Appendix B

E-UTRA BAND 13

CONTENT

1. Effective (Isotropic) Radiated Power

1.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result (dBm)	ERP (dBm)	Limit (dBm)	Verdict
BAND13	5MHz	QPSK	23205	1RB#0	23.75	23.60	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#12	23.96	23.81	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#24	23.89	23.74	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#0	22.82	22.67	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#13	22.95	22.80	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#6	22.92	22.77	34.77	PASS
BAND13	5MHz	QPSK	23205	25RB#0	22.96	22.81	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#0	23.85	23.70	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#12	23.78	23.63	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#24	23.79	23.64	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#0	22.98	22.83	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#13	22.89	22.74	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#6	22.94	22.79	34.77	PASS
BAND13	5MHz	QPSK	23230	25RB#0	22.89	22.74	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#0	23.67	23.52	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#12	23.73	23.58	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#24	23.55	23.40	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#0	22.87	22.72	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#13	22.89	22.74	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#6	22.79	22.64	34.77	PASS
BAND13	5MHz	QPSK	23255	25RB#0	22.86	22.71	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#0	22.72	22.64	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#12	22.73	22.70	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#24	22.68	22.65	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#0	21.57	21.39	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#13	21.72	21.75	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#6	21.89	21.50	34.77	PASS
BAND13	5MHz	16QAM	23205	25RB#0	21.81	21.87	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#0	22.76	22.66	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#12	22.49	22.41	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#24	22.87	22.52	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#0	21.85	21.62	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#13	21.86	21.83	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#6	21.89	21.51	34.77	PASS

BAND13	5MHz	16QAM	23230	25RB#0	21.97	21.77	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#0	22.49	22.46	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#12	22.74	22.32	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#24	22.60	22.23	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#0	21.90	21.73	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#13	21.99	21.73	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#6	21.77	21.54	34.77	PASS
BAND13	5MHz	16QAM	23255	25RB#0	21.65	21.52	34.77	PASS
BAND13	5MHz	64QAM	23205	1RB#0	21.64	21.49	34.77	PASS
BAND13	5MHz	64QAM	23205	1RB#12	21.90	21.75	34.77	PASS
BAND13	5MHz	64QAM	23205	1RB#24	21.81	21.66	34.77	PASS
BAND13	5MHz	64QAM	23205	12RB#0	20.88	20.73	34.77	PASS
BAND13	5MHz	64QAM	23205	12RB#13	20.72	20.57	34.77	PASS
BAND13	5MHz	64QAM	23205	12RB#6	20.81	20.66	34.77	PASS
BAND13	5MHz	64QAM	23205	25RB#0	20.99	20.84	34.77	PASS
BAND13	5MHz	64QAM	23230	1RB#0	21.96	21.81	34.77	PASS
BAND13	5MHz	64QAM	23230	1RB#12	21.85	21.70	34.77	PASS
BAND13	5MHz	64QAM	23230	1RB#24	21.70	21.55	34.77	PASS
BAND13	5MHz	64QAM	23230	12RB#0	20.91	20.76	34.77	PASS
BAND13	5MHz	64QAM	23230	12RB#13	20.70	20.55	34.77	PASS
BAND13	5MHz	64QAM	23230	12RB#6	20.81	20.66	34.77	PASS
BAND13	5MHz	64QAM	23230	25RB#0	20.95	20.80	34.77	PASS
BAND13	5MHz	64QAM	23255	1RB#0	21.49	21.34	34.77	PASS
BAND13	5MHz	64QAM	23255	1RB#12	21.65	21.50	34.77	PASS
BAND13	5MHz	64QAM	23255	1RB#24	21.37	21.22	34.77	PASS
BAND13	5MHz	64QAM	23255	12RB#0	20.96	20.81	34.77	PASS
BAND13	5MHz	64QAM	23255	12RB#13	20.74	20.59	34.77	PASS
BAND13	5MHz	64QAM	23255	12RB#6	20.54	20.39	34.77	PASS
BAND13	5MHz	64QAM	23255	25RB#0	20.72	20.57	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#0	23.81	23.66	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#24	23.82	23.67	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#49	23.57	23.42	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#0	22.86	22.71	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#12	22.78	22.63	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#25	22.72	22.57	34.77	PASS
BAND13	10MHz	QPSK	23230	50RB#0	22.79	22.64	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#0	22.62	22.75	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#24	22.89	22.57	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#49	22.54	22.12	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#0	21.72	21.42	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#12	21.82	21.68	34.77	PASS

BAND13	10MHz	16QAM	23230	25RB#25	21.61	21.49	34.77	PASS
BAND13	10MHz	16QAM	23230	50RB#0	21.78	21.40	34.77	PASS
BAND13	10MHz	64QAM	23230	1RB#0	21.80	21.65	34.77	PASS
BAND13	10MHz	64QAM	23230	1RB#24	21.70	21.55	34.77	PASS
BAND13	10MHz	64QAM	23230	1RB#49	21.28	21.13	34.77	PASS
BAND13	10MHz	64QAM	23230	25RB#0	20.77	20.62	34.77	PASS
BAND13	10MHz	64QAM	23230	25RB#12	20.61	20.46	34.77	PASS
BAND13	10MHz	64QAM	23230	25RB#25	20.65	20.50	34.77	PASS
BAND13	10MHz	64QAM	23230	50RB#0	20.64	20.49	34.77	PASS

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

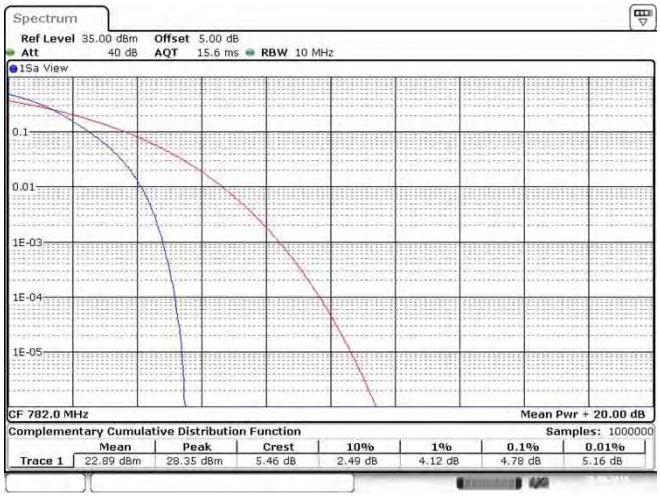
2. Peak-to-Average Ratio(CCDF)

