

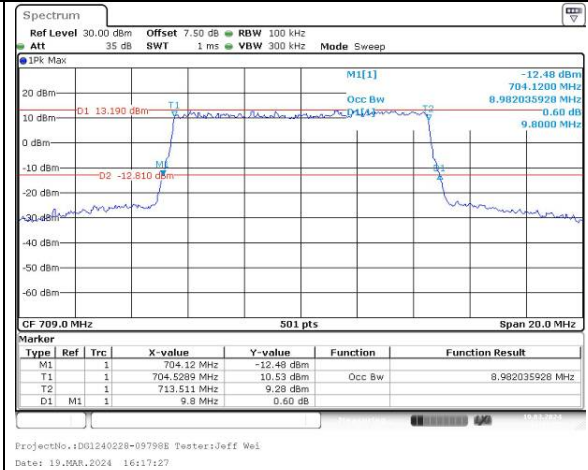
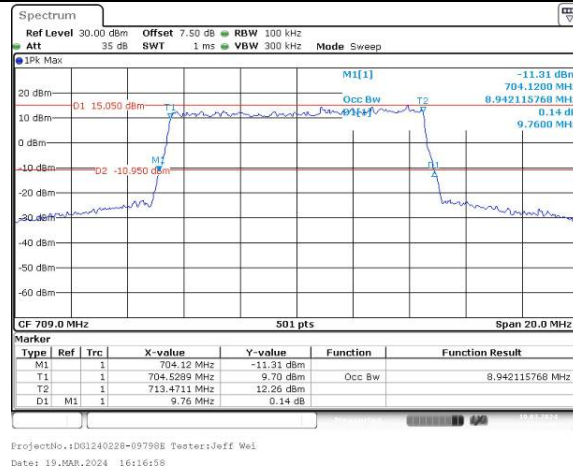
Occupied Bandwidth

Channel

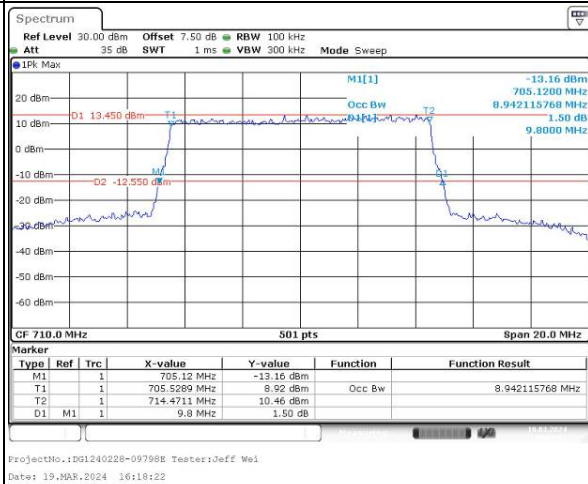
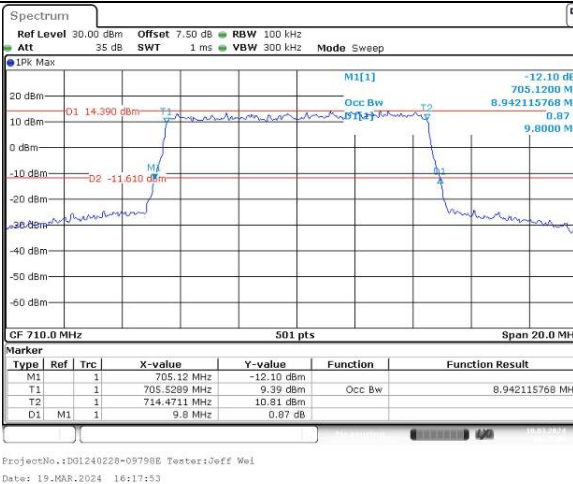
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

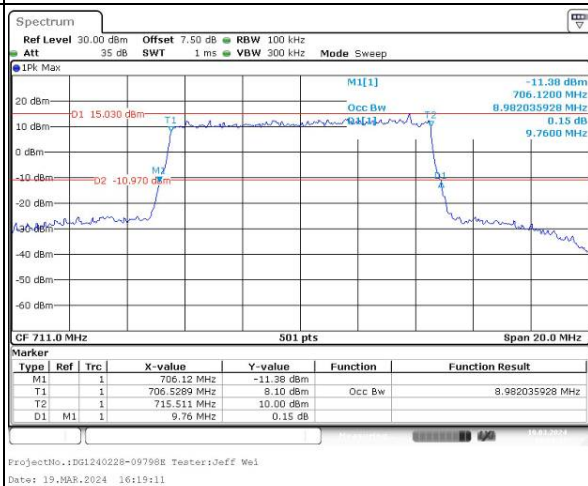
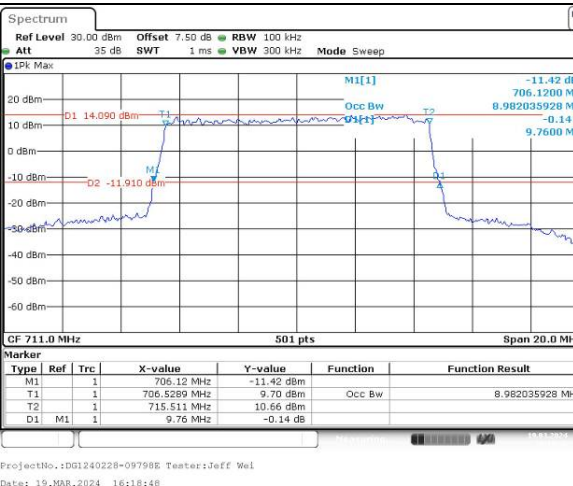
Lowest



