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# Appendix B E-UTRA BAND 13



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# 1. Effective (Isotropic) Radiated Power

#### 1.1.Test Result

SG

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	22.78	16.43	36.98	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.04	16.69	36.98	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.75	16.40	36.98	PASS
Band13	5MHz	QPSK	23205	12RB#0	22.01	15.66	36.98	PASS
Band13	5MHz	QPSK	23205	12RB#6	22.01	15.66	36.98	PASS
Band13	5MHz	QPSK	23205	12RB#13	21.96	15.61	36.98	PASS
Band13	5MHz	QPSK	23205	25RB#0	22.03	15.68	36.98	PASS
Band13	5MHz	QPSK	23230	1RB#0	22.75	16.40	36.98	PASS
Band13	5MHz	QPSK	23230	1RB#12	23.08	16.73	36.98	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.72	16.37	36.98	PASS
Band13	5MHz	QPSK	23230	12RB#0	21.95	15.60	36.98	PASS
Band13	5MHz	QPSK	23230	12RB#6	22.01	15.66	36.98	PASS
Band13	5MHz	QPSK	23230	12RB#13	21.98	15.63	36.98	PASS
Band13	5MHz	QPSK	23230	25RB#0	22.04	15.69	36.98	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.77	16.42	36.98	PASS
Band13	5MHz	QPSK	23255	1RB#12	23.00	16.65	36.98	PASS
Band13	5MHz	QPSK	23255	1RB#24	22.75	16.40	36.98	PASS
Band13	5MHz	QPSK	23255	12RB#0	21.92	15.57	36.98	PASS
Band13	5MHz	QPSK	23255	12RB#6	21.98	15.63	36.98	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.93	15.58	36.98	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.97	15.62	36.98	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.96	15.61	36.98	PASS
Band13	5MHz	16QAM	23205	1RB#12	22.32	15.97	36.98	PASS
Band13	5MHz	16QAM	23205	1RB#24	21.96	15.61	36.98	PASS
Band13	5MHz	16QAM	23205	12RB#0	21.01	14.66	36.98	PASS
Band13	5MHz	16QAM	23205	12RB#6	21.04	14.69	36.98	PASS
Band13	5MHz	16QAM	23205	12RB#13	20.97	14.62	36.98	PASS
Band13	5MHz	16QAM	23205	25RB#0	20.98	14.63	36.98	PASS
Band13	5MHz	16QAM	23230	1RB#0	22.02	15.67	36.98	PASS
Band13	5MHz	16QAM	23230	1RB#12	22.25	15.90	36.98	PASS
Band13	5MHz	16QAM	23230	1RB#24	21.93	15.58	36.98	PASS
Band13	5MHz	16QAM	23230	12RB#0	20.95	14.60	36.98	PASS
Band13	5MHz	16QAM	23230	12RB#6	21.01	14.66	36.98	PASS
Band13	5MHz	16QAM	23230	12RB#13	20.97	14.62	36.98	PASS
Band13	5MHz	16QAM	23230	25RB#0	20.95	14.60	36.98	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.00	15.65	36.98	PASS

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Band13	5MHz	16QAM	23255	1RB#12	22.14	15.79	36.98	PASS
Band13	5MHz	16QAM	23255	1RB#24	21.95	15.60	36.98	PASS
Band13	5MHz	16QAM	23255	12RB#0	20.90	14.55	36.98	PASS
Band13	5MHz	16QAM	23255	12RB#6	20.97	14.62	36.98	PASS
Band13	5MHz	16QAM	23255	12RB#13	20.90	14.55	36.98	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.86	14.51	36.98	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.89	16.54	36.98	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.98	16.63	36.98	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.86	16.51	36.98	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.09	15.74	36.98	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.07	15.72	36.98	PASS
Band13	10MHz	QPSK	23230	25RB#25	22.14	15.79	36.98	PASS
Band13	10MHz	QPSK	23230	50RB#0	22.14	15.79	36.98	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.11	15.76	36.98	PASS
Band13	10MHz	16QAM	23230	1RB#24	22.13	15.78	36.98	PASS
Band13	10MHz	16QAM	23230	1RB#49	21.94	15.59	36.98	PASS
Band13	10MHz	16QAM	23230	25RB#0	21.01	14.66	36.98	PASS
Band13	10MHz	16QAM	23230	25RB#12	21.02	14.67	36.98	PASS
Band13	10MHz	16QAM	23230	25RB#25	21.06	14.71	36.98	PASS
Band13	10MHz	16QAM	23230	50RB#0	21.06	14.71	36.98	PASS

