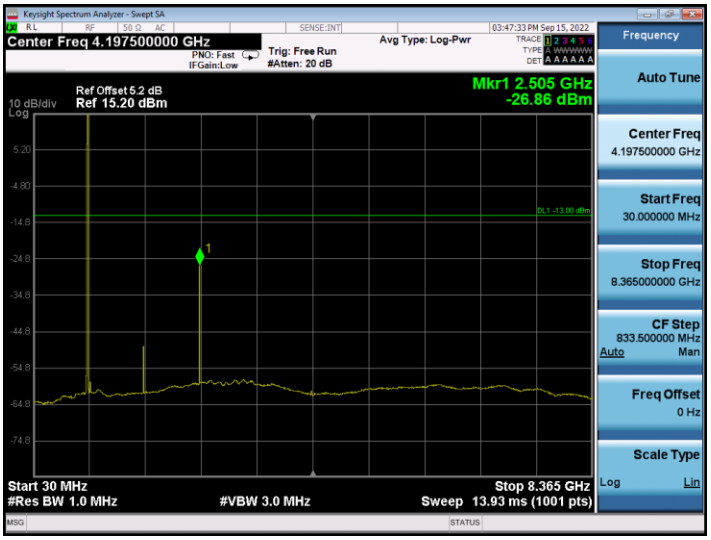
Band2-3MHz-QPSK-20175-1RB#0-Range1: 0.009~0.15MHz



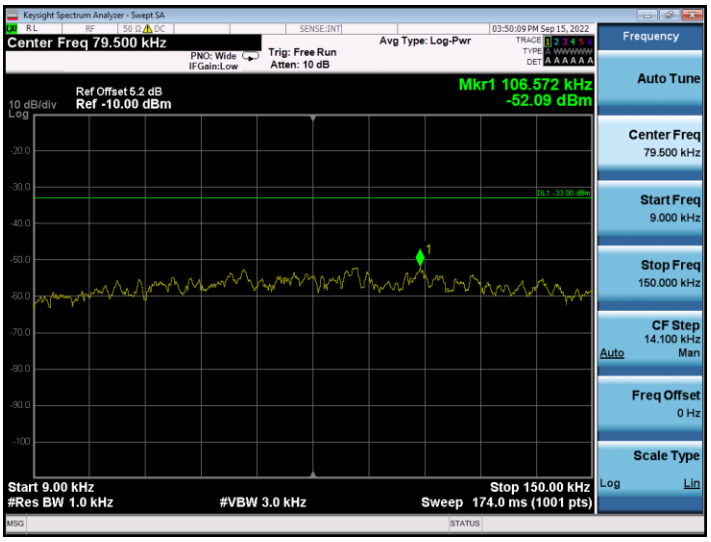
Band2-3MHz-QPSK-20175-1RB#0-Range2: 0.15~30MHz



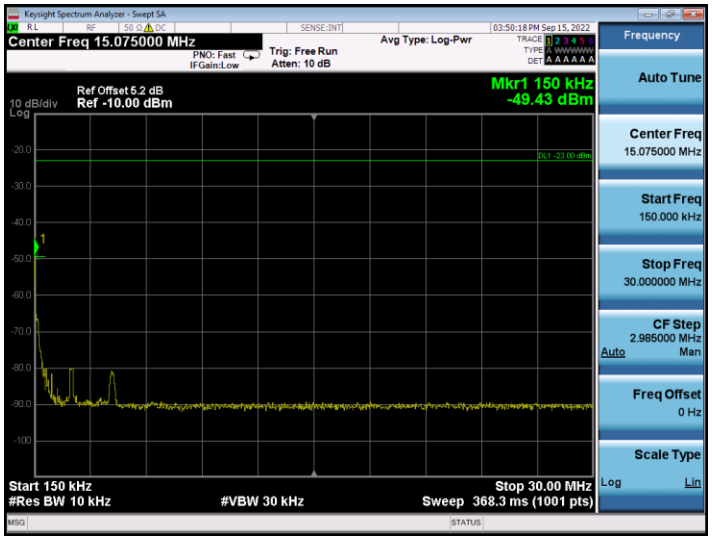
Band2-3MHz-QPSK-20175-1RB#0-Range3: 30~18800MHz



