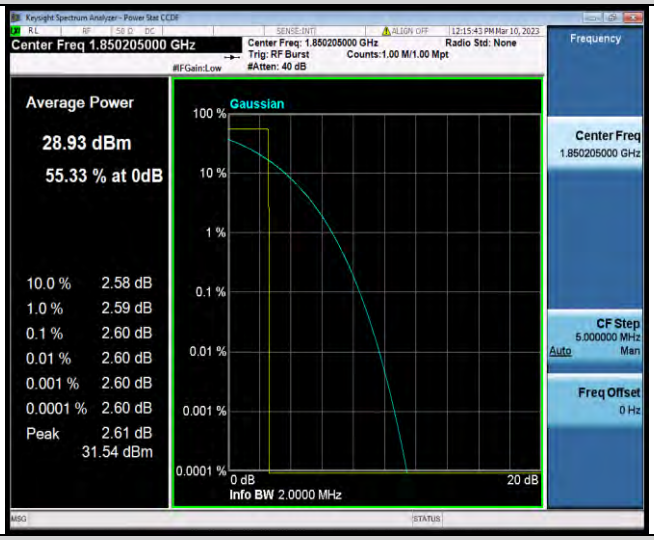
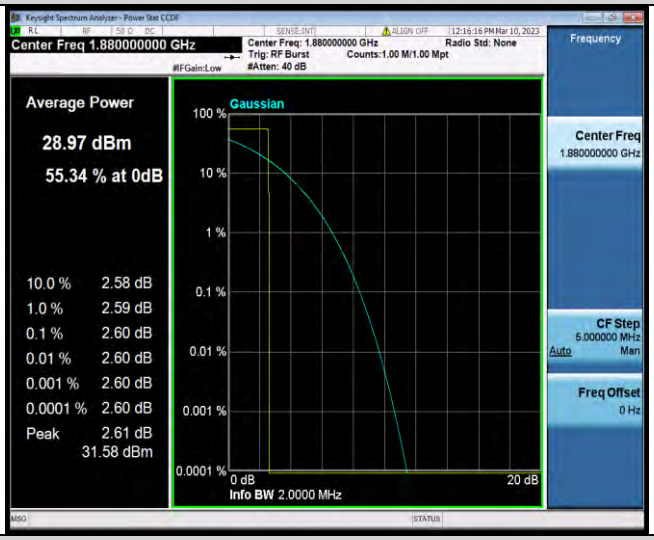
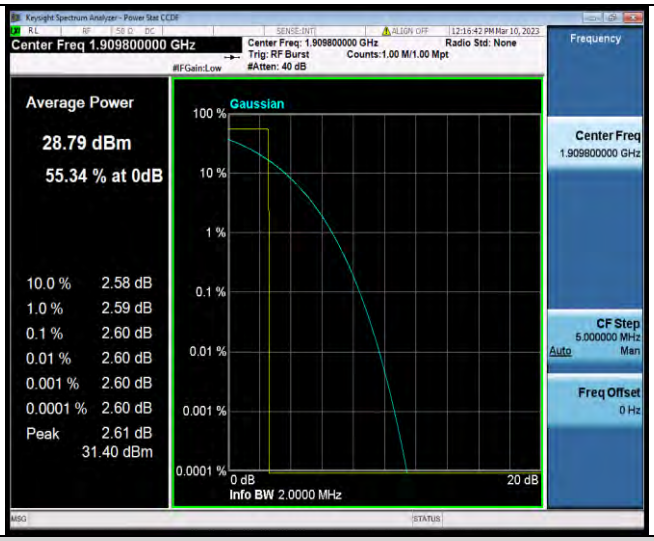
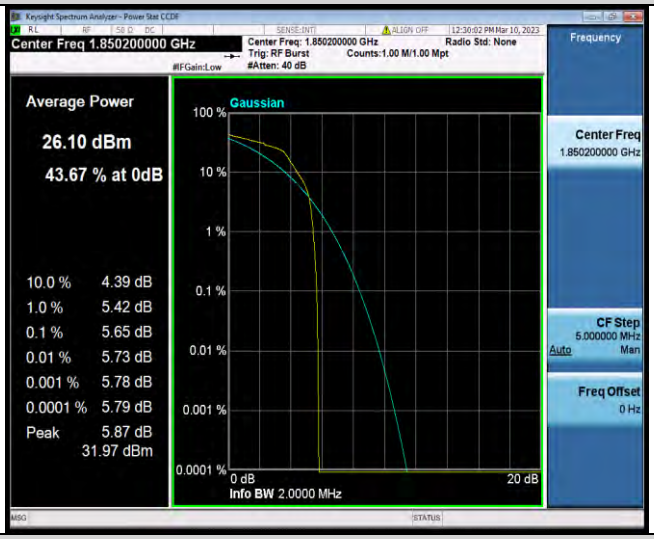
Test Graphs

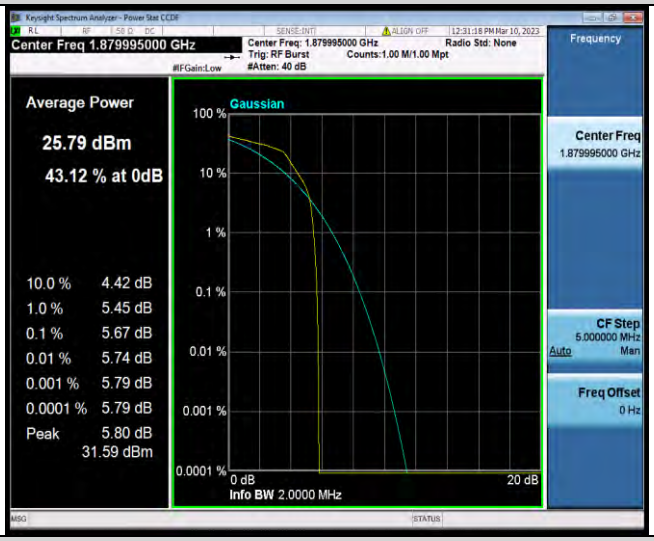
GSM1900-512

GSM1900-661

GSM1900-810



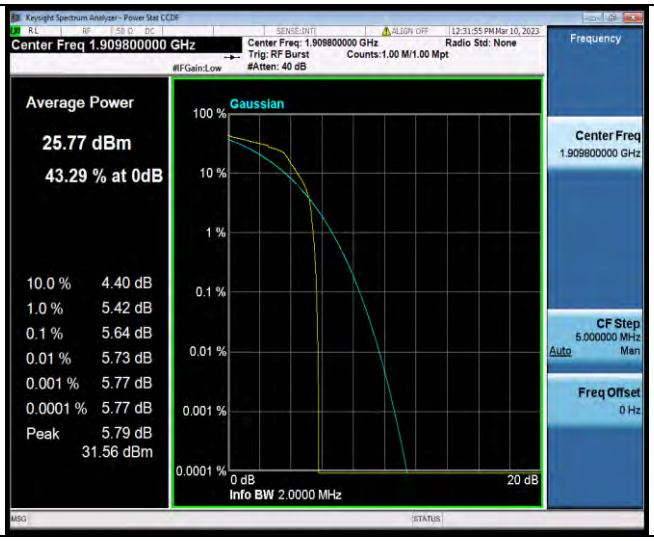
EGPRS1900-512



EGPRS1900-661



EGPRS1900-810


Keysight Spectrum Analyzer - Power Stat CCDF
Center Freq 1.909800000 GHz
Center Freq: 1.909800000 GHz
Trig: RF Burst
#Atten: 40 dB
Counts:1.00 M/1.00 Mpt
Radio Std: None
Frequency
Average Power
25.77 dBm
43.29 % at 0dB
10.0 % 4.40 dB
1.0 % 5.42 dB
0.1 % 5.64 dB
0.01 % 5.73 dB
0.001 % 5.77 dB
0.0001 % 5.77 dB
Peak 5.79 dB
31.56 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 2.0000 MHz
Center Freq
1.909800000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

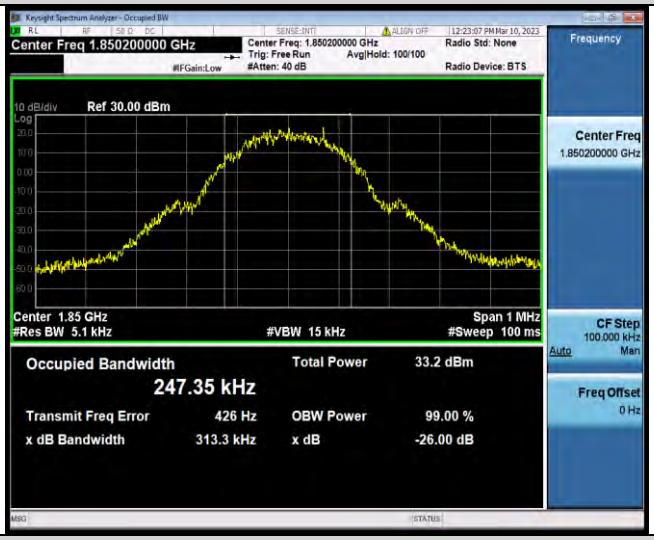
26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

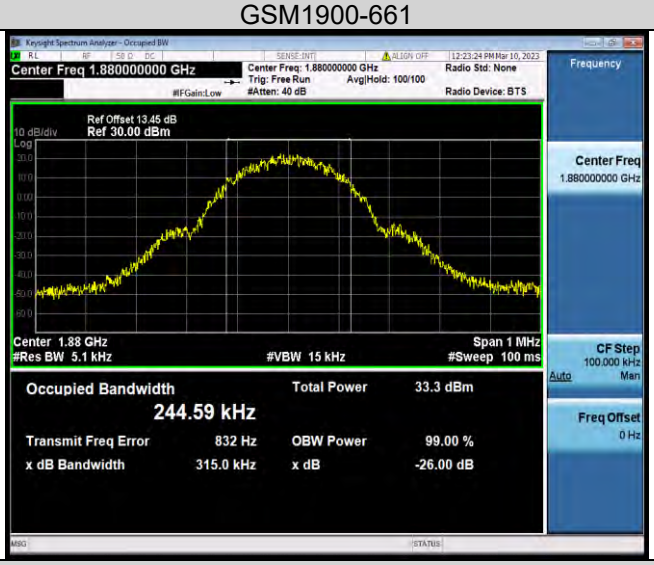
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM1900	512	0.24735	0.3133	---	PASS
GSM1900	661	0.24459	0.3150	---	PASS
GSM1900	810	0.24572	0.3100	---	PASS
EGPRS1900	512	0.25089	0.3070	---	PASS
EGPRS1900	661	0.24998	0.3101	---	PASS
EGPRS1900	810	0.24956	0.3056	---	PASS