Middle



Highest

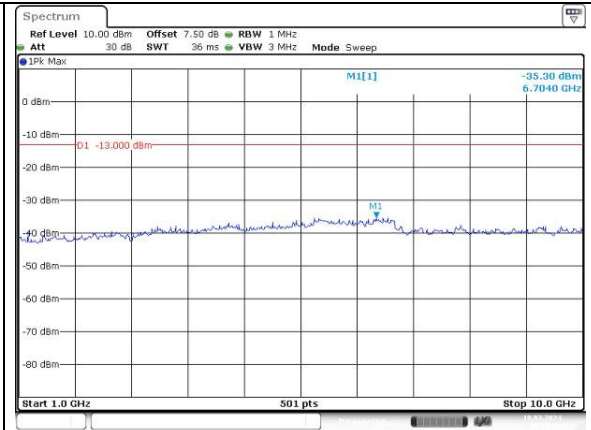
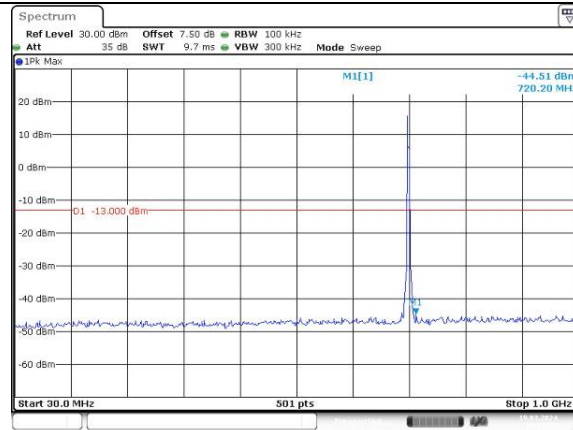


Spurious Emissions at Antenna Terminal

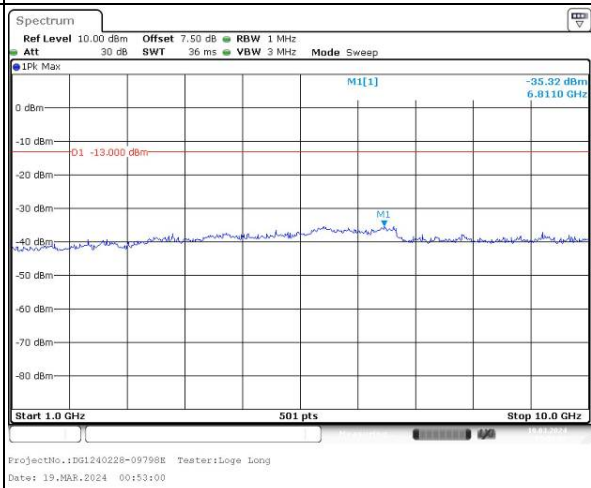
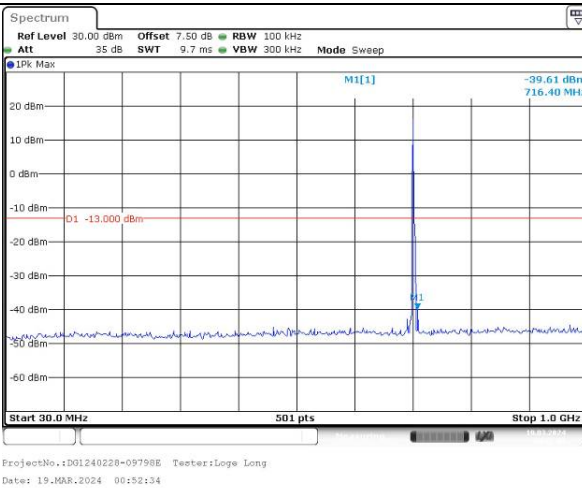
Channel

5MHz Bandwidth QPSK

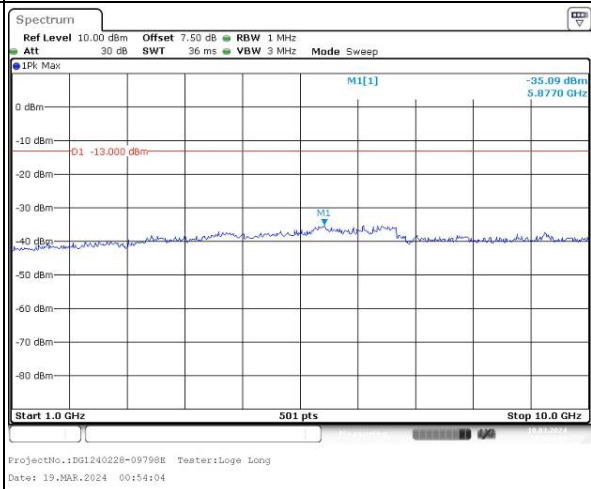
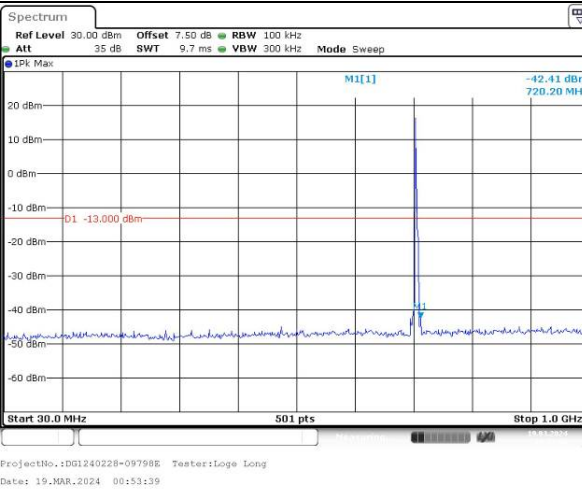
Lowest