2.1. Test Result

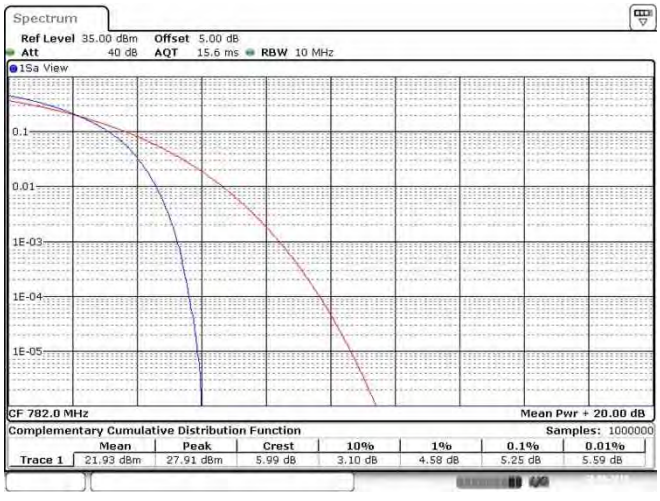
BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
BAND 13	10MHz	QPSK	23230	50RB#0	4.78	13	PASS
		16QAM	23230	50RB#0	5.25	13	PASS
		64QAM	23230	50RB#0	5.22	13	PASS