Test Graphs

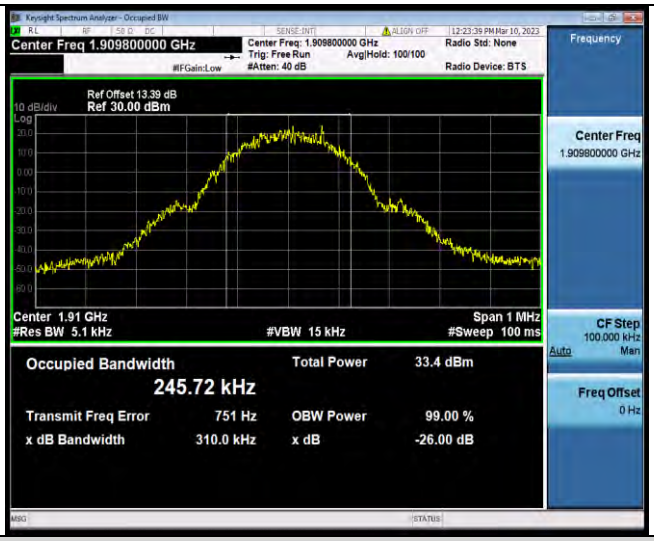
GSM1900-512



GSM1900-661

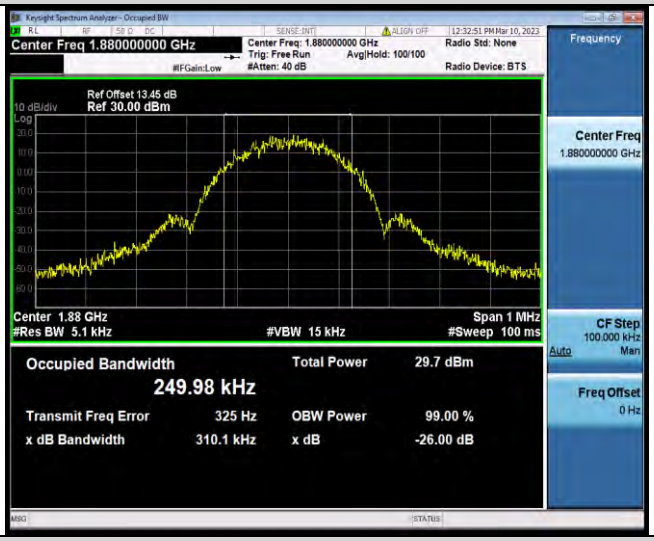


GSM1900-810

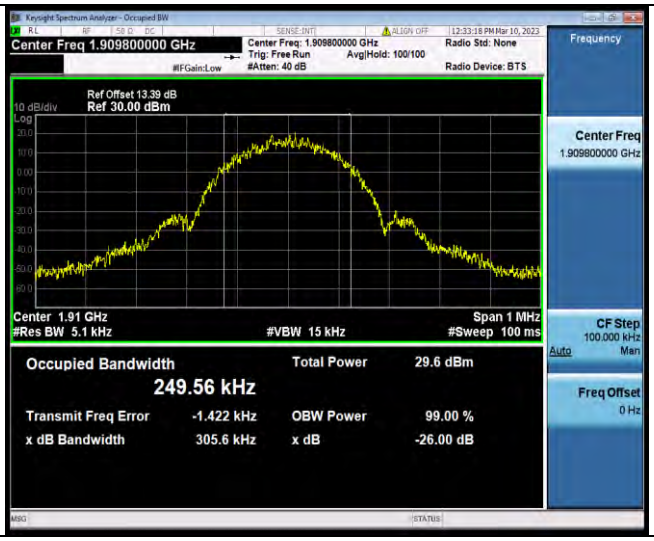


EGPRS1900-512

EGPRS1900-661



EGPRS1900-810


Keysight Spectrum Analyzer - Occupied BW
Center Freq 1.909800000 GHz
Center Freq: 1.909800000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
12:33:18 PM Mar 10, 2023
Frequency
Ref Offset 13.39 dB
10 dB/div
Ref 30.00 dBm
Log
Center Freq
1.909800000 GHz
Center 1.91 GHz
#Res BW 5.1 kHz
#VBW 15 kHz
Span 1 MHz
#Sweep 100 ms
CF Step
100.000 kHz
Auto
Man
Occupied Bandwidth
249.56 kHz
Total Power 29.6 dBm
Transmit Freq Error -1.422 kHz
OBW Power 99.00 %
x dB Bandwidth 305.6 kHz
x dB -26.00 dB
Freq Offset
0 Hz

BAND EDGE

Test Result

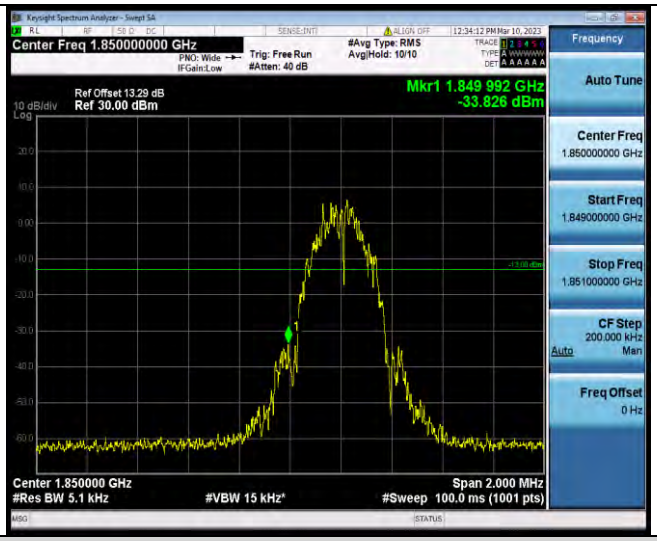
Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM1900	512	1849.97	-28.17	-13	PASS
GSM1900	810	1910.03	-27.56	-13	PASS
EGPRS1900	512	1849.99	-23.71	-13	PASS
EGPRS1900	810	1910.01	-23.60	-13	PASS

Test Graphs

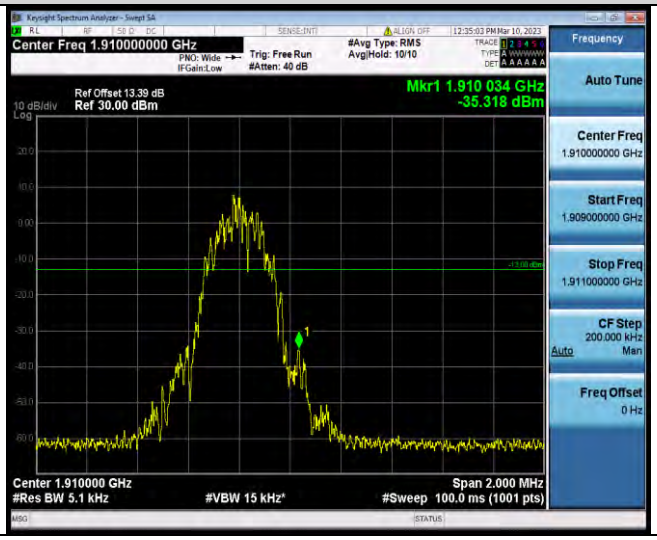
GSM1900-512

GSM1900-810

EGPRS1900-512



EGPRS1900-810



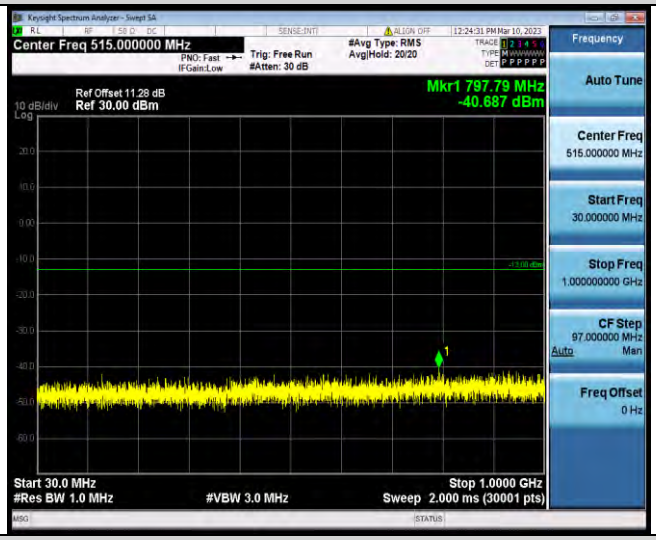
CONDUCTED SPURIOUS EMISSION

Test Result

Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM1900	512	30~1000MHz	797.79	-40.69	-13	PASS
GSM1900	512	1000~20000MHz	19018.33	-32.23	-13	PASS
GSM1900	661	30~1000MHz	881.3	-41.12	-13	PASS
GSM1900	661	1000~20000MHz	19091.8	-31.78	-13	PASS
GSM1900	810	30~1000MHz	886.09	-40.56	-13	PASS
GSM1900	810	1000~20000MHz	19090.53	-32.02	-13	PASS
EGPRS1900	512	30~1000MHz	765.45	-40.72	-13	PASS
EGPRS1900	512	1000~20000MHz	19946.17	-32.06	-13	PASS
EGPRS1900	661	30~1000MHz	941.74	-40.93	-13	PASS
EGPRS1900	661	1000~20000MHz	3817.07	-31.79	-13	PASS
EGPRS1900	810	30~1000MHz	903.55	-40.78	-13	PASS
EGPRS1900	810	1000~20000MHz	19196.93	-32.04	-13	PASS