Remark:

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

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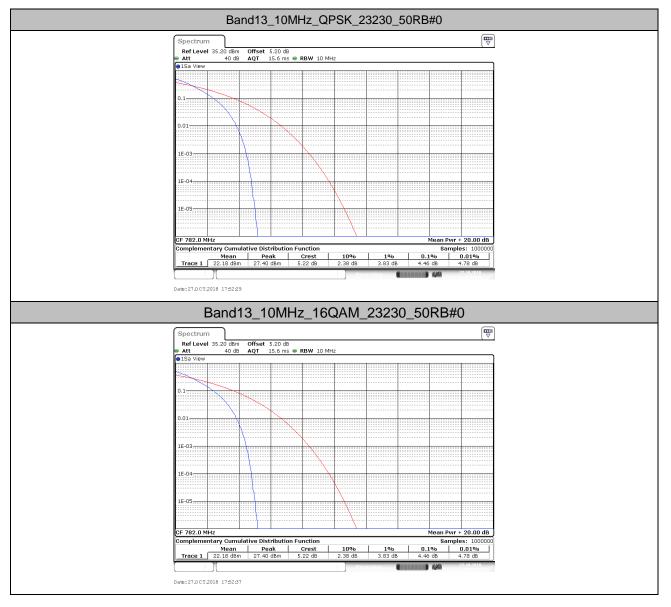
# 2. Peak-to-Average Ratio(CCDF)

#### 2.1.Test Result

SC

BAND	Bandwidth	th Modulation Channel		RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	4.46	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	4.46	13	PASS

#### 2.2. Test Plots



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### 3. Modulation Characteristics

#### 3.1.Test BAND = LTE BAND13

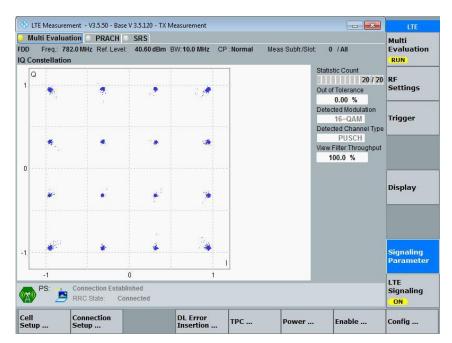
#### 3.1.1. Test Mode = LTE /TM1 10MHz

#### 3.1.1.1. Test Channel = MCH

🚸 LTE Measu	urement - V3.5.50 - Base V	/ 3.5.120 - TX Measurement				LTE
Multi Eval FDD Freq.: IQ Constellat	782.0 MHz Ref. Level:	SRS 40.60 dBm BW:10.0 MHz	CP : Normal	Meas Subfr/Slot	0 / All	Multi Evaluation RUN
Q 1					Statistic Count 20 / 20 Dut of Tolerance 0.00 %	RF Settings
	<b>.</b> .				Detected Modulation QPSK Detected Channel Type	Trigger
0				X	PUSCH fiew Filter Throughput 100.0 %	
u.				_		Display
		÷		_		
-1			1	_		Signaling Parameter
-1	Connection Establis					LTE Signaling ON
Cell Setup	Connection Setup	DL Error Insertion .	трс	Power	Enable	Config

#### 3.1.2. Test Mode = LTE /TM2 10MHz

#### 3.1.2.1. Test Channel = MCH



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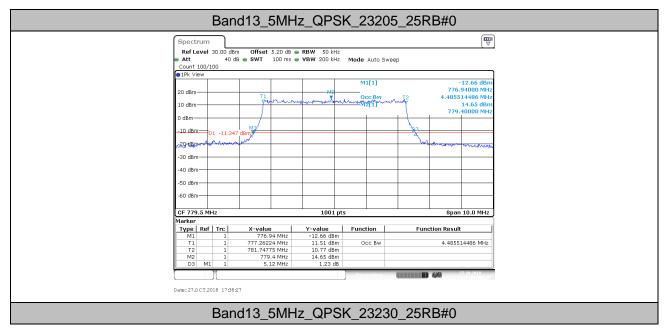
# 4. 26dB Bandwidth and Occupied Bandwidth