2.2. Test Plots

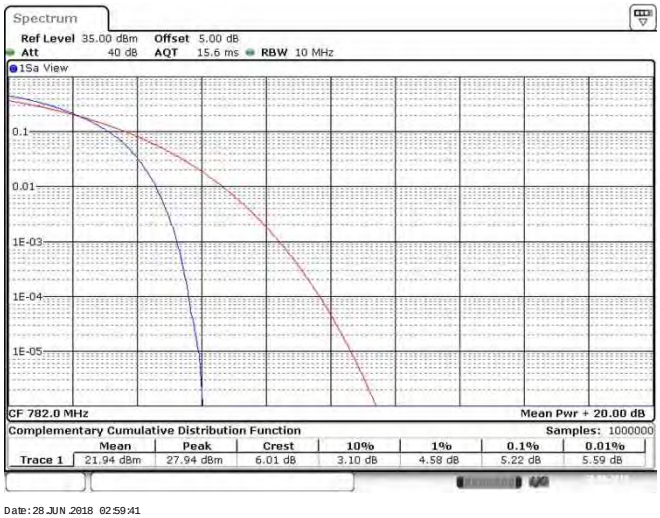
BAND 13_10MHz_QPSK_23230_50RB#0



BAND 13_10MHz_16QAM_23230_50RB#0



BAND 13_10MHz_64QAM_23230_50RB#0

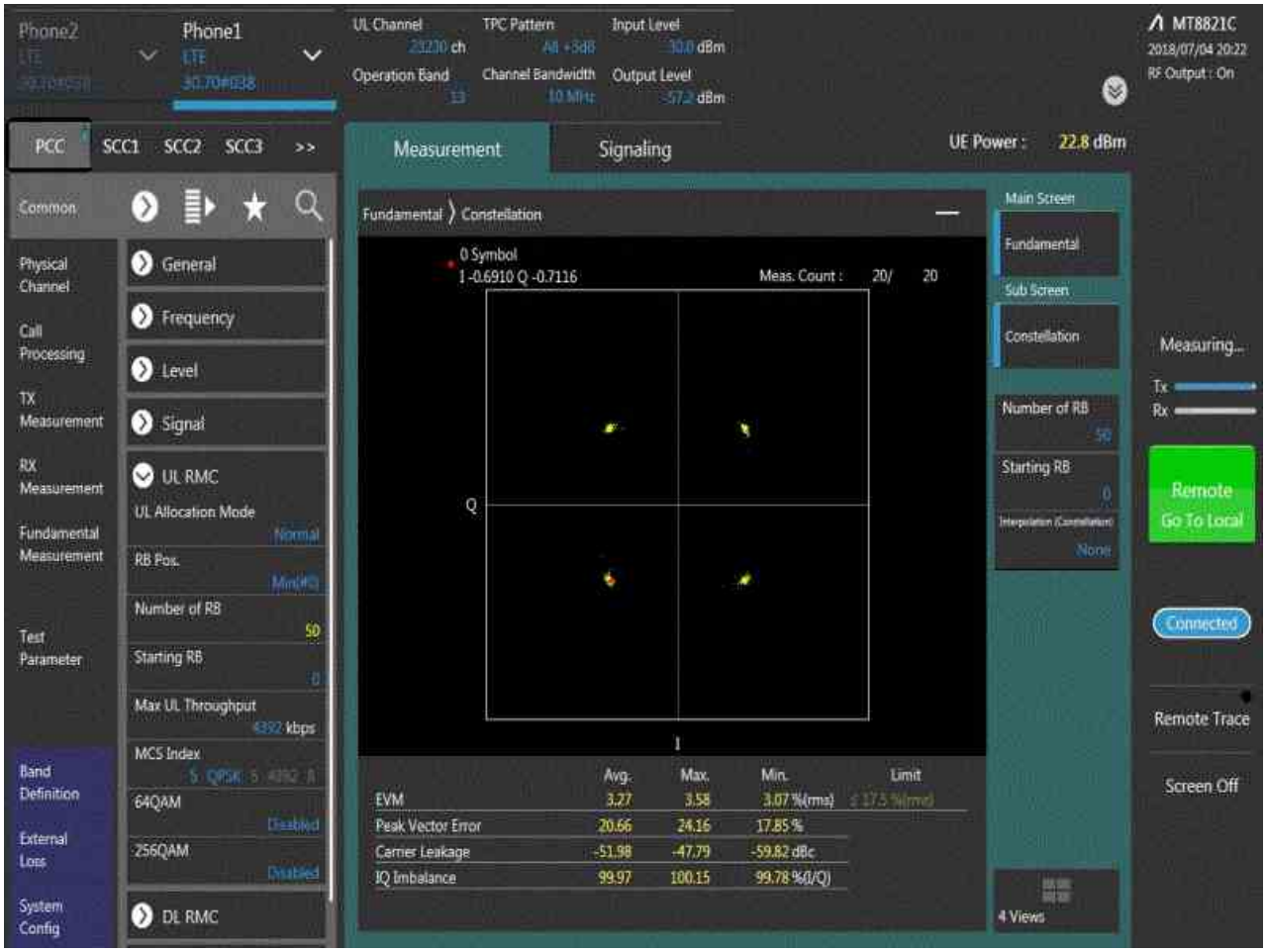


3. Modulation Characteristics

3.1. Test BAND = LTE BAND13

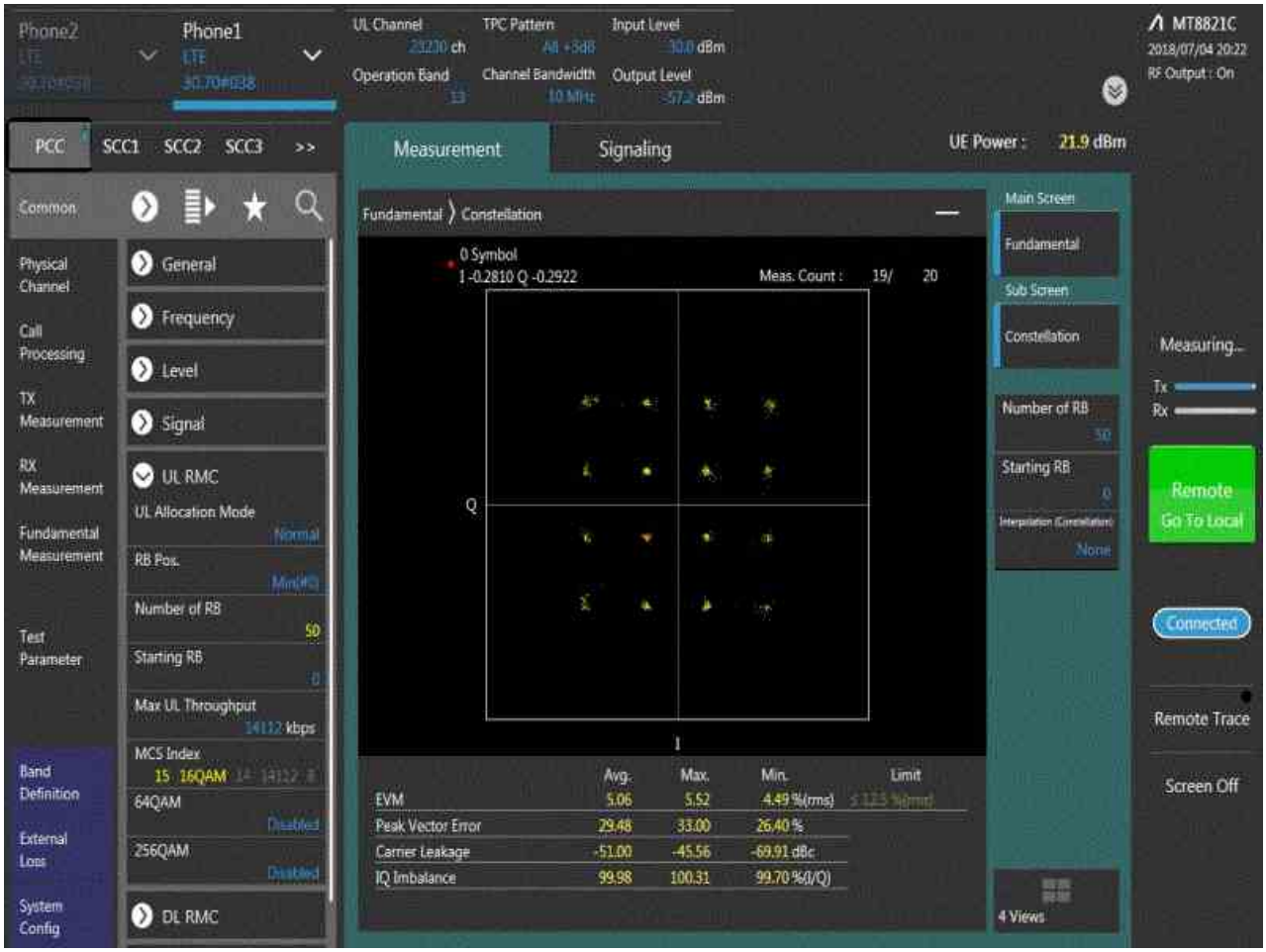
3.1.1. Test Mode = LTE /TM1 10MHz

3.1.1.1. Test Channel = MCH



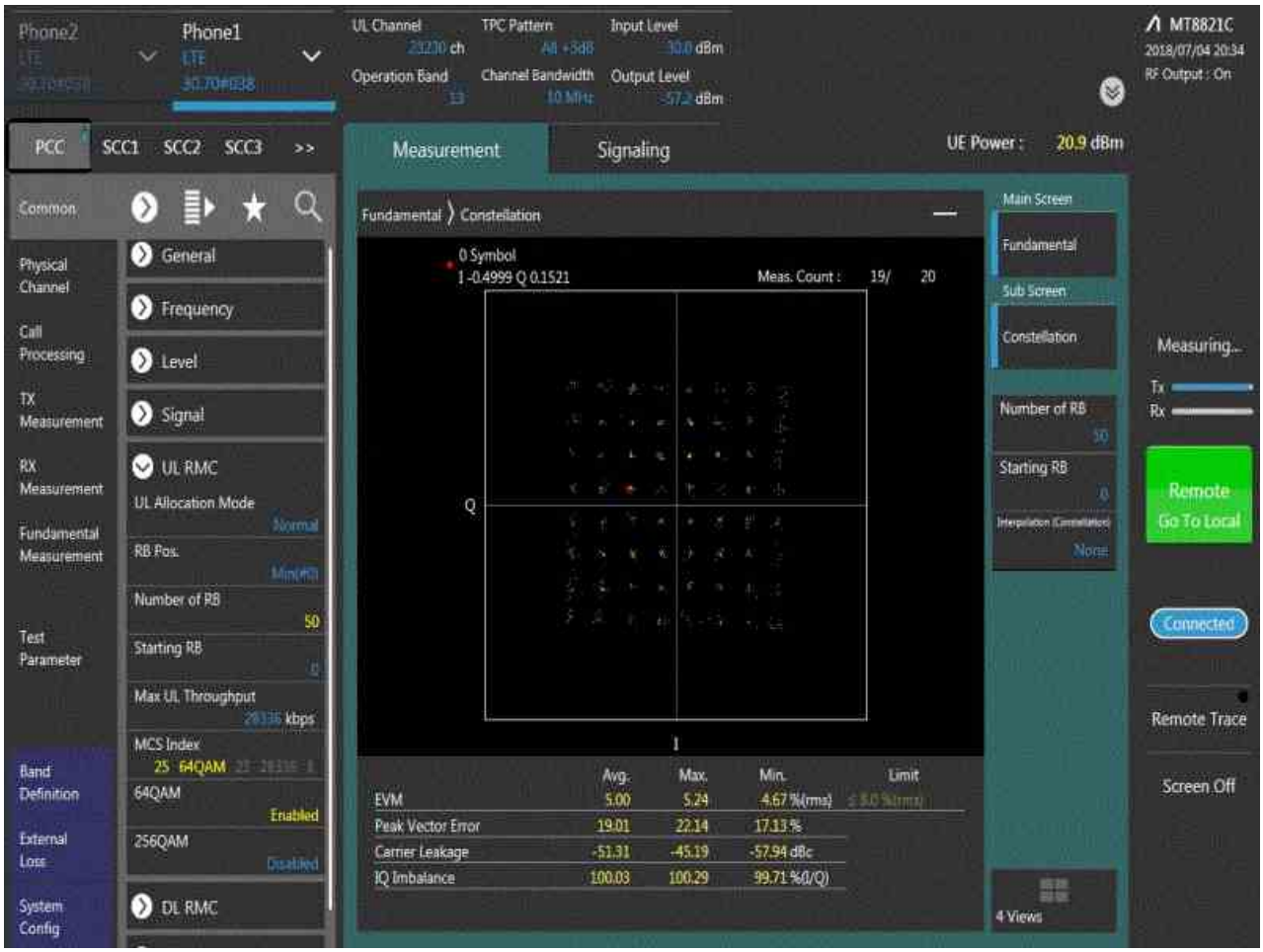
3.1.2. Test Mode = LTE /TM2 10MHz

3.1.2.1. Test Channel = MCH



3.1.1. Test Mode = LTE /TM3 10MHz

3.1.1.1. Test Channel = MCH



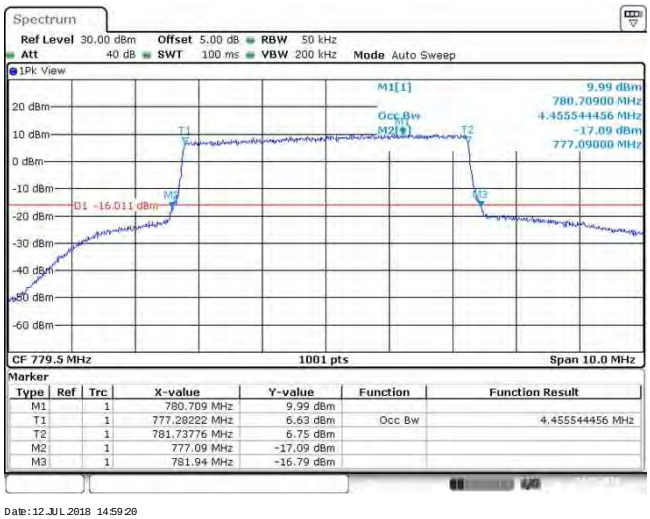