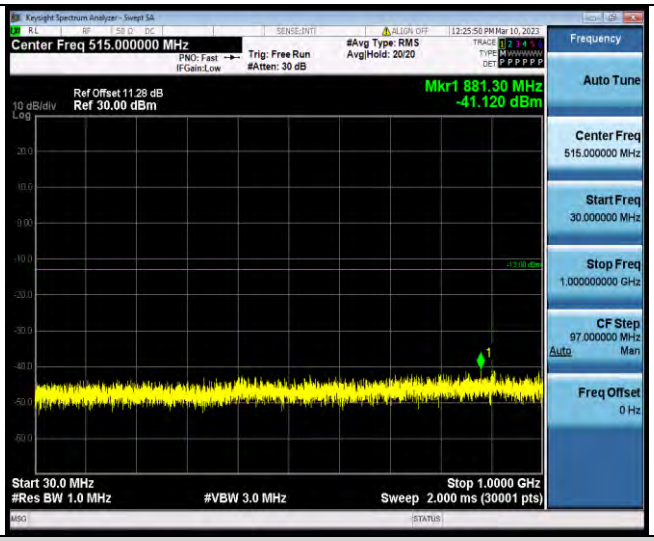
Test Graphs

GSM1900-512-30~1000MHz



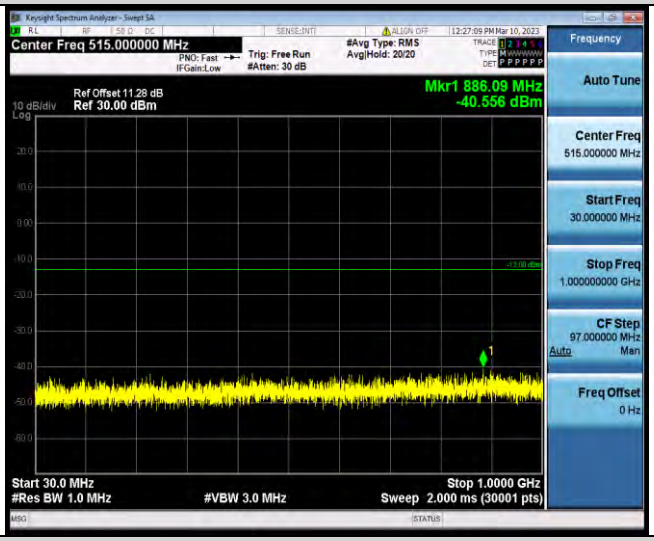
GSM1900-512-1000~20000MHz

GSM1900-661-30~1000MHz

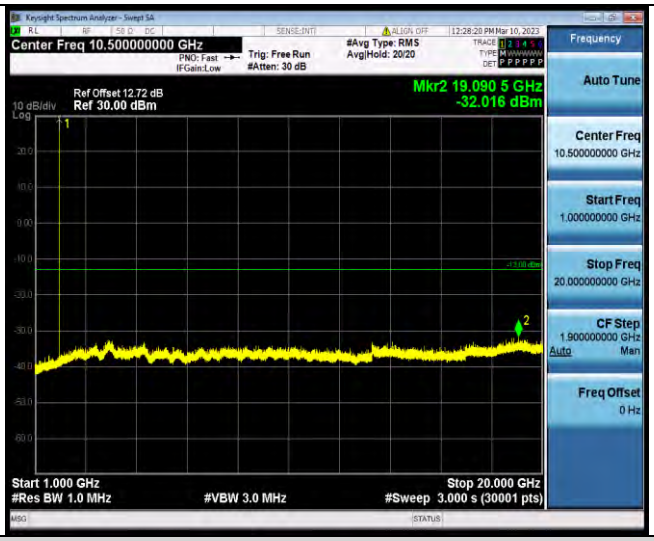


GSM1900-661-1000~20000MHz

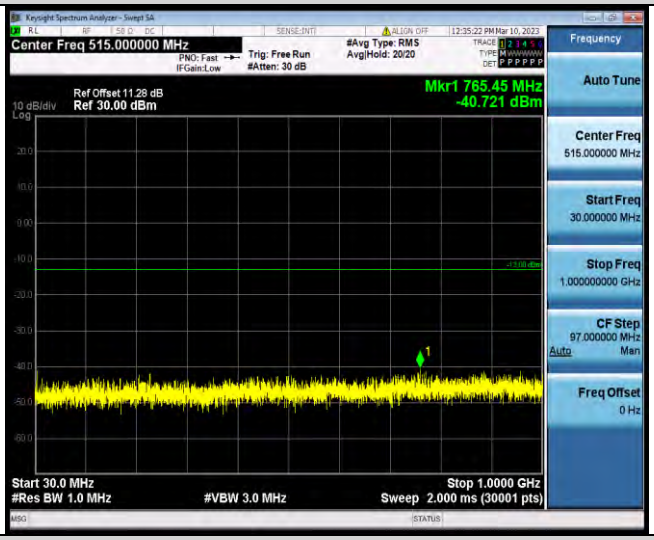
GSM1900-810-30~1000MHz



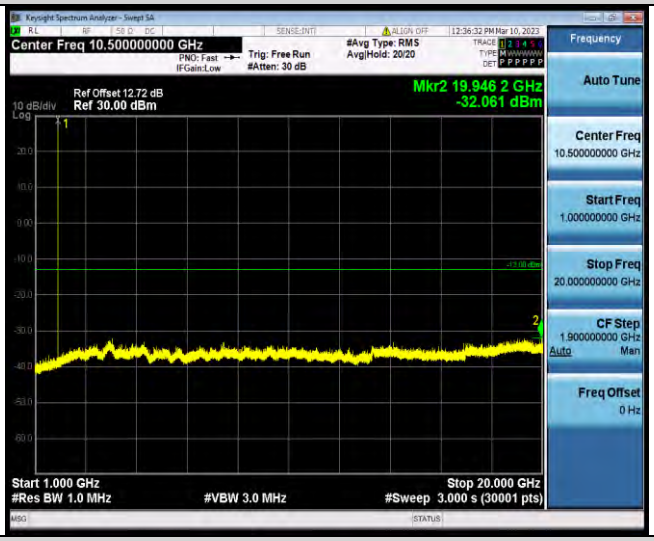
GSM1900-810-1000~20000MHz



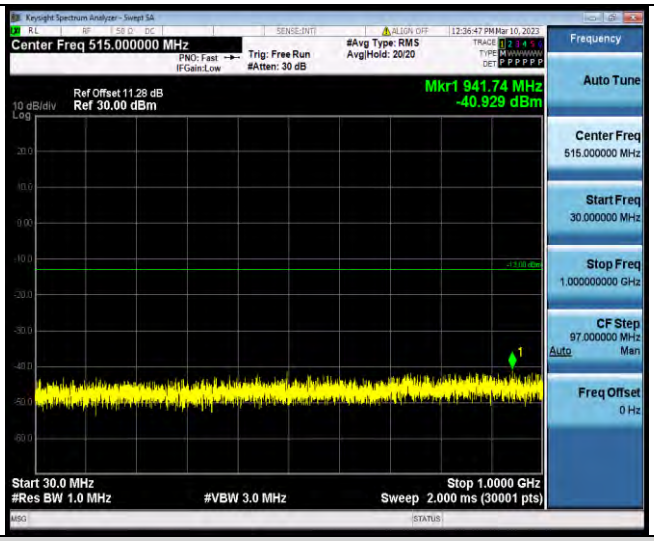
EGPRS1900-512-30~1000MHz



EGPRS1900-512-1000~20000MHz

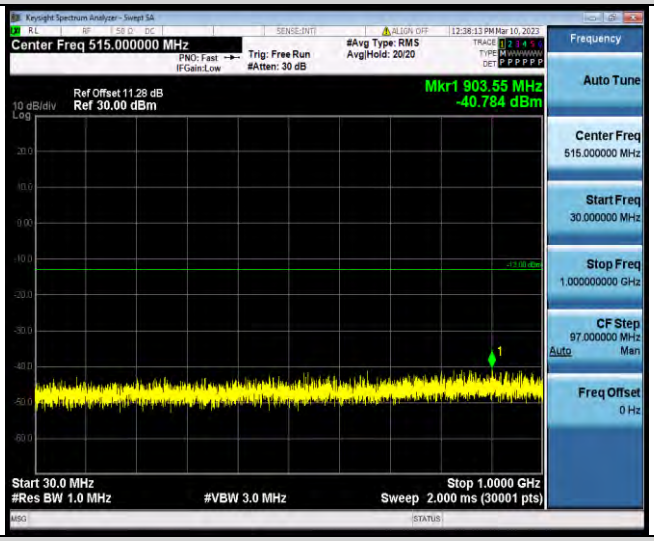


EGPRS1900-661-30~1000MHz



EGPRS1900-661-1000~20000MHz

EGPRS1900-810-30~1000MHz



EGPRS1900-810-1000~20000MHz

FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	LV	NT	4.75	0.002567	±2.5	PASS
GSM1900	512	NV	NT	6.49	0.003508	±2.5	PASS
GSM1900	512	HV	NT	4.71	0.002546	±2.5	PASS
GSM1900	661	LV	NT	2.58	0.001372	±2.5	PASS
GSM1900	661	NV	NT	5.88	0.003128	±2.5	PASS
GSM1900	661	HV	NT	4.13	0.002197	±2.5	PASS
GSM1900	810	LV	NT	5.42	0.002838	±2.5	PASS
GSM1900	810	NV	NT	2.26	0.001183	±2.5	PASS
GSM1900	810	HV	NT	2.32	0.001215	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	NV	-30	4.13	0.002232	±2.5	PASS
GSM1900	512	NV	-20	-3.45	-0.001865	±2.5	PASS
GSM1900	512	NV	-10	10.36	0.005599	±2.5	PASS
GSM1900	512	NV	0	3.91	0.002113	±2.5	PASS
GSM1900	512	NV	10	4.07	0.002200	±2.5	PASS
GSM1900	512	NV	20	-4.84	-0.002616	±2.5	PASS
GSM1900	512	NV	30	10.62	0.005740	±2.5	PASS
GSM1900	512	NV	40	-3.39	-0.001832	±2.5	PASS