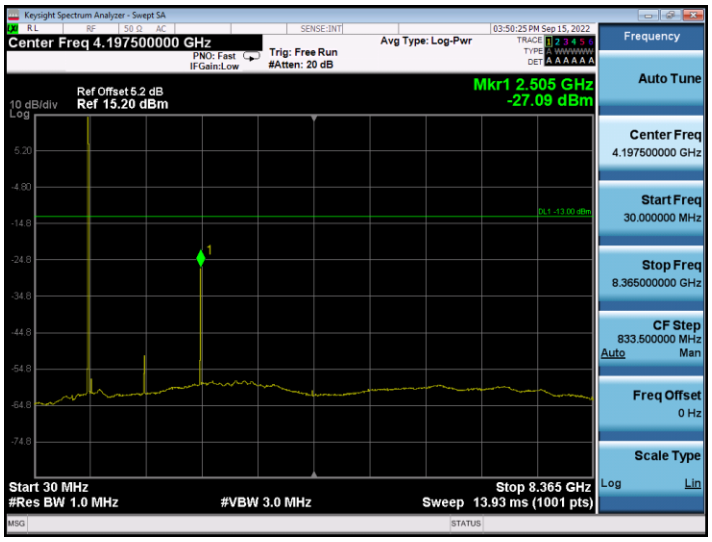
Band2-5MHz-QPSK-20175-1RB#0-Range1: 0.009~0.15MHz



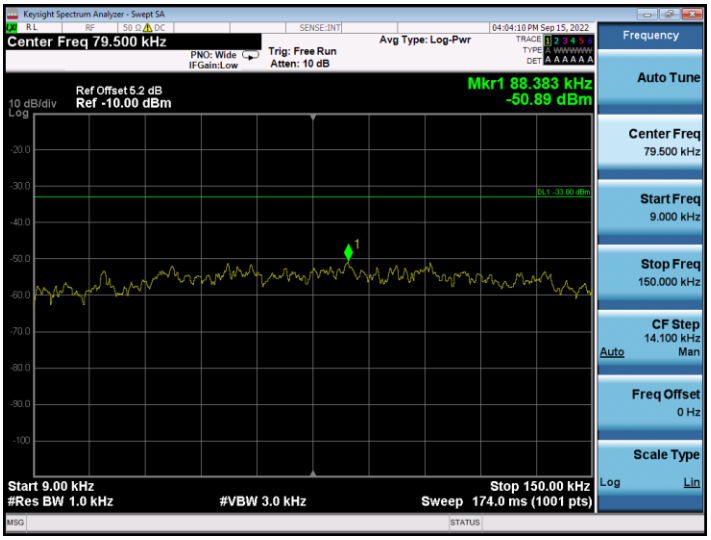
Band2-5MHz-QPSK-20175-1RB#0-Range2: 0.15~30MHz



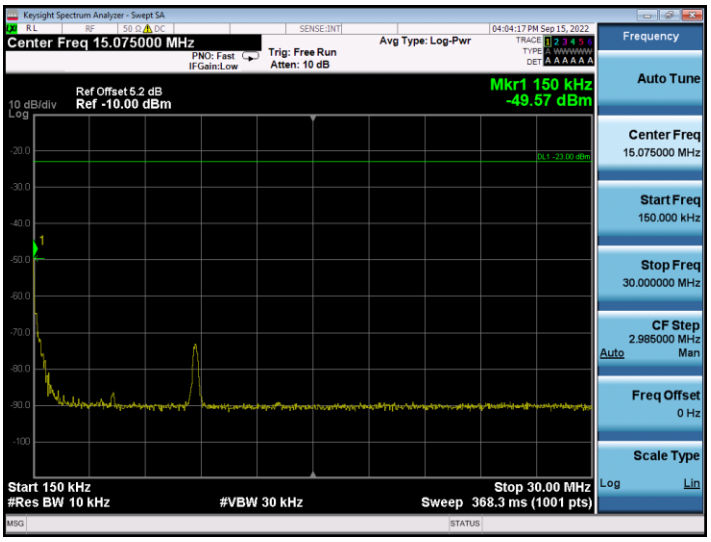
Band2-5MHz-QPSK-20175-1RB#0-Range3: 30~18800MHz