#### 4.1.Test Result

S(

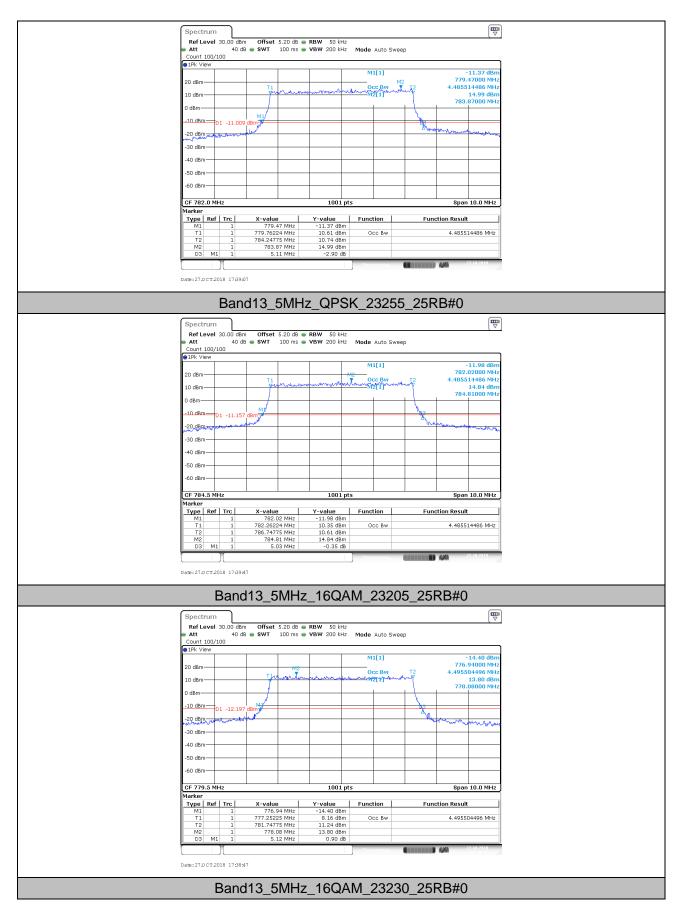
BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.486	5.120	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.486	5.110	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.486	5.030	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.496	5.120	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.486	5.120	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	5.120	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.951	9.980	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.971	9.960	PASS