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

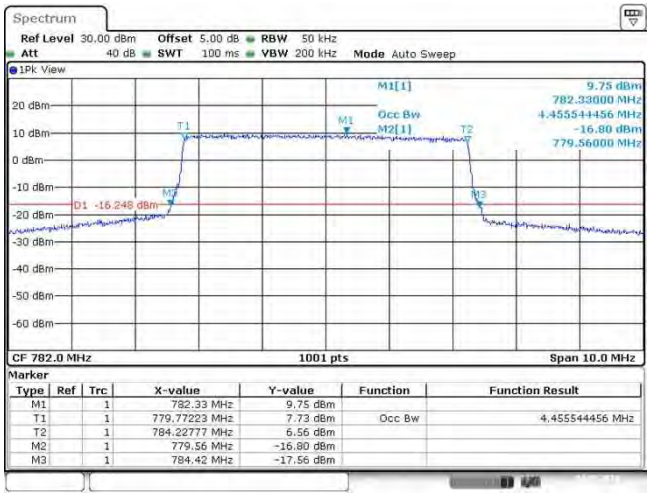
BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
BAND13	5MHz	QPSK	23205	25RB#0	4.456	4.850	PASS
			23230	25RB#0	4.456	4.860	PASS
			23255	25RB#0	4.466	4.870	PASS
		64QAM	23205	25RB#0	4.456	4.960	PASS
			23230	25RB#0	4.466	5.310	PASS
			23255	25RB#0	4.476	4.880	PASS
		16QAM	23205	25RB#0	4.456	4.900	PASS
			23230	25RB#0	4.456	4.950	PASS
			23255	25RB#0	4.466	4.870	PASS
	10MHz	QPSK	23230	50RB#0	8.891	10.040	PASS
		64QAM	23230	50RB#0	8.891	10.160	PASS
		16QAM	23230	50RB#0	8.891	10.120	PASS