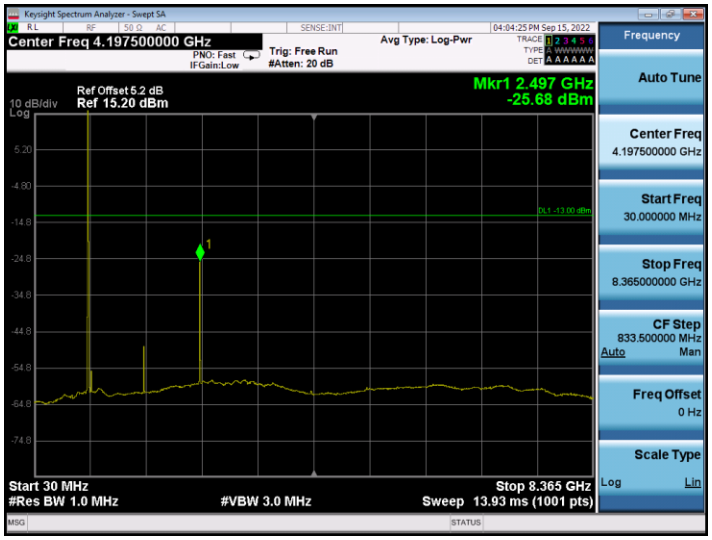
Band2-10MHz-QPSK-20175-1RB#0-Range1: 0.009~0.15MHz



Band2-10MHz-QPSK-20175-1RB#0-Range2: 0.15~30MHz



Band2-10MHz-QPSK-20175-1RB#0-Range3: 30~18800MHz


Keysight Spectrum Analyzer - Swept SA
Center Freq 4.197500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
04:04:25 PM Sep 15, 2022
Ref Offset 5.2 dB
10 dB/div
Ref 15.20 dBm
Log
Mkr1 2.497 GHz
-25.68 dBm
DL1 -13.00 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 8.365 GHz
Sweep 13.93 ms (1001 pts)
Frequency
Auto Tune
Center Freq
4.197500000 GHz
Start Freq
30.000000 MHz
Stop Freq
8.365000000 GHz
CF Step
833.500000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

Appendix G Field Strength of Spurious Radiation

The transmitting equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter up to 1GHz and 1.5 meter above 1GHz in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. The emissions were very low against the limit in the frequency range 9kHz to 30MHz and 18 GHz ~ 20 GHz.

Note: We tested all modes, but the data presented below is the worst case.
9kHz~150kHz, VBW = 200Hz, VBW = 600 Hz, Detector: PK
150kHz~30MHz, VBW = 9kHz, VBW = 30k Hz, Detector: PK
30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: RMS
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: RMS

Note:
The EUT is tested radiation emission at each test mode in three axes. The worst emissions are reported in all test mode and channels.