Middle



Highest

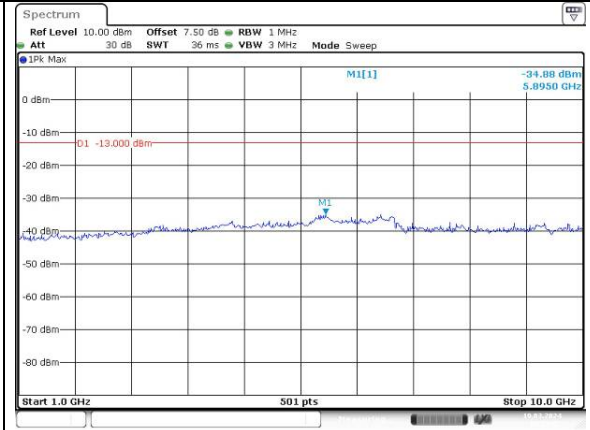
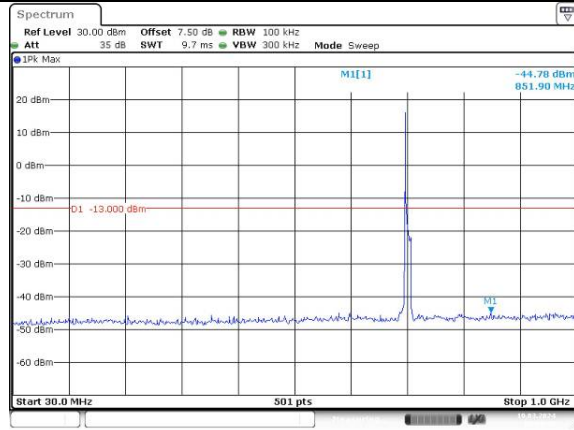


Spurious Emissions at Antenna Terminal

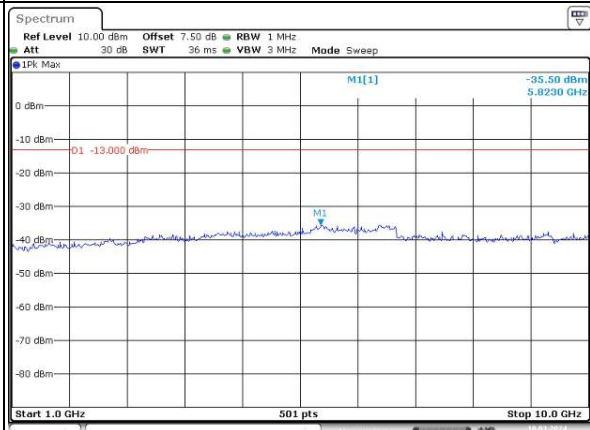
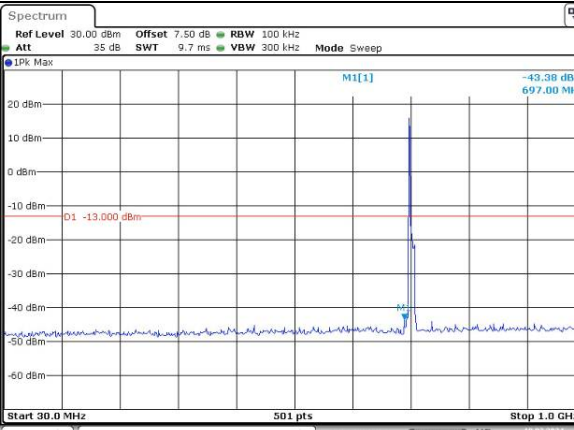
Channel

10MHz Bandwidth QPSK

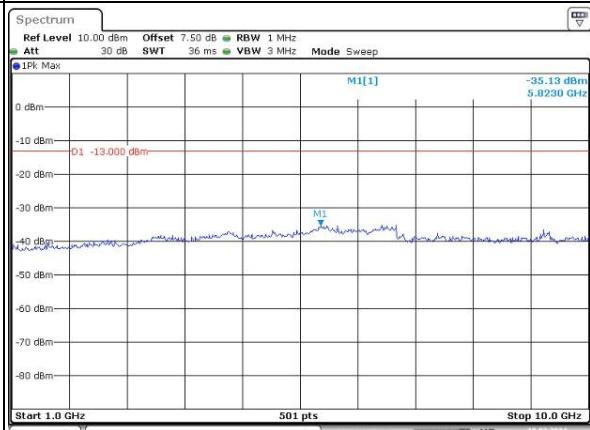
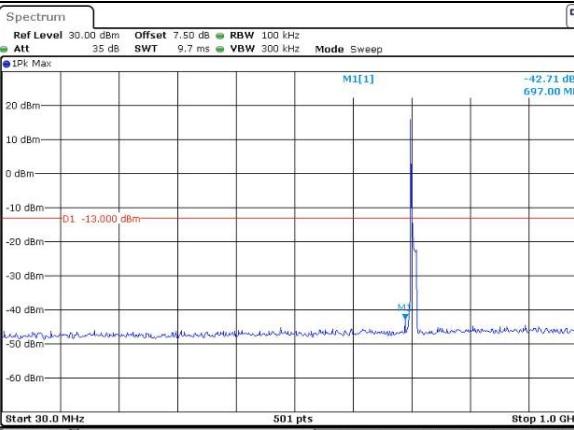
Lowest