4.2. Test Plots

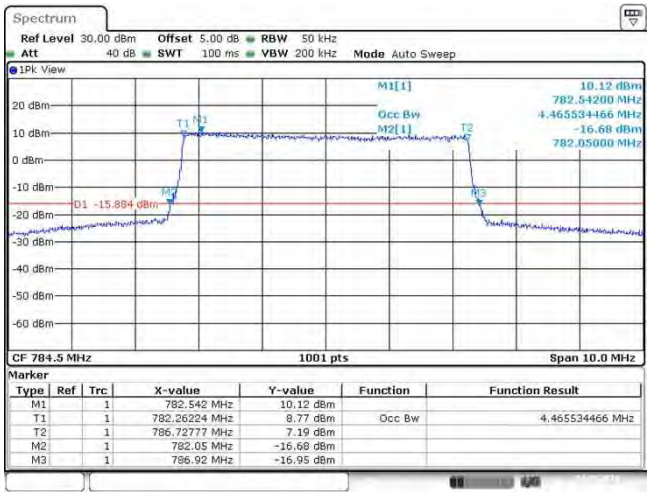
BAND13_5MHz_QPSK_23205_25RB#0



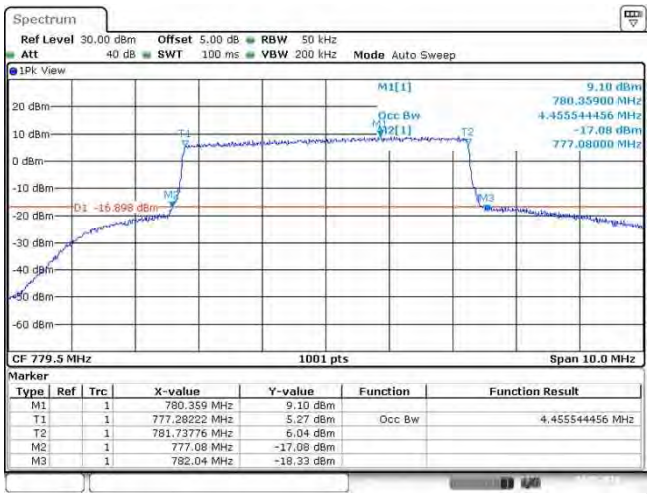
BAND13_5MHz_QPSK_23230_25RB#0



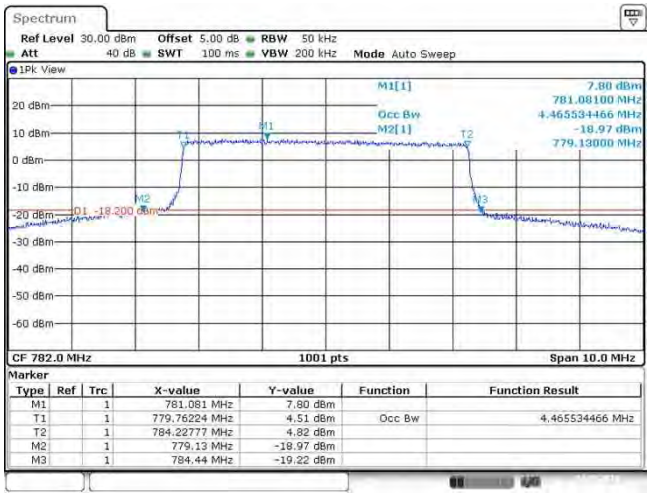
BAND13_5MHz_QPSK_23255_25RB#0



BAND13_5MHz_64QAM_23205_25RB#0

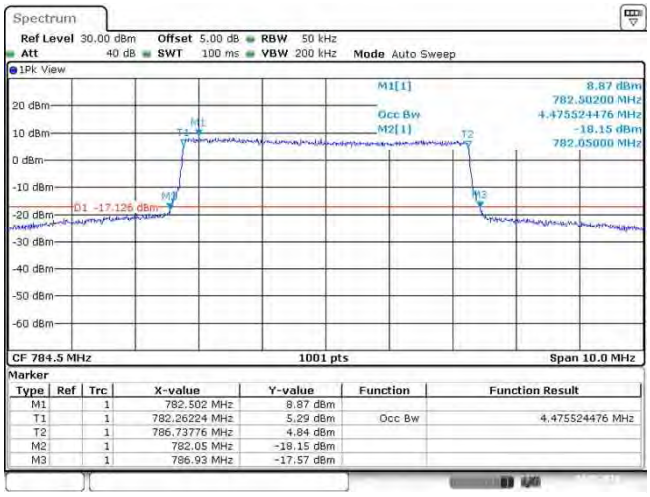


BAND13_5MHz_64QAM_23230_25RB#0



Date: 12.JUL.2018 15:90:58

BAND13_5MHz_64QAM_23255_25RB#0



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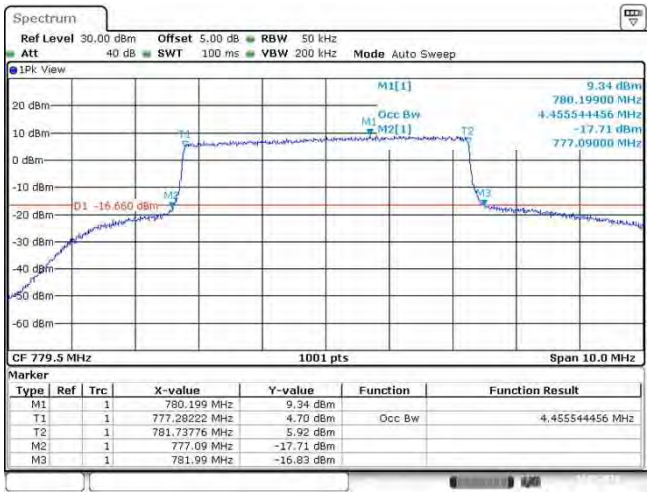
BAND13_5MHz_16QAM_23205_25RB#0