Test Plots

Test Band = BAND5
Worst Test Bandwidth = 5MHz

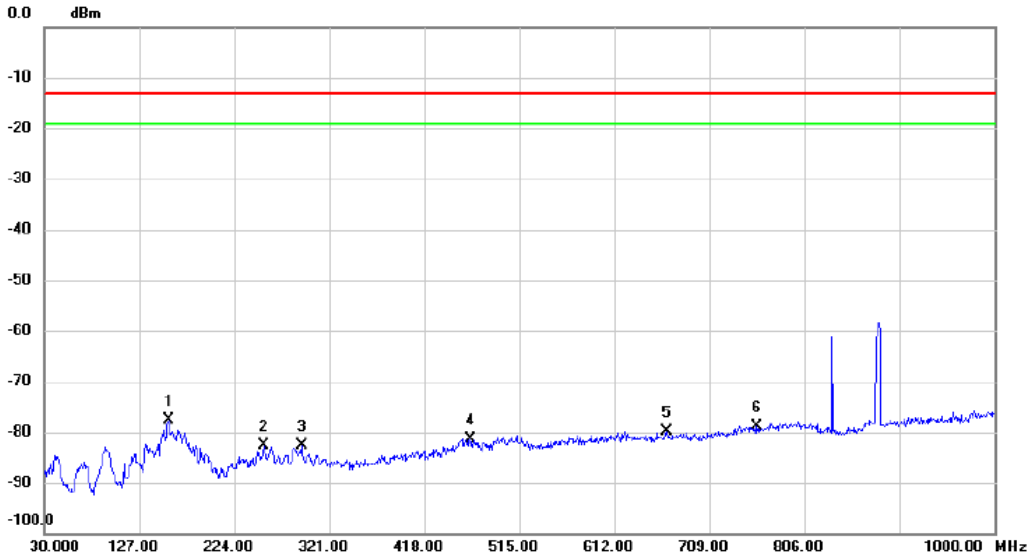
Below 1G

Middle channel Horizontal

Site: SH-CB02	Polarization: ***Horizontal***	Temperature: 24 (C)
Limit: FCC PART 22 EMISSION	Power: AC 120V/60Hz	Humidity: 58 %
EUT: LTE Module	Distance: 3m	
M/N: EG915N-LA	Mode: TX_LTE_B5	
Note: 5M		

Radiated Emission Measurement

File :FCCP_BELOW1G Data :#2 Date: 2022/9/19 Time: 19:31:32



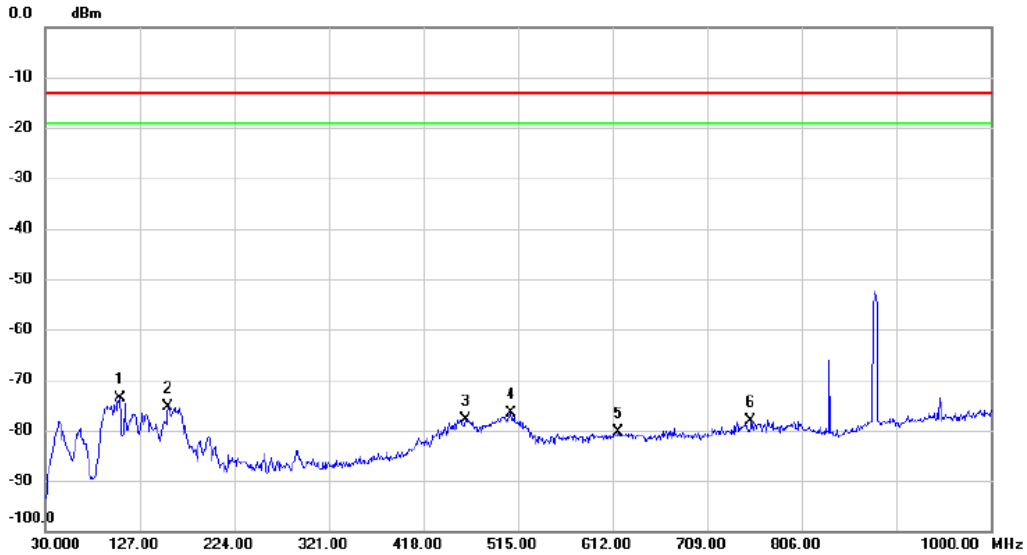
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	157.0700	-72.37	-5.16	-77.53	-13.00	-64.53	RMS	
2		254.5550	-79.24	-3.35	-82.59	-13.00	-69.59	RMS	
3		292.8700	-79.66	-2.91	-82.57	-13.00	-69.57	RMS	
4		465.0450	-80.22	-1.06	-81.28	-13.00	-68.28	RMS	
5		665.8350	-81.85	1.95	-79.90	-13.00	-66.90	RMS	
6		757.0150	-82.30	3.50	-78.80	-13.00	-65.80	RMS	

Middle channel Vertical

Site: SH-CB02	Polarization: ***Vertical***	Temperature: 24 (C)
Limit: FCC PART 22 EMISSION	Power: AC 120V/60Hz	Humidity: 58 %
EUT: LTE Module	Distance: 3m	
M/N: EG915N-LA	Mode: TX_LTE_B5	
Note: 5M		

Radiated Emission Measurement

File :FCCP_BELOW1G Data :#1 Date: 2022/9/19 Time: 19:30:00



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	106.6300	-73.91	0.17	-73.74	-13.00	-60.74	RMS	
2		156.1000	-73.15	-2.15	-75.30	-13.00	-62.30	RMS	
3		461.1650	-76.74	-1.12	-77.86	-13.00	-64.86	RMS	
4		508.2100	-76.20	-0.54	-76.74	-13.00	-63.74	RMS	
5		617.8200	-82.23	1.98	-80.25	-13.00	-67.25	RMS	
6		753.6200	-81.83	3.60	-78.23	-13.00	-65.23	RMS	