#### 4.2.Test Plots



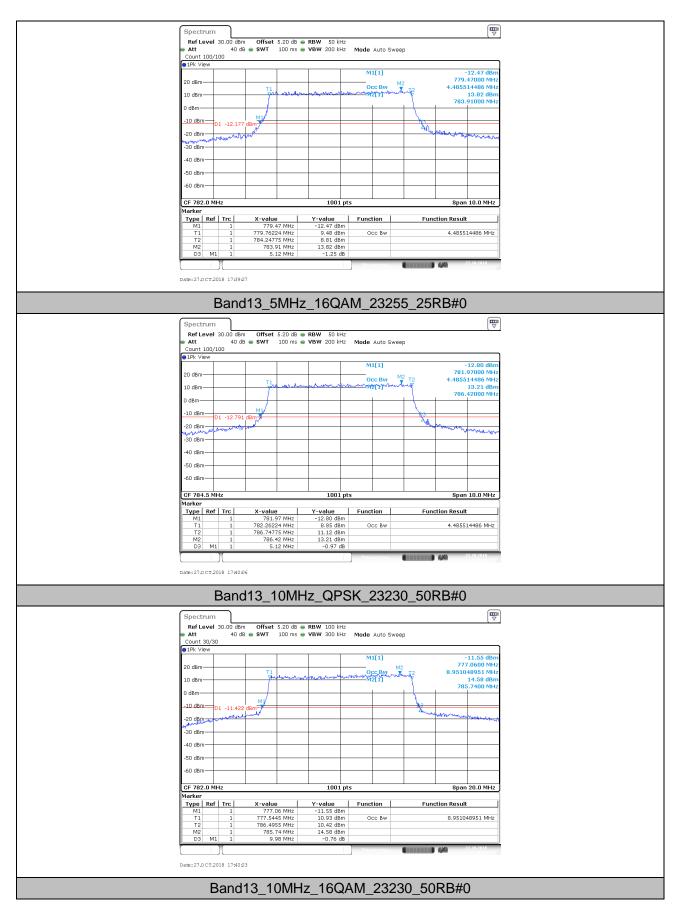


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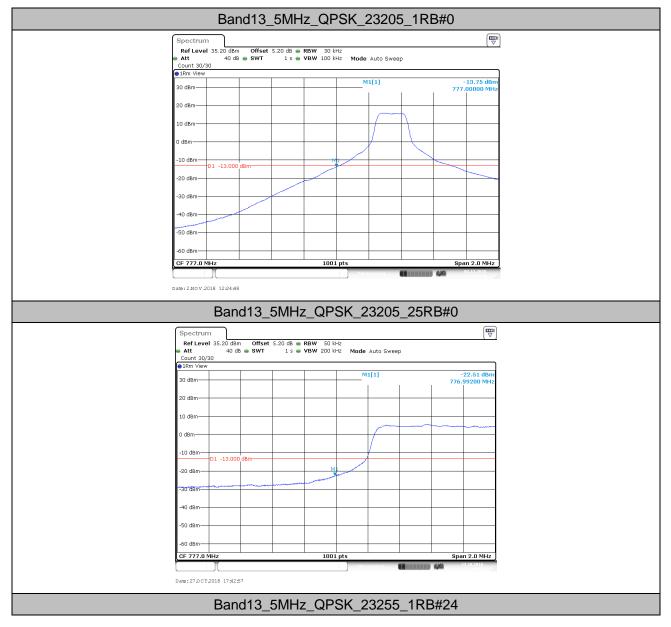
	vel 30.00 d			BRBW 100 kHz				
👄 Att		I dB 👄 SWT	100 ms (	VBW 300 kHz	Mode Auto	Sweep		
Count 3								
😑 1Pk Vie	w							
20 dBm- 10 dBm-		T1	lan shiha an	ran ayna awl yr Anto Malad	M1[1] Occ Bw ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	M2	8.9	-12.11 dBm 777.0800 MHz 71028971 MHz 14.04 dBm
0 dBm—	_					$\rightarrow$		785.3600 MHz
	D1 -11.9							
-20 dBm-	<i>crusual</i> lund	wood water					Yard Herena	wederter deen not
-40 dBm-								
-50 dBm-								
-60 dBm-								
CF 782.	D MHz			1001 pt	s		S	pan 20.0 MHz
Marker					-			
Type	Ref   Trc	X-valı	e	Y-value	Function	F	unction Re	sult
M1	1		.08 MHz	-12.11 dBm				
T1	1		45 MHz	10.07 dBm	Occ Bw		8.9	71028971 MHz
T2	1		955 MHz	9.17 dBm				
M2 D3	1 M1 1		.36 MHz .96 MHz	14.04 dBm -1.53 dB				
U3	1 I I	9	.90 MHZ	-1.53 dB	L	1		



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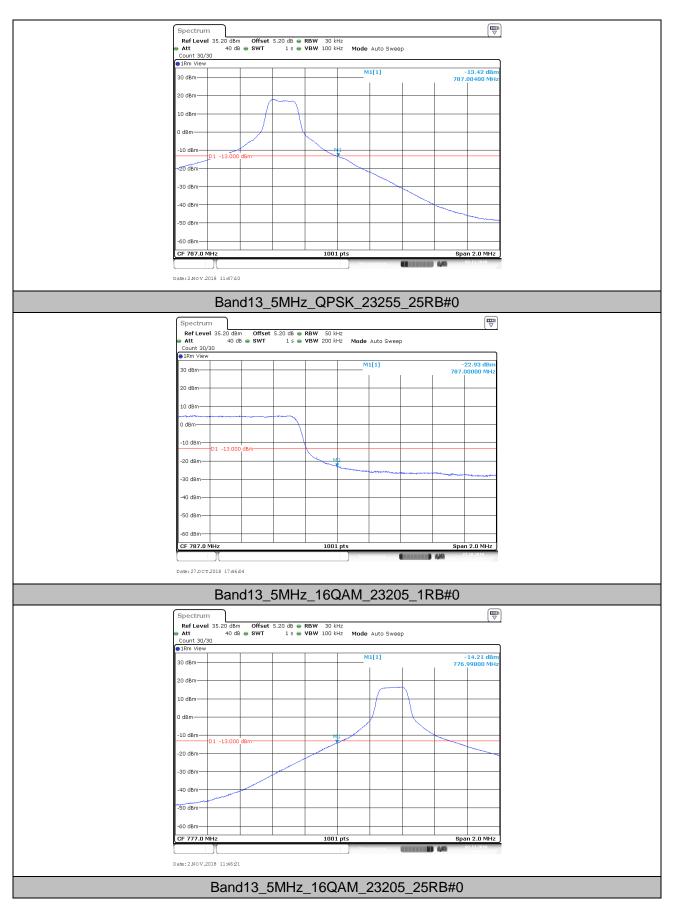
## 5. Band Edge Compliance