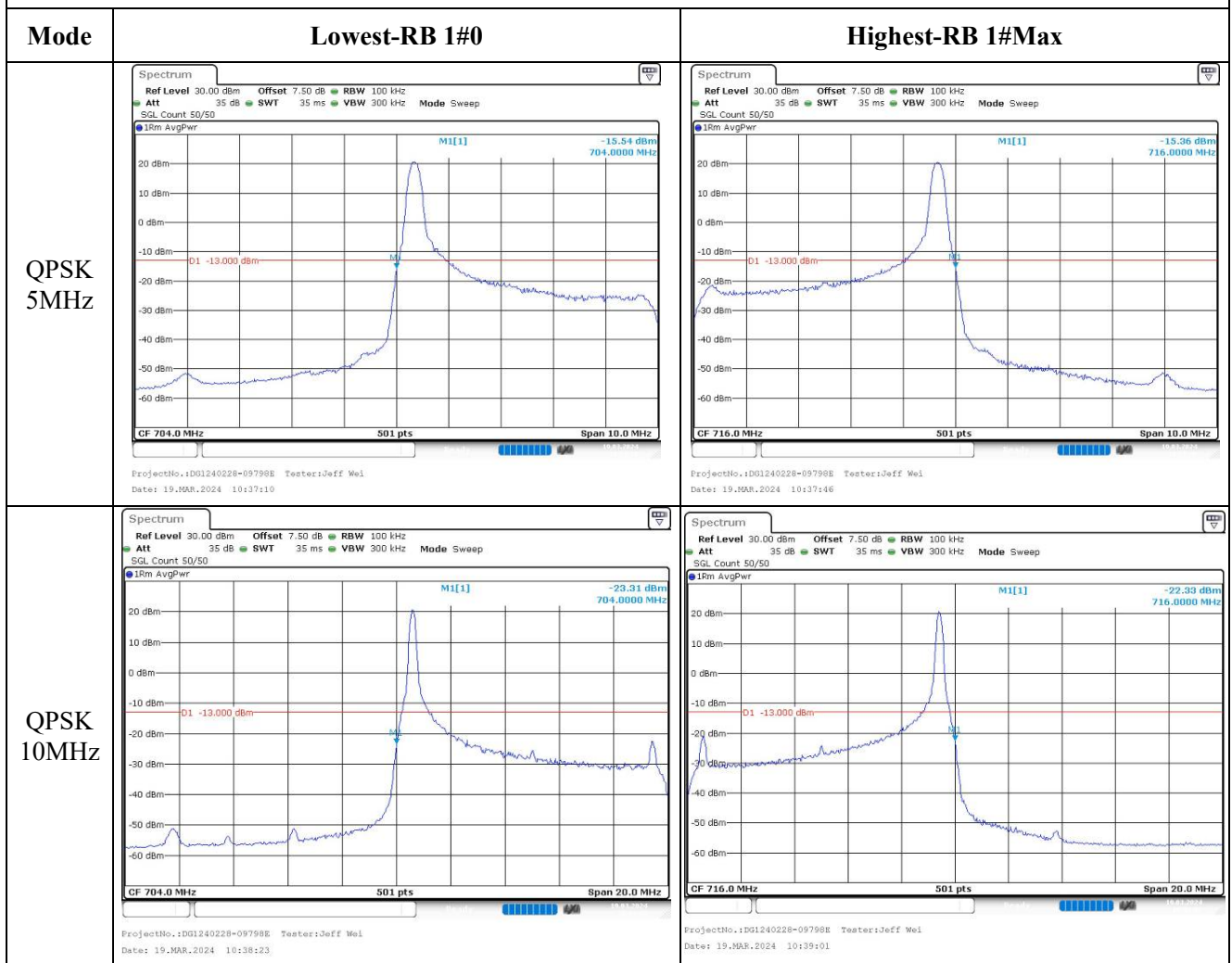
Middle



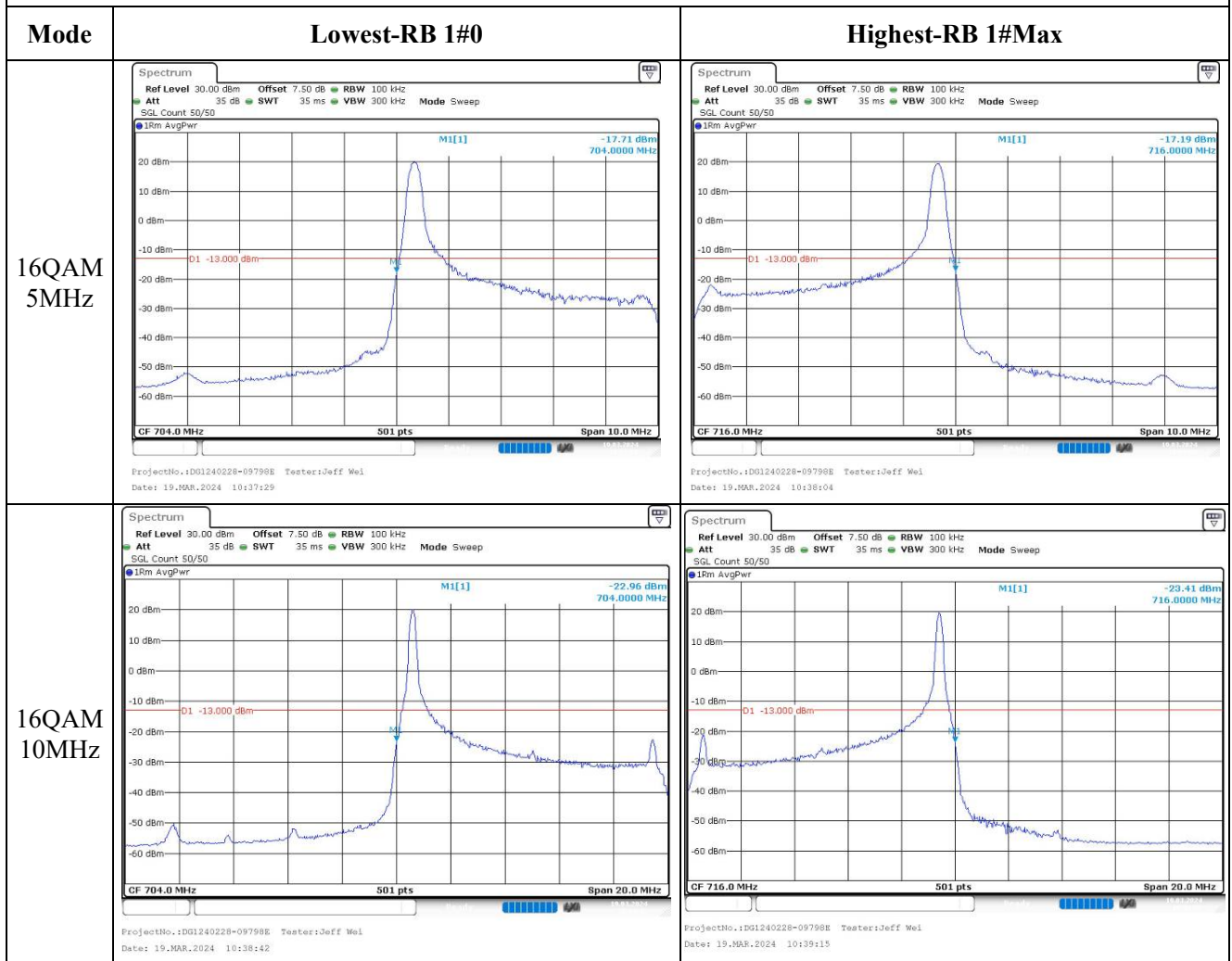
Highest



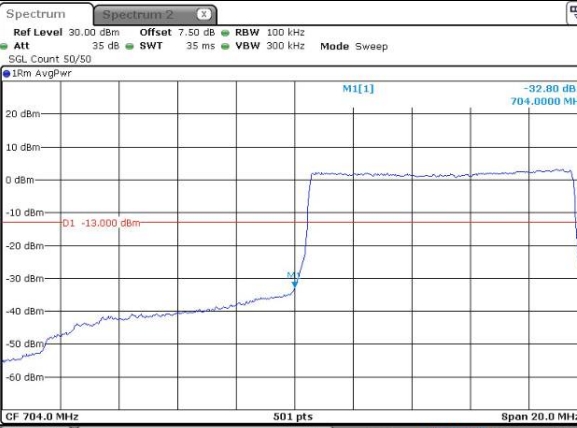
Out of band emission, Band Edge



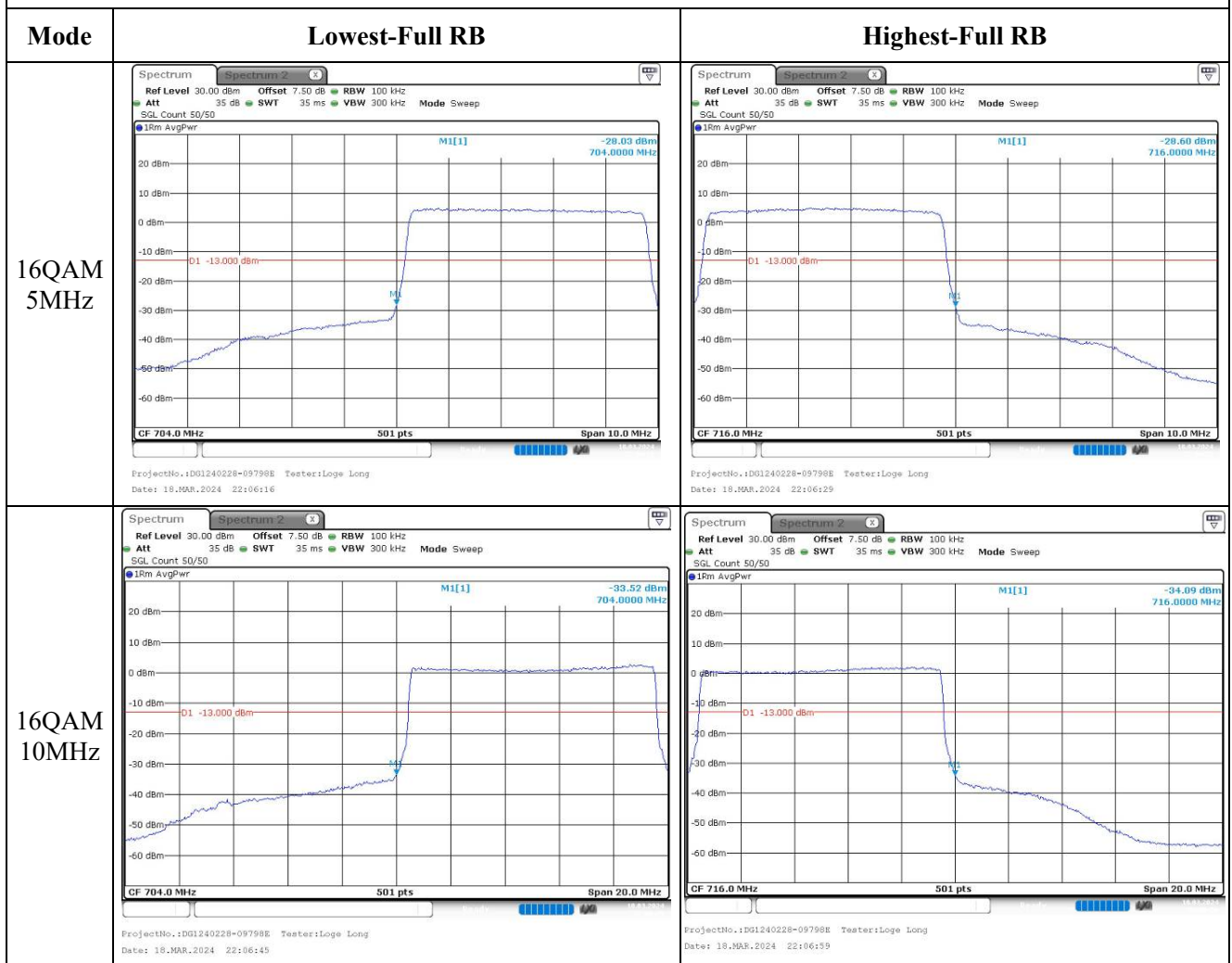
Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest-Full RB	Highest-Full RB
QPSK 5MHz	 ProjectNo.:DG1240228-09798E Tester:Loge Long Date: 18.MAR.2024 21:52:22	 ProjectNo.:DG1240228-09798E Tester:Loge Long Date: 18.MAR.2024 22:06:23
QPSK 10MHz	 ProjectNo.:DG1240228-09798E Tester:Loge Long Date: 18.MAR.2024 22:06:38	 ProjectNo.:DG1240228-09798E Tester:Loge Long Date: 18.MAR.2024 22:06:52

Out of band emission, Band Edge



5.9 Radiated Spurious Emissions

Serial Number:	2145-1	Test Date:	Below 1GHz: 2024/3/16 Above 1GHz: 2024/3/23
Test Site:	Chamber A, Chamber B	Test Mode:	Transmitting
Tester:	Alan Xie,Bill Yang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.5~26.1	Relative Humidity: (%)	60~62	ATM Pressure: (kPa)	100.6~101.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
30MHz~1000MHz					
Sunol Sciences	Hybrid Antenna	JB3	A060611-3	2024/1/12	2027/1/11
Wilson	Attenuator	859936	F-08-EM014	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2023/7/1	2024/6/30
Sonoma	Amplifier	310N	372193	2023/7/1	2024/6/30
R&S	EMI Test Receiver	ESR3	102453	2023/8/18	2024/8/17
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2023/9/4	2024/9/3
Agilent	Signal Generator	E8247C	MY43321350	2023/10/18	2024/10/17