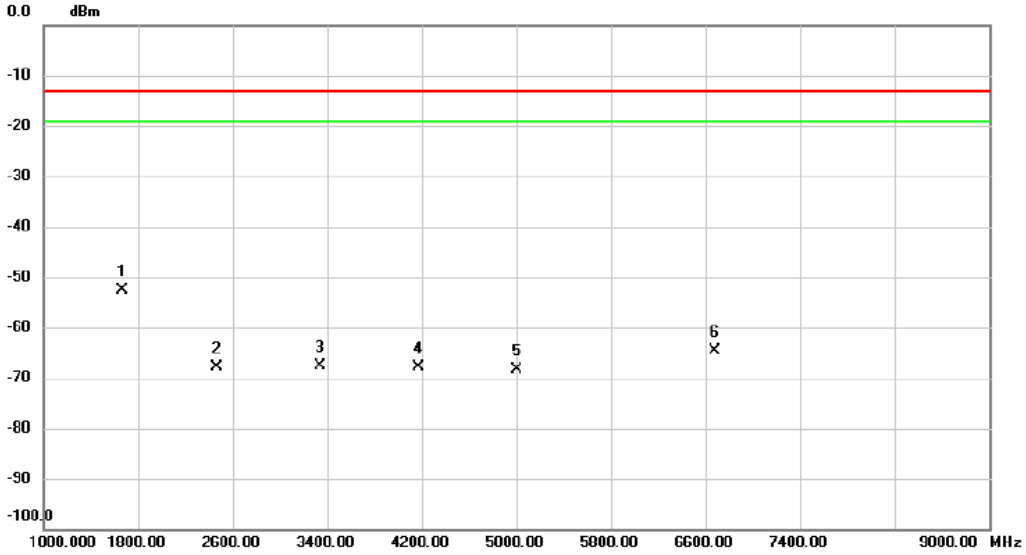
Above lG

Middle channel Horizontal

Site:	SH-CB02	Polarization:	*Horizontal*	Temperature:	24 (C)
Limit:	FCC PART 22 EMISSION	Power:	AC 120V/60Hz	Humidity:	58 %
EUT:	LTE Module	Distance:	3m		
M/N:	EG915N-LA	Mode:	TX_LTE_B5		
Note:	5M				

Radiated Emission Measurement

File :FCCP_ABOVE1G Data :#18 Date: 2022/9/16 Time: 18:59:52



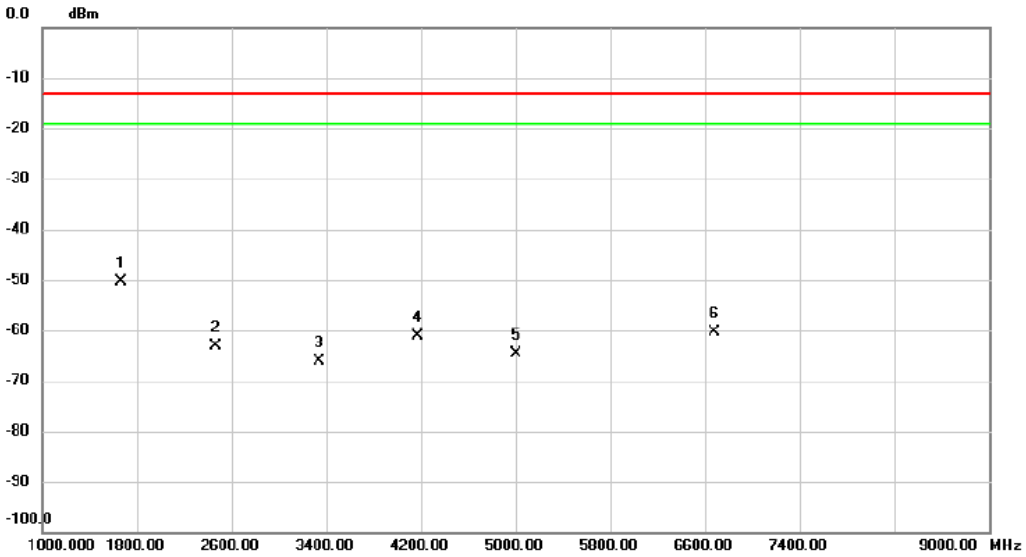
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1668.800	-39.49	-13.16	-52.65	-13.00	-39.65	RMS	
2		2464.800	-57.82	-10.06	-67.88	-13.00	-54.88	RMS	
3		3337.200	-59.37	-8.33	-67.70	-13.00	-54.70	RMS	
4		4172.000	-61.40	-6.35	-67.75	-13.00	-54.75	RMS	
5		5006.000	-63.47	-4.78	-68.25	-13.00	-55.25	RMS	
6		6675.200	-62.98	-1.75	-64.73	-13.00	-51.73	RMS	