GSM1900	512	NV	50	5.36	0.002897	±2.5	PASS
GSM1900	661	NV	-30	1.26	0.000670	±2.5	PASS
GSM1900	661	NV	-20	0.32	0.000170	±2.5	PASS
GSM1900	661	NV	-10	7.04	0.003745	±2.5	PASS
GSM1900	661	NV	0	0.19	0.000101	±2.5	PASS
GSM1900	661	NV	10	3.07	0.001633	±2.5	PASS
GSM1900	661	NV	20	-8.10	-0.004309	±2.5	PASS
GSM1900	661	NV	30	1.55	0.000824	±2.5	PASS
GSM1900	661	NV	40	4.65	0.002473	±2.5	PASS
GSM1900	661	NV	50	-2.94	-0.001564	±2.5	PASS
GSM1900	810	NV	-30	2.23	0.001168	±2.5	PASS
GSM1900	810	NV	-20	6.04	0.003163	±2.5	PASS
GSM1900	810	NV	-10	0.90	0.000471	±2.5	PASS
GSM1900	810	NV	0	0.97	0.000508	±2.5	PASS
GSM1900	810	NV	10	-2.71	-0.001419	±2.5	PASS
GSM1900	810	NV	20	4.10	0.002147	±2.5	PASS
GSM1900	810	NV	30	-5.94	-0.003110	±2.5	PASS
GSM1900	810	NV	40	5.36	0.002807	±2.5	PASS
GSM1900	810	NV	50	5.26	0.002754	±2.5	PASS

Note: LV = Low voltage(3.5V); NV = Normal voltage(3.8V); HV = High voltage(4.2V);
NT = Normal temperature (25℃).

MAX Deviation calculation

Frequency Stability	Frequency (MHz)	Limit Line(MHz)	Result
fL-|MAX(△ f)|	1850.076325	≥1850	PASS
fH-|MAX(△ f)|	1909.922860	≤1910	

Note：1. |MAX(△ f)| = Max Deviation
2. fL = Occ low channel fl(-13dBm/MHz)
3. fH = Occ High channel fH(-13dBm/MHz)
4. |MAX(△ f)| = 10.62Hz.

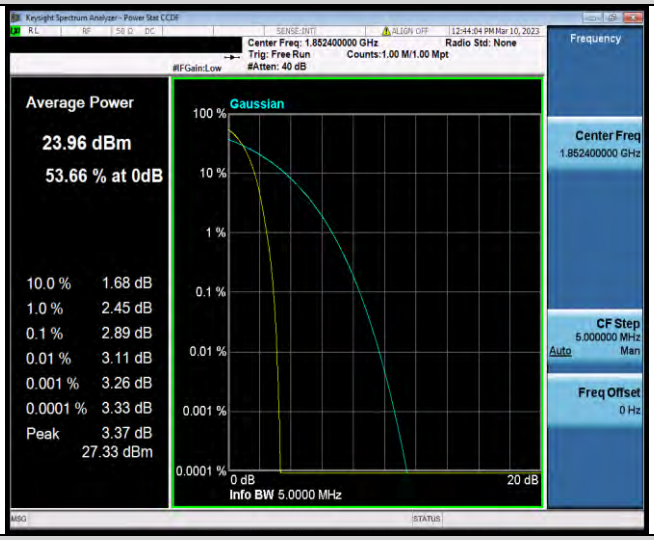
WCDMA BAND2

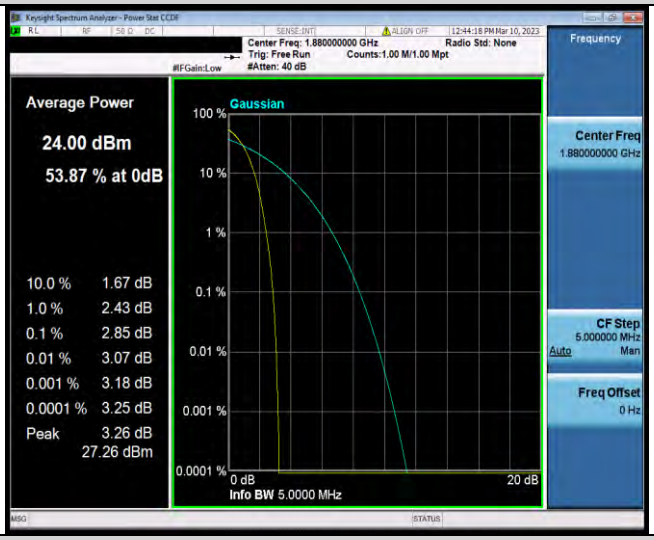
PEAK-TO-AVERAGE RATIO

Test Result

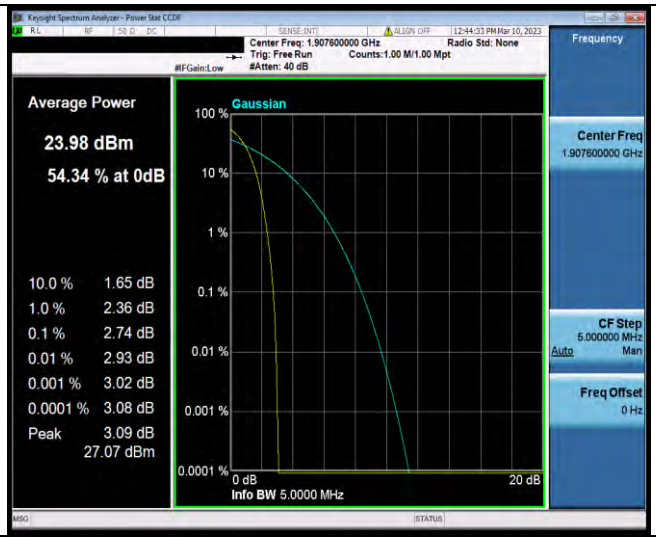
Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	2.89	13	PASS
Band2	9400	2.85	13	PASS
Band2	9538	2.74	13	PASS

Test Graphs

Band2-9262


Band2-9400


Band2-9538

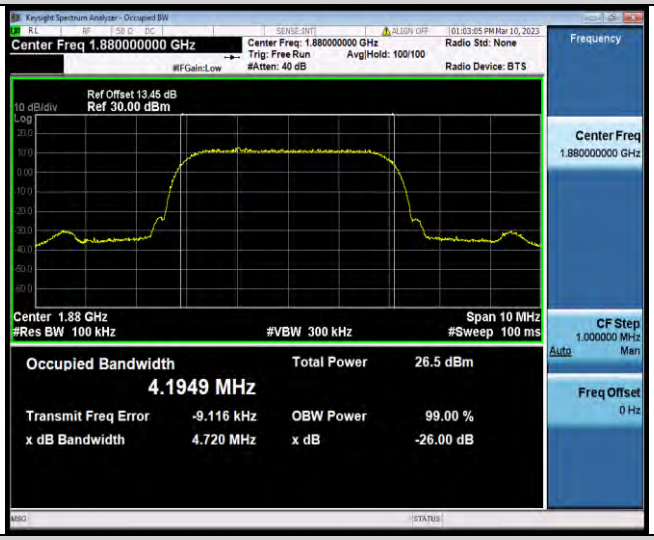


26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band2	9262	4.1875	4.727	---	PASS
Band2	9400	4.1949	4.720	---	PASS
Band2	9538	4.1880	4.727	---	PASS

Test Graphs

Band2-9262
Band2-9400

Band2-9538

BAND EDGE

Test Result

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1850.00	-28.01	-13	PASS
Band2	9538	1910.00	-26.35	-13	PASS

Test Graphs

Band2-9262

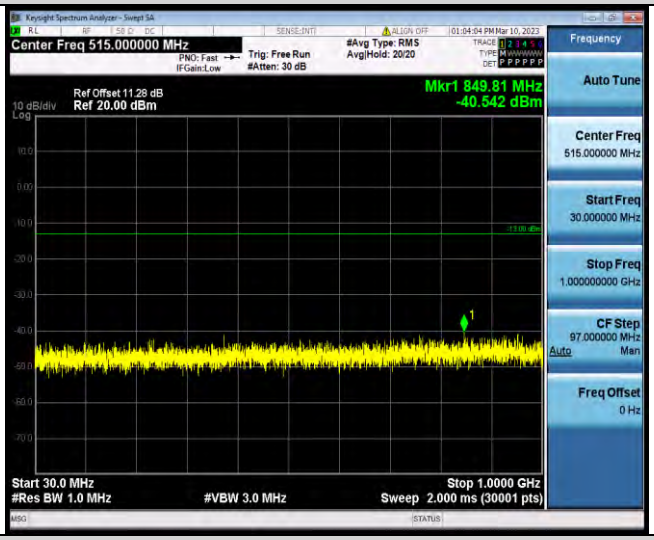
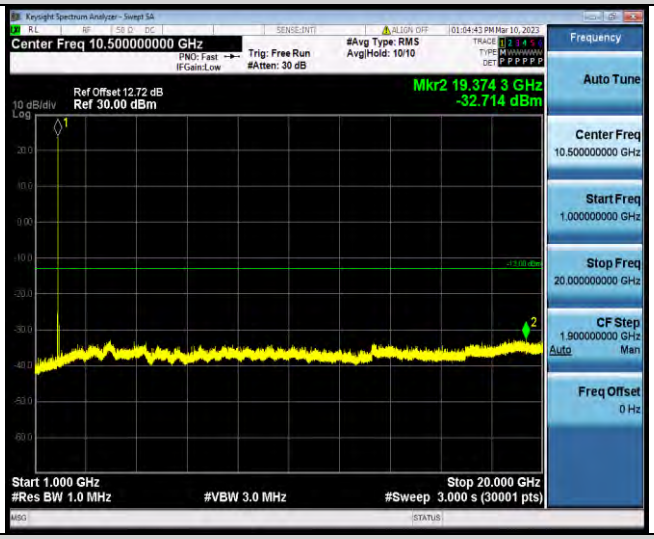
Band2-9538