#### **5.1.Test Plots**



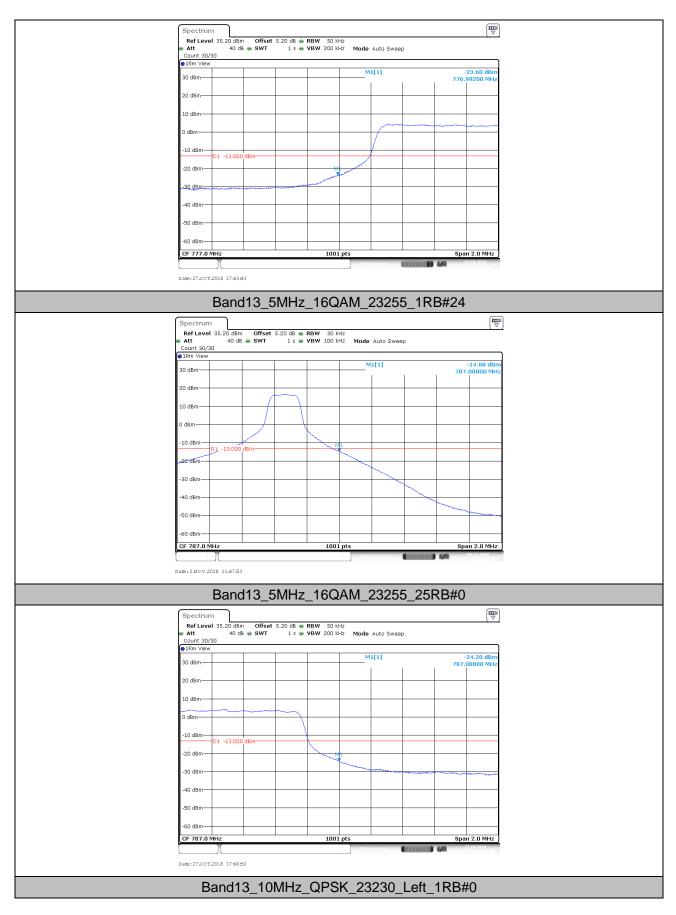


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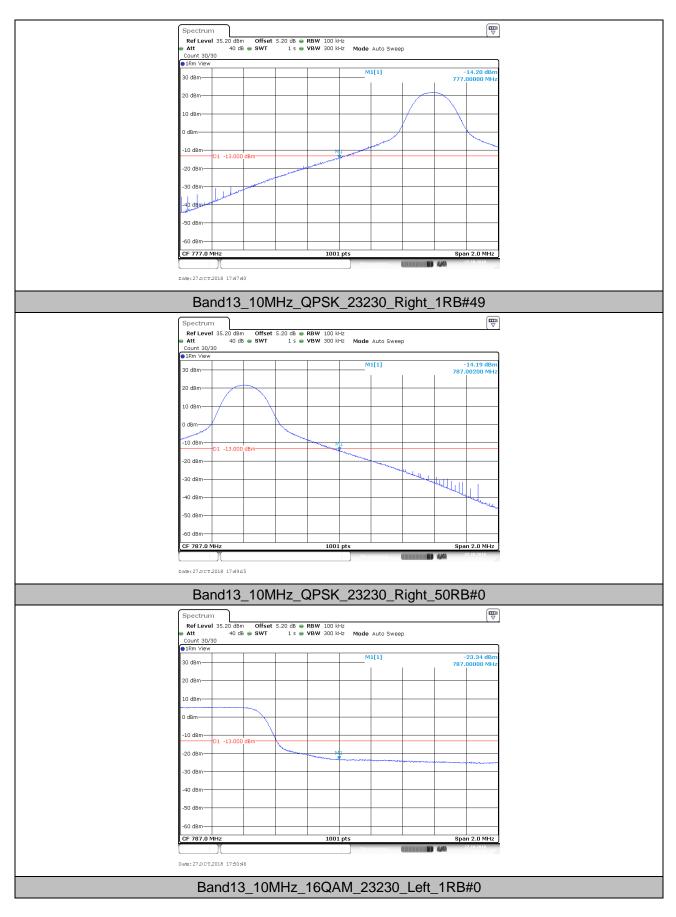