Middle channel Vertical

Site:	SH-CB02	Polarization:	*Vertical*	Temperature:	24 (C)
Limit:	FCC PART 22 EMISSION	Power:	AC 120V/60Hz	Humidity:	58 %
EUT:	LTE Module	Distance:	3m		
M/N:	EG915N-LA	Mode:	TX_LTE_B5		
Note:	5M				

Radiated Emission Measurement

File :FCCP_ABOVE1G Data :#17 Date: 2022/9/16 Time: 18:58:02



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1668.800	-37.03	-13.32	-50.35	-13.00	-37.35	RMS	
2		2464.800	-53.36	-9.83	-63.19	-13.00	-50.19	RMS	
3		3337.200	-57.71	-8.35	-66.06	-13.00	-53.06	RMS	
4		4172.000	-54.80	-6.23	-61.03	-13.00	-48.03	RMS	
5		5006.000	-60.05	-4.60	-64.65	-13.00	-51.65	RMS	
6		6675.200	-58.75	-1.71	-60.46	-13.00	-47.46	RMS	

Appendix H: Frequency Stability

Test Result

Frequency Error vs. Voltage:

Voltage										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	1.4MHz	QPSK	20525	6RB#0	VH	NT	5.10	0.006096832	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	VN	NT	9.16	0.010950389	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	VL	NT	7.60	0.009085475	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	VH	NT	7.59	0.009073521	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	VN	NT	7.87	0.009408249	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	VL	NT	4.74	0.005666467	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	VH	NT	6.35	0.007591154	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	VN	NT	4.12	0.004925284	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	VL	NT	7.94	0.009491931	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VH	NT	8.55	0.01022116	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VN	NT	4.46	0.005331739	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VL	NT	8.04	0.009611476	±2.5	PASS

Frequency Error vs. Temperature:

Temperature										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	1.4MHz	QPSK	20525	6RB#0	NV	-30	4.12	0.004925284	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	-20	8.32	0.009946204	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	-10	5.66	0.006766288	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	0	8.82	0.010543933	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	10	7.86	0.009396294	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	20	7.07	0.008451883	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	30	6.85	0.008188882	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	40	6.96	0.008320383	±2.5	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	NV	50	7.92	0.009468022	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	-30	8.21	0.009814704	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	-20	4.29	0.005128512	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	-10	4.75	0.005678422	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	0	6.39	0.007638972	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	10	8.93	0.010675433	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	20	7.48	0.00894202	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	30	4.66	0.005570831	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	40	8.82	0.010543933	±2.5	PASS
Band5	3MHz	QPSK	20525	15RB#0	NV	50	6.88	0.008224746	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	-30	4.25	0.005080693	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	-20	4.80	0.005738195	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	-10	7.63	0.009121339	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	0	5.08	0.006072923	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	10	6.09	0.007280335	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	20	7.59	0.009073521	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	30	6.38	0.007627017	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	40	4.14	0.004949193	±2.5	PASS
Band5	5MHz	QPSK	20525	25RB#0	NV	50	4.99	0.005965332	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	-30	4.03	0.004817693	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	-20	9.49	0.011344889	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	-10	7.10	0.008487747	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	0	7.41	0.008858338	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	10	9.52	0.011380753	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	20	9.13	0.010914525	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	30	6.88	0.008224746	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	40	7.85	0.00938434	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	50	5.30	0.006335923	±2.5	PASS

END