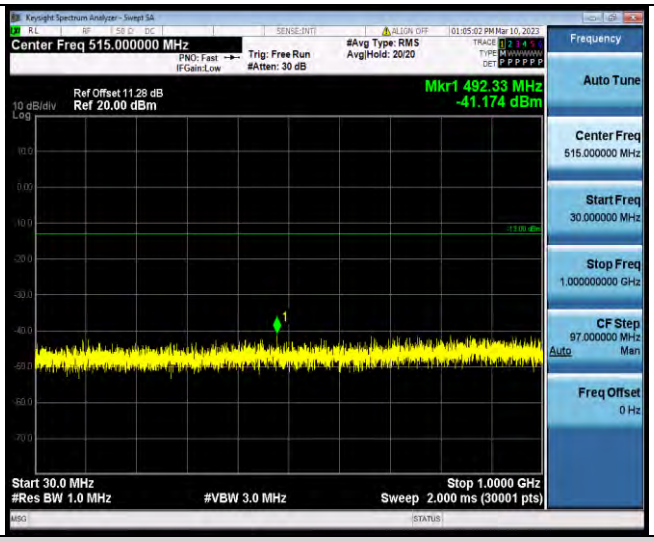
CONDUCTED SPURIOUS EMISSION

Test Result

Band	Channel	Frequency Range (Mhz)	Frequency (dBm)	Result (dBm)	Limit (dBm)	Verdict
Band2	9262	30~1000MHz	849.81	-40.54	-13	PASS
Band2	9262	1000~20000MHz	19374.27	-32.71	-13	PASS
Band2	9400	30~1000MHz	492.33	-41.17	-13	PASS
Band2	9400	1000~20000MHz	19191.23	-32.55	-13	PASS
Band2	9538	30~1000MHz	941.32	-40.46	-13	PASS
Band2	9538	1000~20000MHz	3737.27	-32.18	-13	PASS

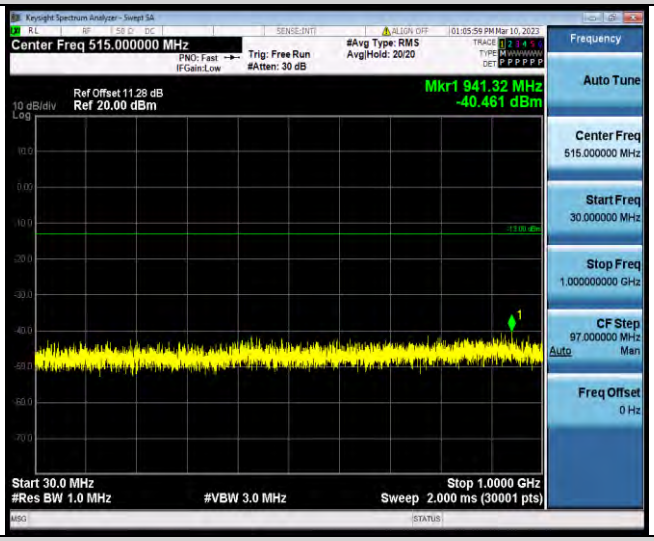
Test Graphs

Band2-9262-30~1000MHz

Band2-9262-1000~20000MHz

Band2-9400-30~1000MHz



Band2-9400-1000~20000MHz

Band2-9538-30~1000MHz



Band2-9538-1000~20000MHz

FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	LV	NT	-10.95	-0.005911	±2.5	PASS
Band2	9262	NV	NT	-11.42	-0.006165	±2.5	PASS
Band2	9262	HV	NT	-11.35	-0.006127	±2.5	PASS
Band2	9400	LV	NT	-8.86	-0.004713	±2.5	PASS
Band2	9400	NV	NT	-7.60	-0.004043	±2.5	PASS
Band2	9400	HV	NT	-9.51	-0.005059	±2.5	PASS
Band2	9538	LV	NT	-11.42	-0.005987	±2.5	PASS
Band2	9538	NV	NT	-10.59	-0.005551	±2.5	PASS
Band2	9538	HV	NT	-8.35	-0.004377	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	NV	-30	-10.16	-0.005485	±2.5	PASS
Band2	9262	NV	-20	-11.42	-0.006165	±2.5	PASS
Band2	9262	NV	-10	-8.40	-0.004535	±2.5	PASS
Band2	9262	NV	0	-11.86	-0.006403	±2.5	PASS
Band2	9262	NV	10	-10.12	-0.005463	±2.5	PASS
Band2	9262	NV	20	-10.79	-0.005825	±2.5	PASS
Band2	9262	NV	30	-8.21	-0.004432	±2.5	PASS
Band2	9262	NV	40	-11.52	-0.006219	±2.5	PASS
Band2	9262	NV	50	-8.09	-0.004367	±2.5	PASS
Band2	9400	NV	-30	-8.76	-0.004660	±2.5	PASS

Band2	9400	NV	-20	-7.25	-0.003856	±2.5	PASS
Band2	9400	NV	-10	-10.86	-0.005777	±2.5	PASS
Band2	9400	NV	0	-9.98	-0.005309	±2.5	PASS
Band2	9400	NV	10	-8.77	-0.004665	±2.5	PASS
Band2	9400	NV	20	-9.23	-0.004910	±2.5	PASS
Band2	9400	NV	30	-8.10	-0.004309	±2.5	PASS
Band2	9400	NV	40	-8.10	-0.004309	±2.5	PASS
Band2	9400	NV	50	-8.78	-0.004670	±2.5	PASS
Band2	9538	NV	-30	-9.76	-0.005116	±2.5	PASS
Band2	9538	NV	-20	-11.52	-0.006039	±2.5	PASS
Band2	9538	NV	-10	-9.99	-0.005237	±2.5	PASS
Band2	9538	NV	0	-8.81	-0.004618	±2.5	PASS
Band2	9538	NV	10	-8.90	-0.004666	±2.5	PASS
Band2	9538	NV	20	-8.71	-0.004566	±2.5	PASS
Band2	9538	NV	30	-10.10	-0.005295	±2.5	PASS
Band2	9538	NV	40	-8.90	-0.004666	±2.5	PASS
Band2	9538	NV	50	-11.53	-0.006044	±2.5	PASS

Note: LV = Low voltage(3.5V); NV = Normal voltage(3.8V); HV = High voltage(4.2V);
NT = Normal temperature (25℃).

MAX Deviation calculation

Frequency Stability	Frequency (MHz)	Limit Line(MHz)	Result
fL-|MAX(△ f)|	1850.30625	≥1850	PASS
fH-|MAX(△ f)|	1909.69400	≤1910	

Note：1. |MAX(△ f)| = Max Deviation
2. fL = Occ low channel fl(-13dBm/MHz)
3. fH = Occ High channel fH(-13dBm/MHz)
4. |MAX(△ f)| = -11.86Hz.

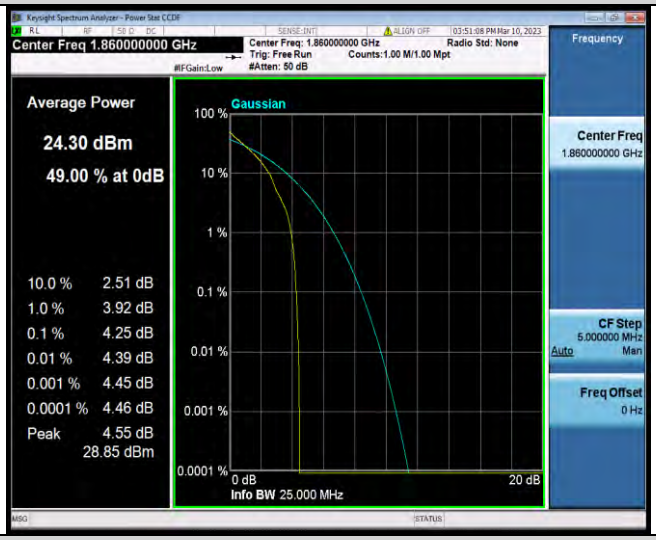
LTE BAND2

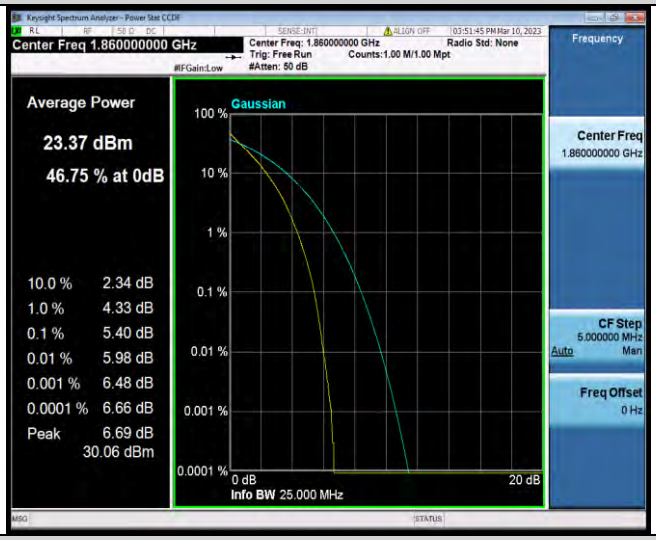
PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