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
AH	Horn Antenna	SAS-571	1177	2023/2/22	2026/2/21
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2023/11/17	2024/11/16
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2023/12/11	2024/12/10
Micro-Coax	Coaxial Cable	UFA210B	99G1448	2023/9/9	2024/9/8
Agilent	Signal Generator	E8247C	MY43321350	2023/10/18	2024/10/17
AH	Preamplifier	PAM-0118P	469	2023/8/19	2024/8/18
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17
E-Microwave	Band Rejection Filter	OBF-ZP-703-748-SMAF	OE01902425	2023/6/16	2024/6/15
E-Microwave	Band Rejection Filter	BSF-ZP-777-787-SMAF	OE01902430	2023/6/16	2024/6/15
Sinoscite	Band Rejection Filter	BSF824-862MS	1438001	2023/6/16	2024/6/15
Sinoscite	Band Rejection Filter	BSF1710-1785MN	0383003	2023/6/16	2024/6/15
Sinoscite	Band Rejection Filter	BSF1850-1910MS	0935V2001	2023/6/16	2024/6/15
AH	Preamplifier	PAM-1840VH	191	2023/9/7	2024/9/6
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-03 1304	2023/2/22	2026/2/21
Mini-Circuits	High Pass Filter	VHF-1200+	31102	2023/8/1	2024/7/31
Mini-Circuits	High-Pass Filter	VHF-2700A+	31223	2023/12/1	2024/11/30

* *Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

Cellular Band (30MHz-10GHz)

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)			
GSM 850 Frequency:824.2MHz								
325.50	H	49.82	-64.44	0.00	0.20	-64.64	-13.00	51.64
741.00	V	53.42	-55.38	0.00	0.32	-55.70	-13.00	42.70
1648.40	H	57.32	-60.79	10.44	0.71	-51.06	-13.00	38.06
1648.40	V	55.49	-63.22	10.44	0.71	-53.49	-13.00	40.49
2472.60	H	56.71	-59.37	12.88	1.25	-47.74	-13.00	34.74
2472.60	V	60.84	-55.30	12.88	1.25	-43.67	-13.00	30.67
3296.80	H	53.25	-59.72	13.60	1.59	-47.71	-13.00	34.71
3296.80	V	54.43	-58.54	13.60	1.59	-46.53	-13.00	33.53
GSM 850 Frequency:836.6MHz								
325.80	H	50.15	-64.09	0.00	0.20	-64.29	-13.00	51.29
741.00	V	53.12	-55.68	0.00	0.32	-56.00	-13.00	43.00
1673.20	H	56.16	-61.58	10.61	0.73	-51.70	-13.00	38.70
1673.20	V	54.02	-64.32	10.61	0.73	-54.44	-13.00	41.44
2509.80	H	56.68	-59.59	13.11	1.25	-47.73	-13.00	34.73
2509.80	V	60.74	-55.56	13.11	1.25	-43.70	-13.00	30.70
3346.40	H	51.98	-60.87	13.83	1.61	-48.65	-13.00	35.65
3346.40	V	53.65	-59.25	13.83	1.61	-47.03	-13.00	34.03
GSM 850 Frequency:848.8MHz								
327.30	H	50.84	-63.34	0.00	0.20	-63.54	-13.00	50.54
739.60	V	51.92	-56.91	0.00	0.32	-57.23	-13.00	44.23
1697.60	H	57.88	-59.50	10.78	0.75	-49.47	-13.00	36.47
1697.60	V	52.67	-65.31	10.78	0.75	-55.28	-13.00	42.28
2546.40	H	58.72	-57.71	13.15	1.27	-45.83	-13.00	32.83
2546.40	V	58.36	-58.21	13.15	1.27	-46.33	-13.00	33.33
3395.20	H	55.64	-57.05	14.08	1.64	-44.61	-13.00	31.61
3395.20	V	50.88	-61.91	14.08	1.64	-49.47	-13.00	36.47

PCS Band (30MHz-20GHz)

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)			
GSM 1900 Frequency:1850.2MHz								
82.60	H	46.75	-73.54	0.00	0.10	-73.64	-13.00	60.64
81.20	V	50.25	-72.99	0.00	0.10	-73.09	-13.00	60.09
3700.40	H	63.22	-48.63	14.00	1.83	-36.46	-13.00	23.46
3700.40	V	56.23	-55.60	14.00	1.83	-43.43	-13.00	30.43
5550.60	H	66.29	-41.28	13.95	1.27	-28.60	-13.00	15.60
5550.60	V	65.32	-42.10	13.95	1.27	-29.42	-13.00	16.42
GSM 1900 Frequency:1880MHz								
200.60	H	45.84	-69.30	0.00	0.18	-69.48	-13.00	56.48
82.60	V	51.66	-70.89	0.00	0.10	-70.99	-13.00	57.99
3760.00	H	63.15	-48.19	13.76	1.63	-36.06	-13.00	23.06
3760.00	V	58.29	-52.92	13.76	1.63	-40.79	-13.00	27.79
5640.00	H	65.21	-42.11	14.02	1.31	-29.40	-13.00	16.40
5640.00	V	62.31	-44.89	14.02	1.31	-32.18	-13.00	19.18
GSM 1900 Frequency:1909.8MHz								
225.80	H	45.74	-69.79	0.00	0.19	-69.98	-13.00	56.98
53.20	V	48.21	-60.88	-13.43	0.07	-74.38	-13.00	61.38
3819.60	H	64.19	-46.71	13.56	1.50	-34.65	-13.00	21.65
3819.60	V	57.62	-53.10	13.56	1.50	-41.04	-13.00	28.04
5729.40	H	66.26	-41.19	13.96	1.31	-28.54	-13.00	15.54
5729.40	V	64.31	-43.10	13.96	1.31	-30.45	-13.00	17.45

