



Appendix B

WCDMA BAND V



CONTENT

	Page
1. EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA.....	3
1.1. Test Result.....	3
2. PEAK-TO-AVERAGE RATIO	4
2.1. Test Result.....	4
2.2. Test Plots.....	4
3. MODULATION CHARACTERISTICS	6
3.1. For WCDMA.....	6
3.1.1. Test BAND = WCDMA BAND V	6
3.1.1.1. Test Mode = UMTS /TM1	6
3.1.1.1.1. Test Channel = MCH.....	6
4. 26dB BANDWIDTH AND OCCUPIED BANDWIDTH	7
4.1. Test Result.....	7
4.2. Test Plots.....	7
5. BAND EDGE COMPLIANCE	9
5.1. Test Plots.....	9
6. SPURIOUS EMISSION AT ANTENNA TERMINAL	10
6.1. Test Plots.....	10
7. FIELD STRENGTH OF SPURIOUS RADIATION.....	15
7.1. For WCDMA.....	15
7.1.1. Test Band = WCDMA BAND V	15
7.1.1.1. Test Mode = UMTS/TM1	15
7.1.1.1.1. Test Channel = LCH.....	15
7.1.1.1.1.1. Polarity=Horizontal.....	15
7.1.1.1.1.2. Polarity=Vertical.....	16
7.1.1.1.2. Test Channel = MCH.....	16
7.1.1.1.2.1. Polarity=Horizontal.....	16
7.1.1.1.2.2. Polarity=Vertical.....	17
7.1.1.1.3. Test Channel = HCH.....	17
7.1.1.1.3.1. Polarity=Horizontal.....	17
7.1.1.1.3.2. Polarity=Vertical.....	18
8. FREQUENCY STABILITY	19
8.1. Frequency Vs Voltage.....	19
8.2. Frequency Vs Temperature	19



1. Effective (Isotropic) Radiated Power Output Data

1.1. Test Result

	Modu	Channel	Power(dBm)	ERP (dBm)	Limit(dBm)	Verdict
BAND V	WCDMA	4132	22.22	19.97	38.45	PASS
		4182	22.05	19.80	38.45	PASS
		4233	22.11	19.86	38.45	PASS

Remark:

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

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

b: SGP=Signal Generator Level

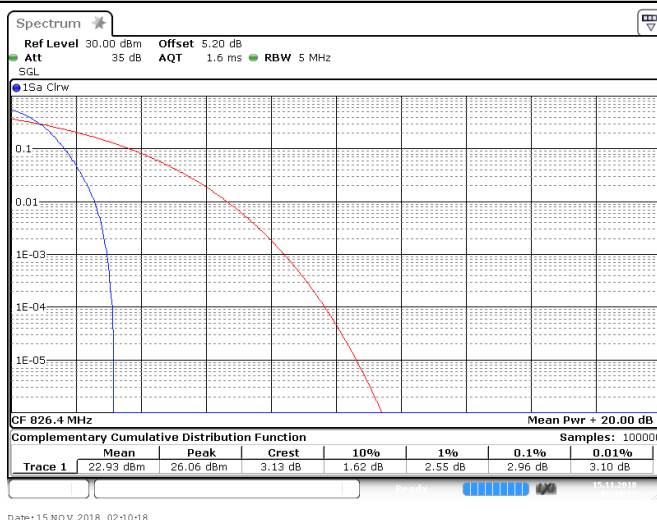
2. Peak-to-Average Ratio

2.1. Test Result

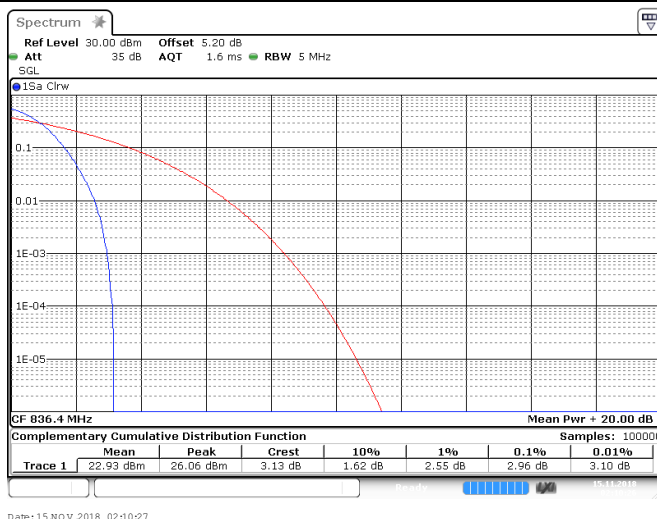
BAND	Channel	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
Band V	4132	2.96	13	PASS
Band V	4182	2.96	13	PASS
Band V	4233	2.96	13	PASS