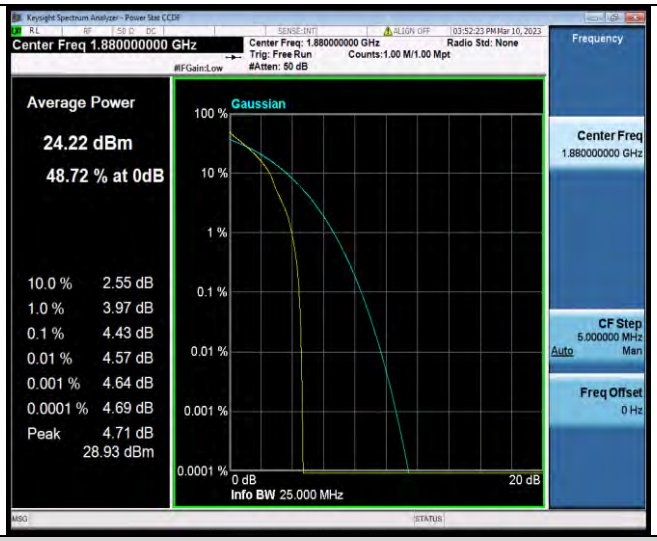
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band2	20MHz	QPSK	18700	1RB#0	4.25	13	PASS
Band2	20MHz	QPSK	18700	100RB#0	5.40	13	PASS
Band2	20MHz	QPSK	18900	1RB#0	4.43	13	PASS
Band2	20MHz	QPSK	18900	100RB#0	5.32	13	PASS
Band2	20MHz	QPSK	19100	1RB#0	4.61	13	PASS
Band2	20MHz	QPSK	19100	100RB#0	5.21	13	PASS
Band2	20MHz	16QAM	18700	1RB#0	4.98	13	PASS
Band2	20MHz	16QAM	18700	100RB#0	6.16	13	PASS
Band2	20MHz	16QAM	18900	1RB#0	5.08	13	PASS
Band2	20MHz	16QAM	18900	100RB#0	6.07	13	PASS
Band2	20MHz	16QAM	19100	1RB#0	5.28	13	PASS
Band2	20MHz	16QAM	19100	100RB#0	6.02	13	PASS
Band2	20MHz	64QAM	18700	1RB#0	5.80	13	PASS
Band2	20MHz	64QAM	18700	100RB#0	6.50	13	PASS
Band2	20MHz	64QAM	18900	1RB#0	5.81	13	PASS
Band2	20MHz	64QAM	18900	100RB#0	6.45	13	PASS
Band2	20MHz	64QAM	19100	1RB#0	6.01	13	PASS
Band2	20MHz	64QAM	19100	100RB#0	6.38	13	PASS