WCDMA Band 5(30MHz-10GHz):

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)			
WCDMA Band 5 Frequency:826.4 MHz								
360.60	H	40.20	-72.46	0.00	0.19	-72.65	-13.00	59.65
499.60	V	40.87	-71.88	0.00	0.26	-72.14	-13.00	59.14
1652.80	H	56.29	-61.76	10.47	0.72	-52.01	-13.00	39.01
1652.80	V	62.84	-55.81	10.47	0.72	-46.06	-13.00	33.06
2479.20	H	67.98	-48.14	12.93	1.25	-36.46	-13.00	23.46
2479.20	V	72.05	-44.11	12.93	1.25	-32.43	-13.00	19.43
3305.60	H	65.32	-47.66	13.63	1.59	-35.62	-13.00	22.62
3305.60	V	67.90	-45.09	13.63	1.59	-33.05	-13.00	20.05
WCDMA Band 5 Frequency:836.6MHz								
433.80	H	45.87	-64.60	0.00	0.21	-64.81	-13.00	51.81
559.90	V	41.12	-70.47	0.00	0.24	-70.71	-13.00	57.71
1673.20	H	56.84	-60.90	10.61	0.73	-51.02	-13.00	38.02
1673.20	V	61.55	-56.79	10.61	0.73	-46.91	-13.00	33.91
2509.80	H	66.59	-49.68	13.11	1.25	-37.82	-13.00	24.82
2509.80	V	70.00	-46.30	13.11	1.25	-34.44	-13.00	21.44
3346.40	H	65.95	-46.90	13.83	1.61	-34.68	-13.00	21.68
3346.40	V	67.49	-45.41	13.83	1.61	-33.19	-13.00	20.19
WCDMA Band 5 Frequency:846.6MHz								
399.70	H	46.30	-64.57	0.00	0.19	-64.76	-13.00	51.76
374.60	V	41.27	-73.60	0.00	0.19	-73.79	-13.00	60.79
1693.20	H	52.32	-65.12	10.75	0.75	-55.12	-13.00	42.12
1693.20	V	62.32	-55.72	10.75	0.75	-45.72	-13.00	32.72
2539.80	H	62.35	-54.05	13.14	1.27	-42.18	-13.00	29.18
2539.80	V	64.55	-51.97	13.14	1.27	-40.10	-13.00	27.10
3386.40	H	65.84	-46.88	14.03	1.63	-34.48	-13.00	21.48
3386.40	V	64.28	-48.53	14.03	1.63	-36.13	-13.00	23.13

LTE Bands:

(The Worst modulation and bandwidth was below)

LTE Band 2(30MHz-20GHz):

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)			
1RB, 1.4MHz, QPSK,Frequency:1850.7 MHz								
799.80	H	53.23	-50.81	0.00	0.36	-51.17	-13.00	38.17
433.60	V	45.07	-68.65	0.00	0.21	-68.86	-13.00	55.86
3701.40	H	50.30	-61.55	13.99	1.83	-49.39	-13.00	36.39
3701.40	V	50.16	-61.66	13.99	1.83	-49.50	-13.00	36.50
5552.10	H	50.29	-57.27	13.96	1.27	-44.58	-13.00	31.58
5552.10	V	50.41	-57.00	13.96	1.27	-44.31	-13.00	31.31
1RB, 1.4MHz, QPSK,Frequency:1880 MHz								
800.00	H	54.10	-49.93	0.00	0.36	-50.29	-13.00	37.29
399.90	V	44.57	-69.65	0.00	0.19	-69.84	-13.00	56.84
3760.00	H	50.95	-60.39	13.76	1.63	-48.26	-13.00	35.26
3760.00	V	50.20	-61.01	13.76	1.63	-48.88	-13.00	35.88
5640.00	H	50.41	-56.91	14.02	1.31	-44.20	-13.00	31.20
5640.00	V	50.56	-56.64	14.02	1.31	-43.93	-13.00	30.93
1RB, 1.4MHz, QPSK,Frequency:1909.3 MHz								
795.60	H	52.84	-51.32	0.00	0.36	-51.68	-13.00	38.68
433.80	V	45.24	-68.48	0.00	0.21	-68.69	-13.00	55.69
3818.60	H	50.74	-60.17	13.56	1.50	-48.11	-13.00	35.11
3818.60	V	50.65	-60.07	13.56	1.50	-48.01	-13.00	35.01
5727.90	H	50.50	-56.95	13.96	1.31	-44.30	-13.00	31.30
5727.90	V	50.85	-56.56	13.96	1.31	-43.91	-13.00	30.91

LTE Band 4(30MHz-20GHz):

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)			
1RB, 1.4MHz, QPSK,Frequency:1710.7 MHz								
802.20	H	53.62	-50.37	0.00	0.36	-50.73	-13.00	37.73
433.70	V	45.41	-68.31	0.00	0.21	-68.52	-13.00	55.52
3421.40	H	50.32	-62.28	14.04	1.63	-49.87	-13.00	36.87
3421.40	V	50.64	-62.04	14.04	1.63	-49.63	-13.00	36.63
5132.10	H	50.19	-57.88	13.93	1.37	-45.32	-13.00	32.32
5132.10	V	50.88	-57.10	13.93	1.37	-44.54	-13.00	31.54
1RB, 1.4MHz, QPSK,Frequency:1732.5 MHz								
800.50	H	53.38	-50.64	0.00	0.36	-51.00	-13.00	38.00
435.20	V	46.28	-67.42	0.00	0.21	-67.63	-13.00	54.63
3465.00	H	50.84	-61.60	13.91	1.62	-49.31	-13.00	36.31
3465.00	V	50.66	-61.82	13.91	1.62	-49.53	-13.00	36.53
5197.50	H	50.49	-57.03	14.00	1.52	-44.55	-13.00	31.55
5197.50	V	50.84	-56.76	14.00	1.52	-44.28	-13.00	31.28
1RB, 1.4MHz, QPSK,Frequency:1754.3MHz								
799.90	H	54.20	-49.83	0.00	0.36	-50.19	-13.00	37.19
374.60	V	41.70	-73.17	0.00	0.19	-73.36	-13.00	60.36
3508.60	H	50.64	-61.70	13.83	1.60	-49.47	-13.00	36.47
3508.60	V	50.20	-62.14	13.83	1.60	-49.91	-13.00	36.91
5262.90	H	50.24	-58.38	14.19	1.29	-45.48	-13.00	32.48
5262.90	V	50.17	-58.53	14.19	1.29	-45.63	-13.00	32.63