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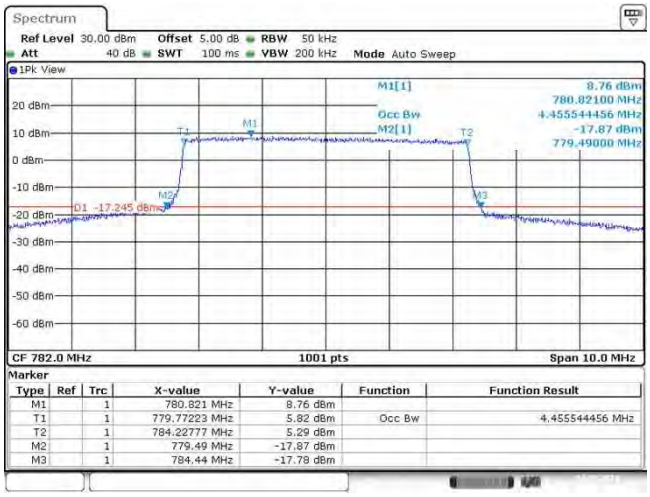
BAND13_5MHz_16QAM_23230_25RB#0



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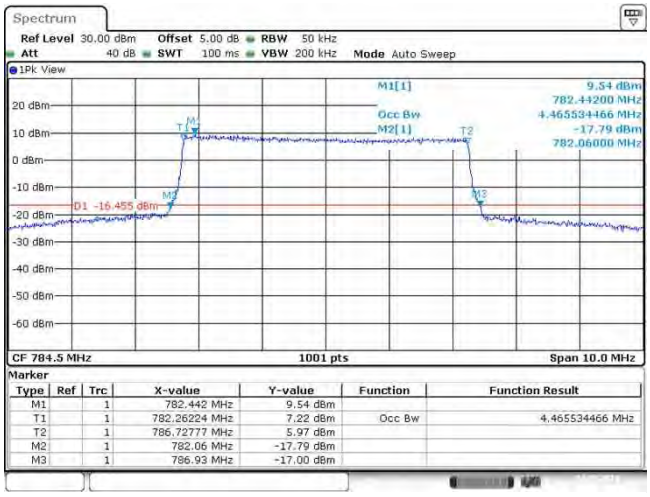
BAND13_5MHz_16QAM_23255_25RB#0



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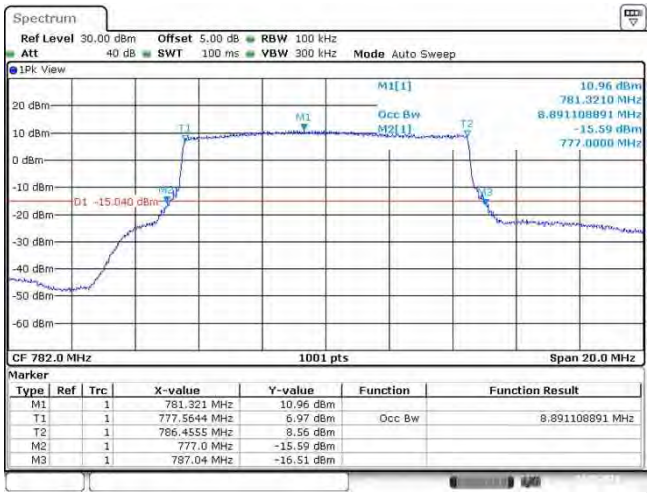
BAND13_10MHz_QPSK_23230_50RB#0



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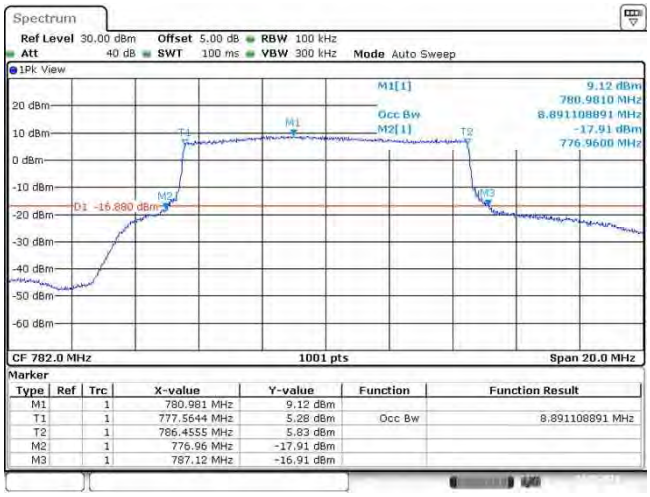
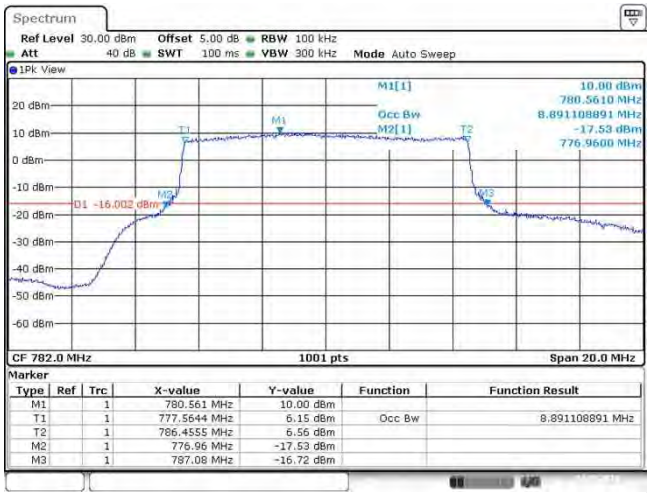
BAND13_10MHz_64QAM_23230_50RB#0