Test Graphs

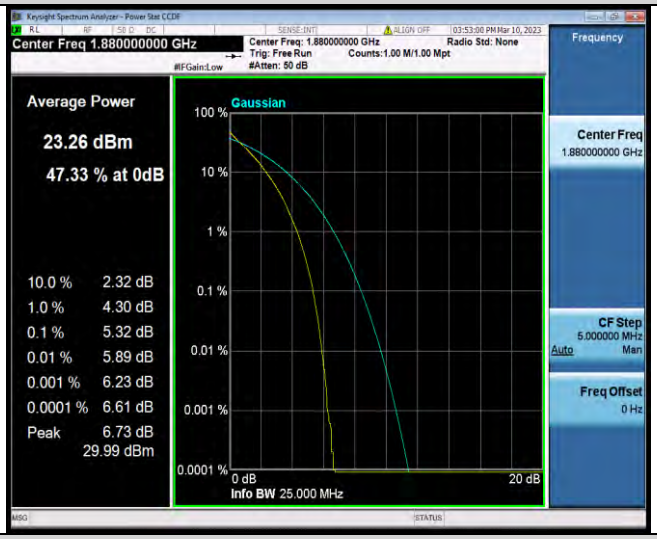
Band2-20MHz-QPSK-18700-1RB#0


Band2-20MHz-QPSK-18700-100RB#0


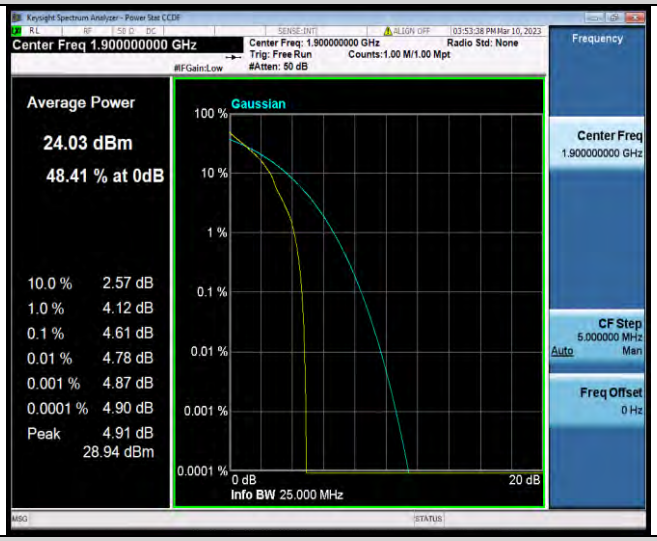
Band2-20MHz-QPSK-18900-1RB#0



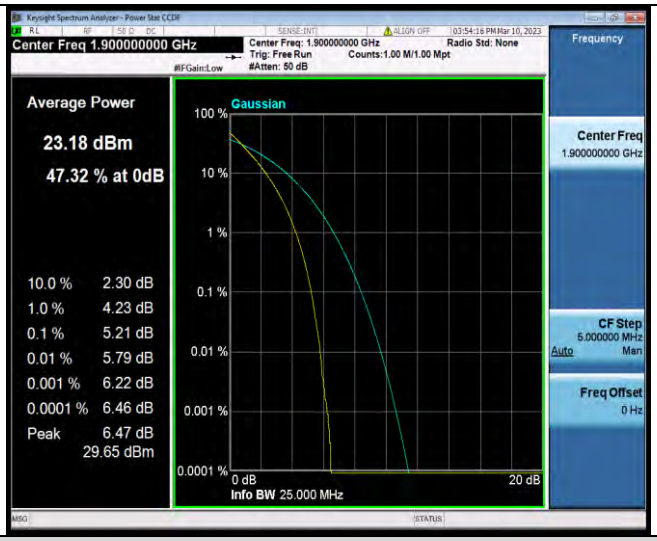
Band2-20MHz-QPSK-18900-100RB#0



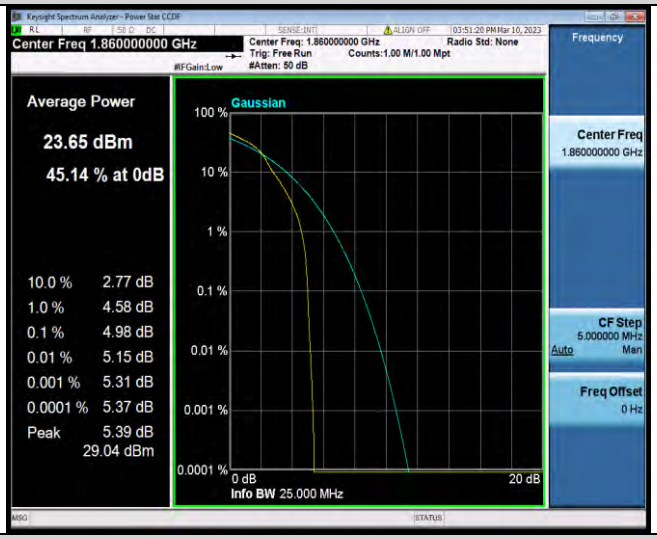
Band2-20MHz-QPSK-19100-1RB#0



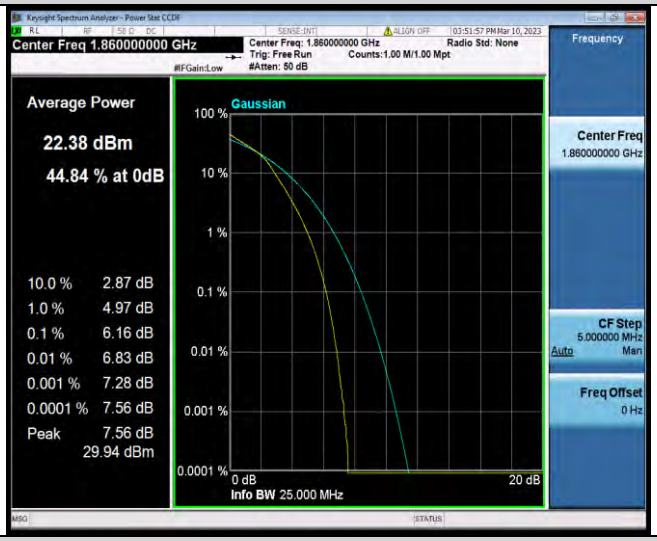
Band2-20MHz-QPSK-19100-100RB#0



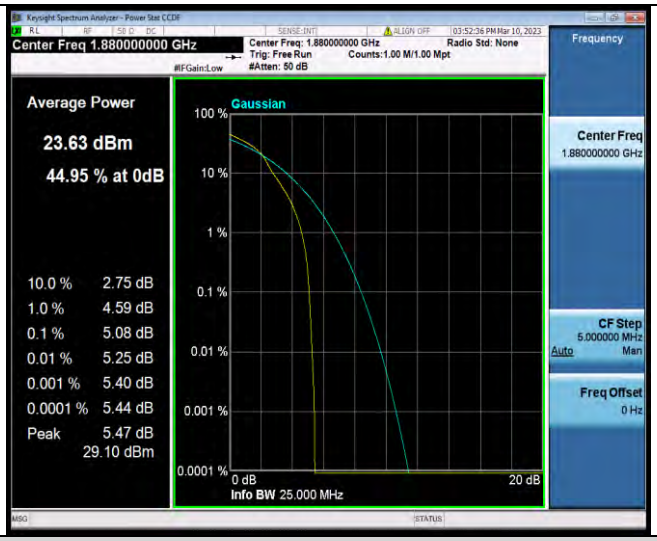
Band2-20MHz-16QAM-18700-1RB#0



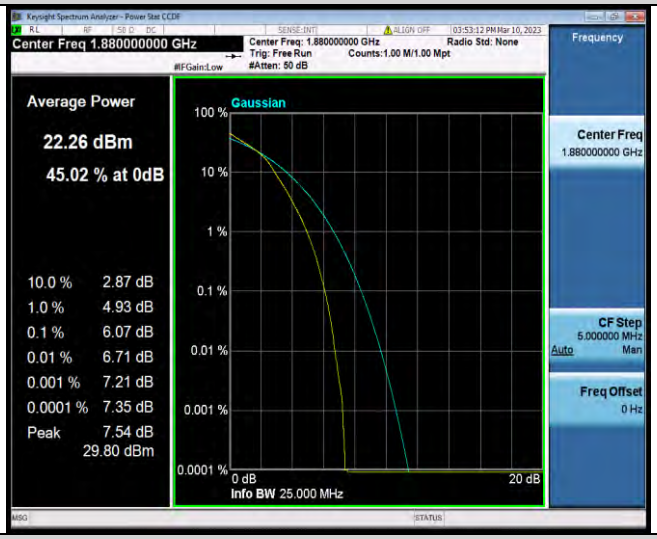
Band2-20MHz-16QAM-18700-100RB#0



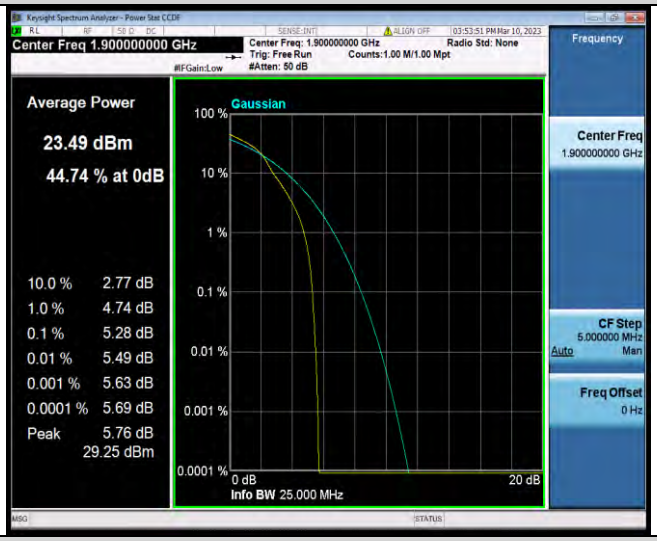
Band2-20MHz-16QAM-18900-1RB#0



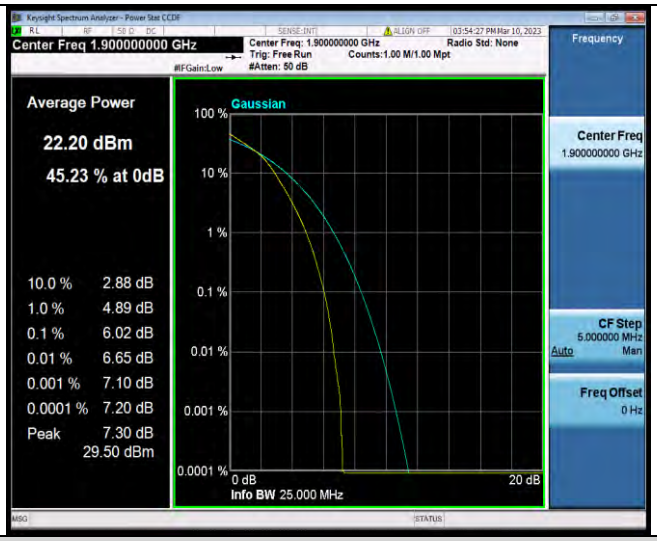
Band2-20MHz-16QAM-18900-100RB#0



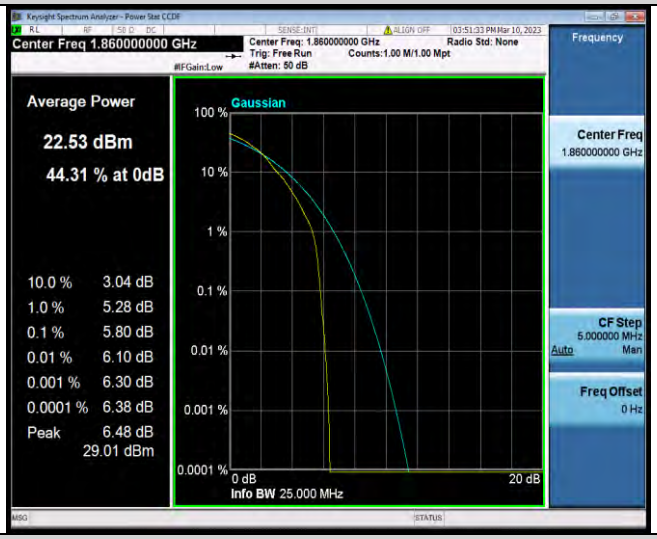
Band2-20MHz-16QAM-19100-1RB#0



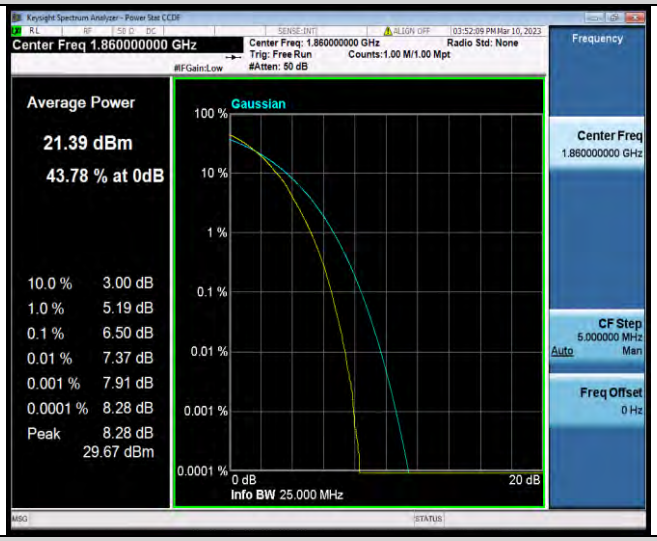
Band2-20MHz-16QAM-19100-100RB#0



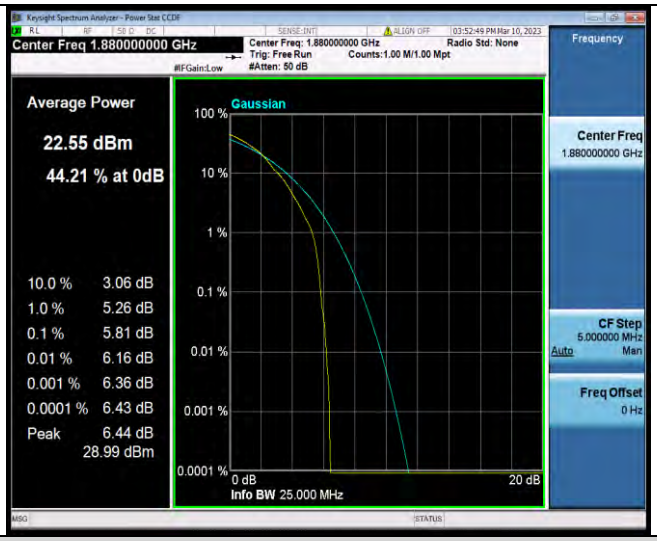
Band2-20MHz-64QAM-18700-1RB#0



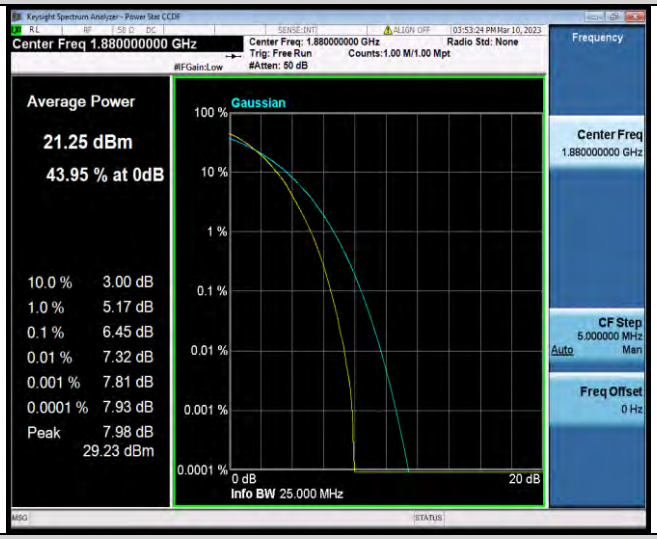
Band2-20MHz-64QAM-18700-100RB#0



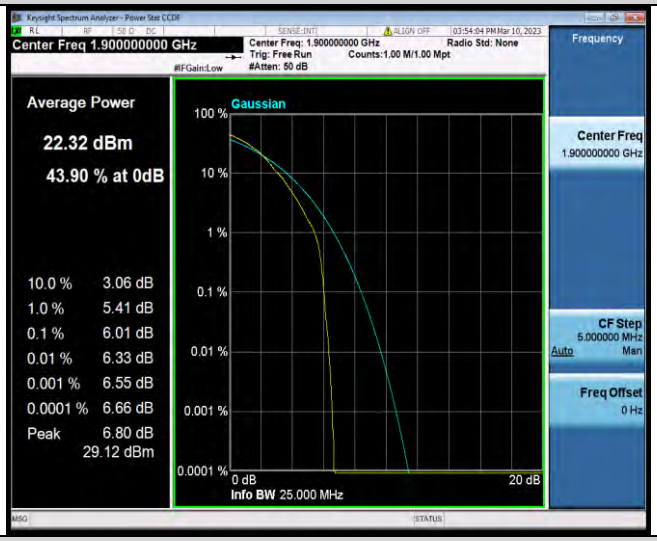
Band2-20MHz-64QAM-18900-1RB#0



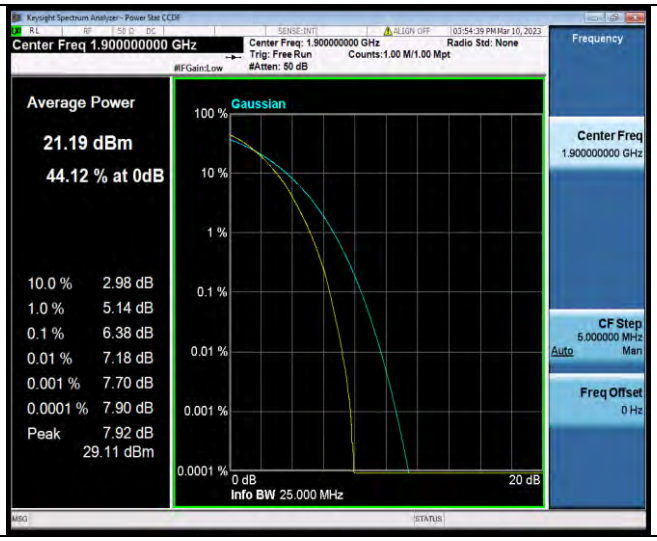
Band2-20MHz-64QAM-18900-100RB#0



Band2-20MHz-64QAM-19100-1RB#0



Band2-20MHz-64QAM-19100-100RB#0


Keysight Spectrum Analyzer - Power Stat CCDF
Center Freq 1.900000000 GHz
Center Freq: 1.900000000 GHz
Trig: Free Run
#Atten: 50 dB
Counts:1.00 M/1.00 Mpt
Radio Std: None
Frequency
Average Power
21.19 dBm
44.12 % at 0dB
10.0 % 2.98 dB
1.0 % 5.14 dB
0.1 % 6.38 dB
0.01 % 7.18 dB
0.001 % 7.70 dB
0.0001 % 7.90 dB
Peak 7.92 dB
29.11 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz
Center Freq
1.900000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

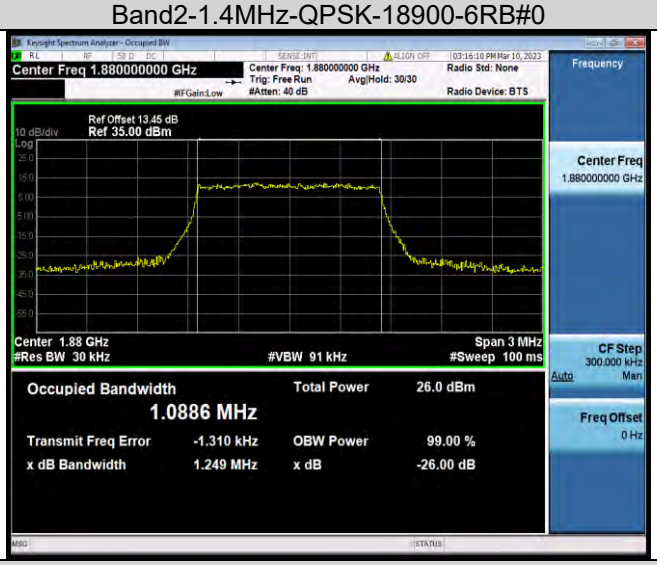
Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band2	1.4MHz	QPSK	18607	6RB#0	1.0873	1.249	PASS
Band2	1.4MHz	QPSK	18900	6RB#0	1.0886	1.249	PASS
Band2	1.4MHz	QPSK	19193	6RB#0	1.0876	1.261	PASS
Band2	1.4MHz	16QAM	18607	6RB#0	1.0924	1.265	PASS
Band2	1.4MHz	16QAM	18900	6RB#0	1.0880	1.260	PASS
Band2	1.4MHz	16QAM	19193	6RB#0	1.0925	1.257	PASS
Band2	1.4MHz	64QAM	18607	6RB#0	1.0874	1.253	PASS
Band2	1.4MHz	64QAM	18900	6RB#0	1.0863	1.260	PASS
Band2	1.4MHz	64QAM	19193	6RB#0	1.0884	1.240	PASS
Band2	3MHz	QPSK	18615	15RB#0	2.6874	2.854	PASS
Band2	3MHz	QPSK	18900	15RB#0	2.6929	2.857	PASS
Band2	3MHz	QPSK	19185	15RB#0	2.6882	2.844	PASS
Band2	3MHz	16QAM	18615	15RB#0	2.6896	2.855	PASS
Band2	3MHz	16QAM	18900	15RB#0	2.6865	2.849	PASS
Band2	3MHz	16QAM	19185	15RB#0	2.6858	2.855	PASS
Band2	3MHz	64QAM	18615	15RB#0	2.6923	2.871	PASS
Band2	3MHz	64QAM	18900	15RB#0	2.6961	2.869	PASS
Band2	3MHz	64QAM	19185	15RB#0	2.6964	2.877	PASS
Band2	5MHz	QPSK	18625	25RB#0	4.4984	4.788	PASS
Band2	5MHz	QPSK	18900	25RB#0	4.4984	4.800	PASS