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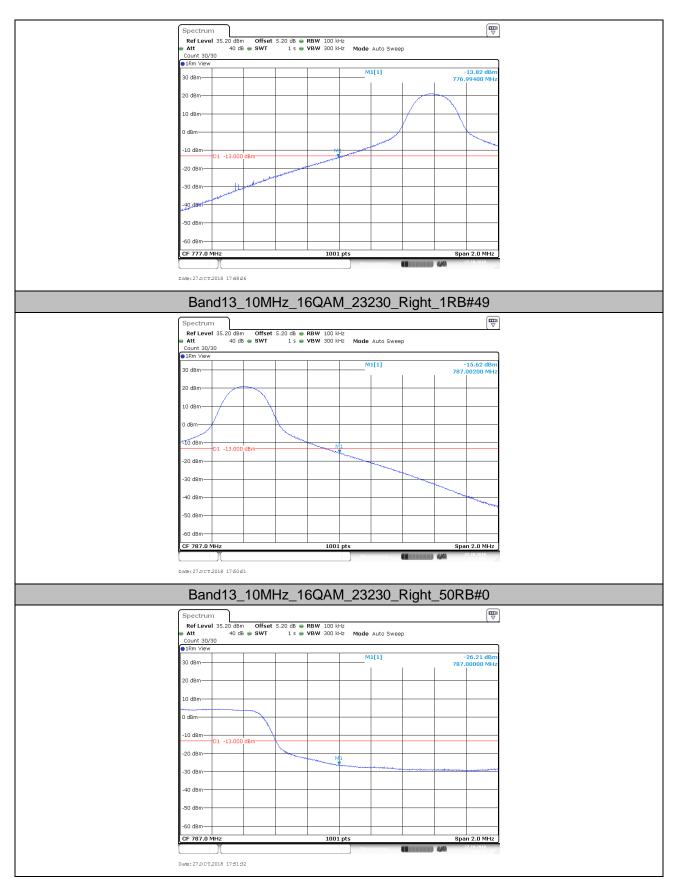


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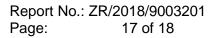
### 6. Spurious Emission at Antenna Terminal

Remark1: 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.

Remark2: only the worst case data displayed in this report.

#### 6.1. Test Plots





## 7. Field Strength of Spurious Radiation

#### 7.1.Test BAND = LTE BAND 13

#### 7.1.1. Test Mode =LTE/TM1 10MHz

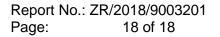
#### 7.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
104.246667	-78.63	-13.00	65.63	Vertical
280.506667	-84.42	-13.00	71.42	Vertical
1605.485320	-65.41	-40.00	25.41	Vertical
2332.500000	-58.77	-13.00	45.77	Vertical
4665.300000	-64.02	-13.00	51.02	Vertical
9245.850000	-63.47	-13.00	50.47	Vertical
62.853333	-77.69	-13.00	64.69	Horizontal
272.480000	-79.27	-13.00	66.27	Horizontal
1604.558900	-65.49	-40.00	25.49	Horizontal
2475.000000	-59.09	-13.00	46.09	Horizontal
4665.300000	-66.43	-13.00	53.43	Horizontal
7944.225000	-64.01	-13.00	51.01	Horizontal

Remark:

1) The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the worst case data 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

S

#### 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	VL	NT	-9.50	-0.012148	±2.5	PASS				
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-9.50	-0.012148	±2.5	PASS				
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-9.80	-0.012532	±2.5	PASS				
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-8.60	-0.010997	±2.5	PASS				
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-7.70	-0.009847	±2.5	PASS				
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-4.80	-0.006138	±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	-30	-9.50	-0.012148	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-8.60	-0.010997	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-4.90	-0.006266	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-9.00	-0.011509	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	20	2.00	0.002558	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-1.20	-0.001535	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-8.90	-0.011381	±2.5	PASS			
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-4.90	-0.006266	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-4.40	-0.005627	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-3.90	-0.004987	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	0	0.80	0.001023	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-11.40	-0.014578	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-1.30	-0.001662	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-7.90	-0.010102	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-3.40	-0.004348	±2.5	PASS			
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-4.50	-0.005754	±2.5	PASS			

The End