Date: 12.JUL.2018 15:02:39

BAND13_10MHz_16QAM_23230_50RB#0



Date: 12.JUL.2018 15:02:27

5. Band Edge Compliance

5.1. Test Plots

BAND13_5MHz_QPSK_23205_1RB#0

BAND13_5MHz_QPSK_23205_25RB#0

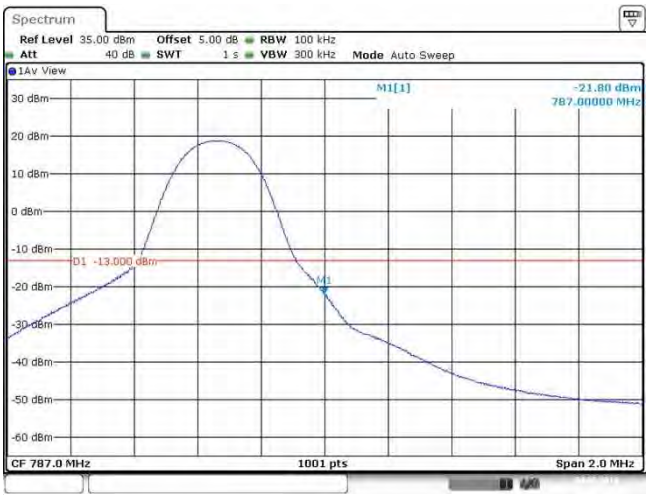
BAND13_5MHz_QPSK_23255_1RB#24

BAND13_5MHz_QPSK_23255_25RB#0

BAND13_5MHz_64QAM_23205_1RB#0

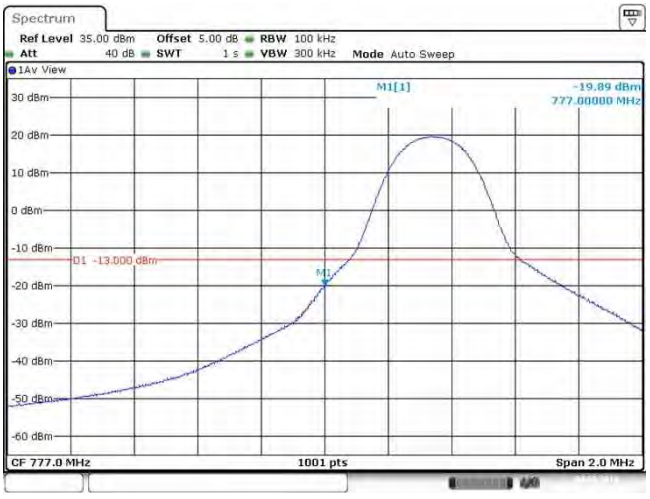
BAND13_5MHz_64QAM_23205_25RB#0

BAND13_5MHz_64QAM_23255_1RB#24



BAND13_5MHz_64QAM_23255_25RB#0

BAND13_5MHz_16QAM_23205_1RB#0



BAND13_5MHz_16QAM_23205_25RB#0

BAND13_5MHz_16QAM_23255_1RB#24

BAND13_5MHz_16QAM_23255_25RB#0

BAND13_10MHz_QPSK_23230_1RB#0

BAND13_10MHz_QPSK_23230_1RB#49

BAND13_10MHz_QPSK_23230_50RB#0

BAND13_10MHz_64QAM_23230_1RB#0

BAND13_10MHz_64QAM_23230_1RB#49

BAND13_10MHz_64QAM_23230_50RB#0

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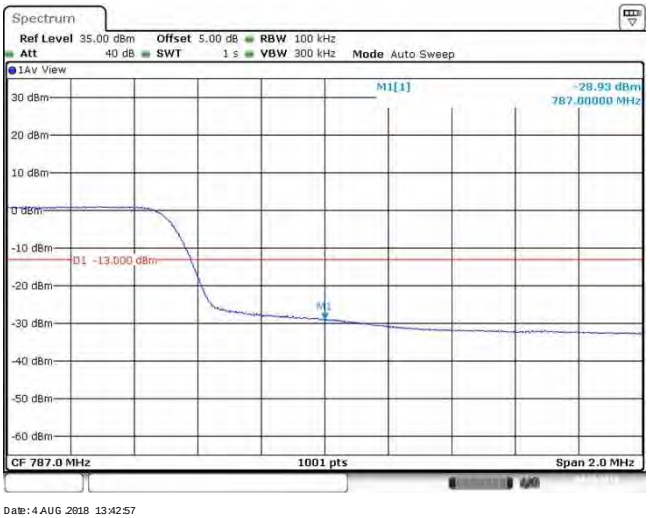
BAND13_10MHz_16QAM_23230_50RB#0



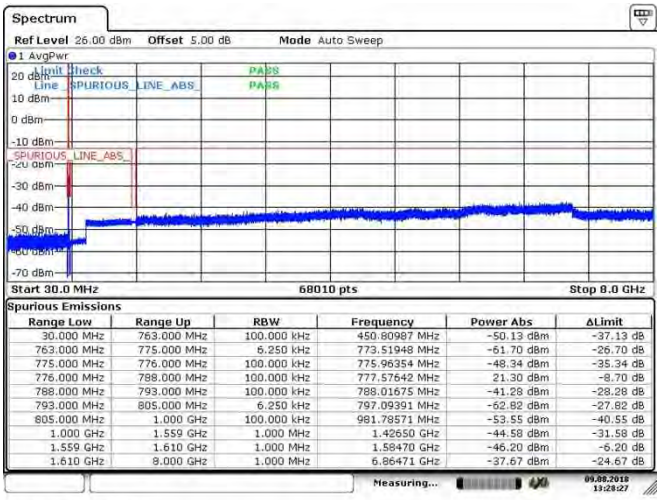
6. Spurious Emission at Antenna Terminal