Band2	5MHz	QPSK	19175	25RB#0	4.4986	4.812	PASS
Band2	5MHz	16QAM	18625	25RB#0	4.5048	4.820	PASS
Band2	5MHz	16QAM	18900	25RB#0	4.5025	4.811	PASS
Band2	5MHz	16QAM	19175	25RB#0	4.5073	4.816	PASS
Band2	5MHz	64QAM	18625	25RB#0	4.4994	4.807	PASS
Band2	5MHz	64QAM	18900	25RB#0	4.5026	4.812	PASS
Band2	5MHz	64QAM	19175	25RB#0	4.4986	4.787	PASS
Band2	10MHz	QPSK	18650	50RB#0	8.9890	9.531	PASS
Band2	10MHz	QPSK	18900	50RB#0	8.9911	9.526	PASS
Band2	10MHz	QPSK	19150	50RB#0	8.9818	9.522	PASS
Band2	10MHz	16QAM	18650	50RB#0	8.9880	9.526	PASS
Band2	10MHz	16QAM	18900	50RB#0	8.9887	9.532	PASS
Band2	10MHz	16QAM	19150	50RB#0	8.9723	9.514	PASS
Band2	10MHz	64QAM	18650	50RB#0	8.9801	9.504	PASS
Band2	10MHz	64QAM	18900	50RB#0	8.9880	9.520	PASS
Band2	10MHz	64QAM	19150	50RB#0	8.9814	9.517	PASS
Band2	15MHz	QPSK	18675	75RB#0	13.478	14.25	PASS
Band2	15MHz	QPSK	18900	75RB#0	13.480	14.25	PASS
Band2	15MHz	QPSK	19125	75RB#0	13.465	14.24	PASS
Band2	15MHz	16QAM	18675	75RB#0	13.479	14.24	PASS
Band2	15MHz	16QAM	18900	75RB#0	13.480	14.25	PASS

Band2	15MHz	16QAM	19125	75RB#0	13.468	14.24	PASS
Band2	15MHz	64QAM	18675	75RB#0	13.461	14.22	PASS
Band2	15MHz	64QAM	18900	75RB#0	13.472	14.26	PASS
Band2	15MHz	64QAM	19125	75RB#0	13.450	14.25	PASS
Band2	20MHz	QPSK	18700	100RB#0	17.963	18.95	PASS
Band2	20MHz	QPSK	18900	100RB#0	17.948	18.97	PASS
Band2	20MHz	QPSK	19100	100RB#0	17.922	18.96	PASS
Band2	20MHz	16QAM	18700	100RB#0	17.977	18.96	PASS
Band2	20MHz	16QAM	18900	100RB#0	17.942	18.95	PASS
Band2	20MHz	16QAM	19100	100RB#0	17.922	18.96	PASS
Band2	20MHz	64QAM	18700	100RB#0	17.956	18.96	PASS
Band2	20MHz	64QAM	18900	100RB#0	17.957	18.95	PASS
Band2	20MHz	64QAM	19100	100RB#0	17.928	18.97	PASS

Test Graphs

Band2-1.4MHz-QPSK-18607-6RB#0

Band2-1.4MHz-QPSK-18900-6RB#0



Band2-1.4MHz-QPSK-19193-6RB#0

Band2-1.4MHz-16QAM-18607-6RB#0

Band2-1.4MHz-16QAM-18900-6RB#0

Band2-1.4MHz-16QAM-19193-6RB#0

Band2-1.4MHz-64QAM-18607-6RB#0

Band2-1.4MHz-64QAM-18900-6RB#0

Band2-1.4MHz-64QAM-19193-6RB#0

Band2-3MHz-QPSK-18615-15RB#0

Band2-3MHz-QPSK-18900-15RB#0

Band2-3MHz-QPSK-19185-15RB#0

Band2-3MHz-16QAM-18615-15RB#0

Band2-3MHz-16QAM-18900-15RB#0

Band2-3MHz-16QAM-19185-15RB#0

Band2-3MHz-64QAM-18615-15RB#0

Band2-3MHz-64QAM-18900-15RB#0

Band2-3MHz-64QAM-19185-15RB#0

Band2-5MHz-QPSK-18625-25RB#0

Band2-5MHz-QPSK-18900-25RB#0

Band2-5MHz-QPSK-19175-25RB#0

Band2-5MHz-16QAM-18625-25RB#0

Band2-5MHz-16QAM-18900-25RB#0

Band2-5MHz-16QAM-19175-25RB#0

Band2-5MHz-64QAM-18625-25RB#0

Band2-5MHz-64QAM-18900-25RB#0

Band2-5MHz-64QAM-19175-25RB#0

Band2-10MHz-QPSK-18650-50RB#0

Band2-10MHz-QPSK-18900-50RB#0

Band2-10MHz-QPSK-19150-50RB#0

Band2-10MHz-16QAM-18650-50RB#0

Band2-10MHz-16QAM-18900-50RB#0

Band2-10MHz-16QAM-19150-50RB#0