LTE Band 12(30MHz-10GHz):

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)			
1RB, 1.4MHz, QPSK, Frequency: 699.7 MHz								
800.10	H	54.02	-50.01	0.00	0.36	-50.37	-13.00	37.37
399.50	V	45.65	-68.58	0.00	0.19	-68.77	-13.00	55.77
1399.40	H	50.62	-66.52	9.00	1.20	-58.72	-13.00	45.72
1399.40	V	50.24	-67.50	9.00	1.20	-59.70	-13.00	46.70
2099.10	H	50.18	-66.25	11.41	1.10	-55.94	-13.00	42.94
2099.10	V	50.32	-66.11	11.41	1.10	-55.80	-13.00	42.80
2798.80	H	50.48	-65.27	13.10	1.36	-53.53	-13.00	40.53
2798.80	V	50.47	-65.47	13.10	1.36	-53.73	-13.00	40.73
1RB, 1.4MHz,QPSK, Frequency:707.5 MHz								
802.70	H	54.15	-49.83	0.00	0.36	-50.19	-13.00	37.19
398.00	V	46.23	-68.04	0.00	0.19	-68.23	-13.00	55.23
1415.00	H	50.26	-67.22	9.08	1.22	-59.36	-13.00	46.36
1415.00	V	50.14	-67.87	9.08	1.22	-60.01	-13.00	47.01
2122.50	H	50.55	-65.88	11.27	1.11	-55.72	-13.00	42.72
2122.50	V	50.30	-66.11	11.27	1.11	-55.95	-13.00	42.95
2830.00	H	50.29	-65.04	13.34	1.36	-53.06	-13.00	40.06
2830.00	V	50.77	-64.79	13.34	1.36	-52.81	-13.00	39.81
1RB, 1.4MHz,QPSK, Frequency: 715.3 MHz								
789.80	H	53.85	-50.49	0.00	0.35	-50.84	-13.00	37.84
388.68	V	46.82	-67.69	0.00	0.19	-67.88	-13.00	54.88
1430.60	H	50.84	-67.01	9.15	1.25	-59.11	-13.00	46.11
1430.60	V	50.32	-67.97	9.15	1.25	-60.07	-13.00	47.07
2145.90	H	50.74	-65.71	11.12	1.12	-55.71	-13.00	42.71
2145.90	V	50.66	-65.74	11.12	1.12	-55.74	-13.00	42.74
2861.20	H	50.41	-64.48	13.59	1.35	-52.24	-13.00	39.24
2861.20	V	50.27	-64.88	13.59	1.35	-52.64	-13.00	39.64

LTE Band 17(30MHz-10GHz):

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)			
1RB, 5MHz,QPSK, Frequency: 706.5 MHz								
797.60	H	54.13	-49.97	0.00	0.36	-50.33	-13.00	37.33
442.20	V	45.59	-68.01	0.00	0.22	-68.23	-13.00	55.23
1413.00	H	56.26	-61.18	9.07	1.22	-53.33	-13.00	40.33
1413.00	V	57.84	-60.13	9.07	1.22	-52.28	-13.00	39.28
2119.50	H	50.62	-65.81	11.28	1.11	-55.64	-13.00	42.64
2119.50	V	50.48	-65.93	11.28	1.11	-55.76	-13.00	42.76
2826.00	H	50.19	-65.19	13.31	1.36	-53.24	-13.00	40.24
2826.00	V	50.33	-65.28	13.31	1.36	-53.33	-13.00	40.33
1RB, 5MHz,QPSK, Frequency:710 MHz								
800.60	H	52.69	-51.33	0.00	0.36	-51.69	-13.00	38.69
432.70	V	46.03	-67.71	0.00	0.21	-67.92	-13.00	54.92
1420.00	H	56.74	-60.86	9.10	1.23	-52.99	-13.00	39.99
1420.00	V	57.21	-60.89	9.10	1.23	-53.02	-13.00	40.02
2130.00	H	50.32	-66.12	11.22	1.11	-56.01	-13.00	43.01
2130.00	V	50.48	-65.93	11.22	1.11	-55.82	-13.00	42.82
2840.00	H	50.32	-64.87	13.42	1.36	-52.81	-13.00	39.81
2840.00	V	50.17	-65.26	13.42	1.36	-53.20	-13.00	40.20
1RB, 5MHz,QPSK, Frequency: 713.5 MHz								
806.40	H	51.95	-51.97	0.00	0.36	-52.33	-13.00	39.33
396.60	V	45.84	-68.47	0.00	0.19	-68.66	-13.00	55.66
1427.00	H	56.88	-60.88	9.14	1.24	-52.98	-13.00	39.98
1427.00	V	57.49	-60.74	9.14	1.24	-52.84	-13.00	39.84
2140.50	H	50.32	-66.13	11.16	1.12	-56.09	-13.00	43.09
2140.50	V	50.14	-66.27	11.16	1.12	-56.23	-13.00	43.23
2854.00	H	50.08	-64.91	13.53	1.35	-52.73	-13.00	39.73
2854.00	V	50.65	-64.59	13.53	1.35	-52.41	-13.00	39.41

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment DG1240228-09798E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and DG1240228-09798E-RF-INP EUT INTERNAL PHOTOGRAPHS

APPENDIX B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment DG1240228-09798E-RF-00D-TSP TEST SETUP PHOTOGRAPHS.

==== END OF REPORT =====