NOTE1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

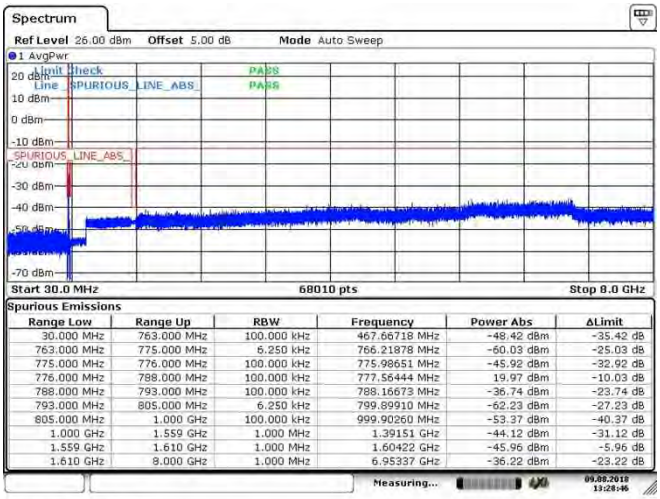
NOTE2: only the worst case data displayed in this report.

6.1. Test Plots

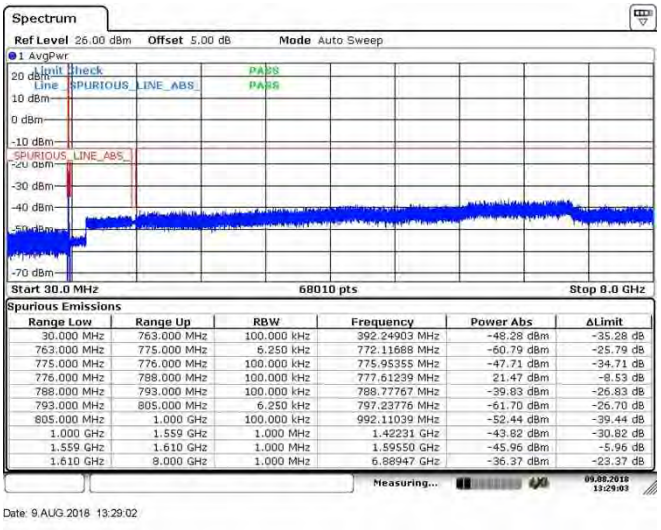
BAND 13_10MHz_QPSK_23230_1RB#0



BAND 13_10MHz_16QAM_23230_1RB#0



BAND 13_10MHz_64QAM_23230_1RB#0



7. Field Strength of Spurious Radiation

7.1. Test BAND = LTE BAND 13

7.1.1. Test Mode =LTE/TM1 10MHz

7.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.646667	-81.80	-13.00	68.80	Vertical
104.293333	-84.88	-13.00	71.88	Vertical
300.713333	-87.34	-13.00	74.34	Vertical
1559.500000	-66.09	-40.00	26.09	Vertical
2291.000000	-59.60	-13.00	46.60	Vertical
3116.025000	-69.31	-13.00	56.31	Vertical
62.340000	-77.91	-13.00	64.91	Horizontal
104.293333	-89.79	-13.00	76.79	Horizontal
262.213333	-87.92	-13.00	74.92	Horizontal
1605.000000	-59.75	-40.00	19.75	Horizontal
2332.500000	-58.10	-13.00	45.10	Horizontal
3286.650000	-69.28	-13.00	56.28	Horizontal

NOTE:

1) All modes are tested, but the data presented above is the worst case.the disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
2) We have tested all modulation and all Bandwidth, but only the worst case data presented in this report.

8. Frequency Stability

8.1. Frequency Vs Voltage

Voltage										
BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
BAND13	10MHz	QPSK	23230	50RB#0	VH	NT	4.70	0.006010	±2.5	PASS
				50RB#0	VL	NT	1.50	0.001918	±2.5	PASS
				50RB#0	VN	NT	1.70	0.002174	±2.5	PASS
		16QAM	23230	50RB#0	VH	NT	3.90	0.004987	±2.5	PASS
				50RB#0	VL	NT	3.90	0.004987	±2.5	PASS
				50RB#0	VN	NT	3.90	0.004987	±2.5	PASS
		64QAM	23230	50RB#0	VH	NT	3.90	0.004987	±2.5	PASS
				50RB#0	VL	NT	3.90	0.004987	±2.5	PASS
				50RB#0	VN	NT	3.90	0.004987	±2.5	PASS

8.2. Frequency Vs Temperature

Temperature										
BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
BAND13	10MHz	QPSK	23230	50RB#0	NV	0	2.10	0.002685	±2.5	PASS
				50RB#0	NV	10	2.20	0.002813	±2.5	PASS
				50RB#0	NV	20	3.90	0.004987	±2.5	PASS
				50RB#0	NV	-20	1.80	0.002302	±2.5	PASS
				50RB#0	NV	-30	3.10	0.003964	±2.5	PASS
		16QAM	23230	50RB#0	NV	0	3.90	0.004987	±2.5	PASS
				50RB#0	NV	10	3.90	0.004987	±2.5	PASS
				50RB#0	NV	20	3.90	0.004987	±2.5	PASS
				50RB#0	NV	-20	3.90	0.004987	±2.5	PASS
				50RB#0	NV	-30	3.90	0.004987	±2.5	PASS
		64QAM	23230	50RB#0	NV	0	3.90	0.004987	±2.5	PASS
				50RB#0	NV	10	3.90	0.004987	±2.5	PASS
				50RB#0	NV	20	3.90	0.004987	±2.5	PASS
				50RB#0	NV	-20	3.90	0.004987	±2.5	PASS
				50RB#0	NV	-30	3.90	0.004987	±2.5	PASS

The End