2.2. Test Plots

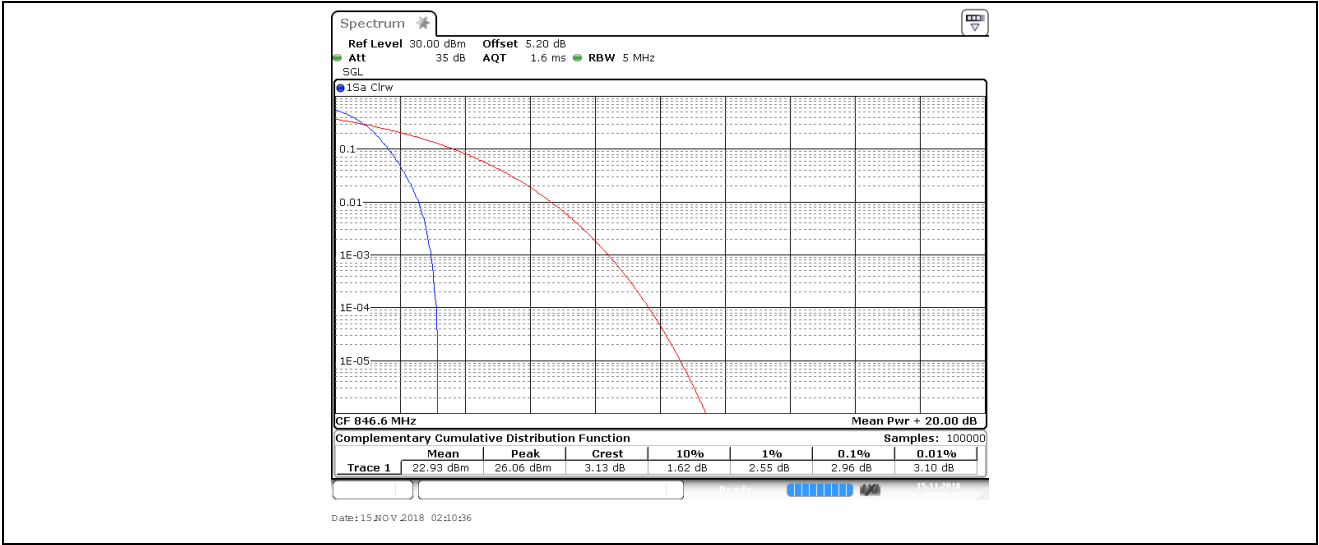
BAND V_4132



BAND V_4182



BAND V_4233



3. Modulation Characteristics

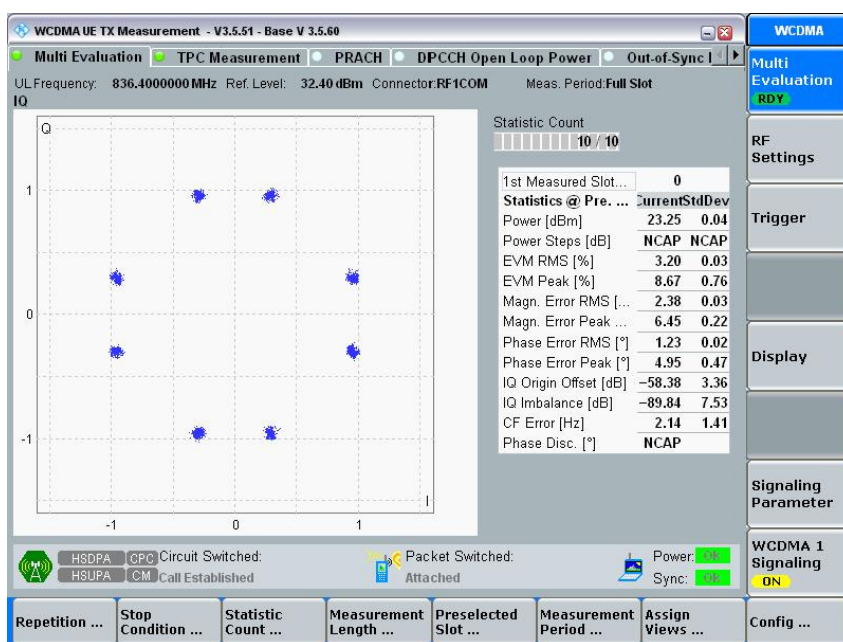
Part I - Test Plots

3.1. For WCDMA

3.1.1. Test BAND = WCDMA BAND V

3.1.1.1. Test Mode = UMTS /TM1

3.1.1.1.1. Test Channel = MCH



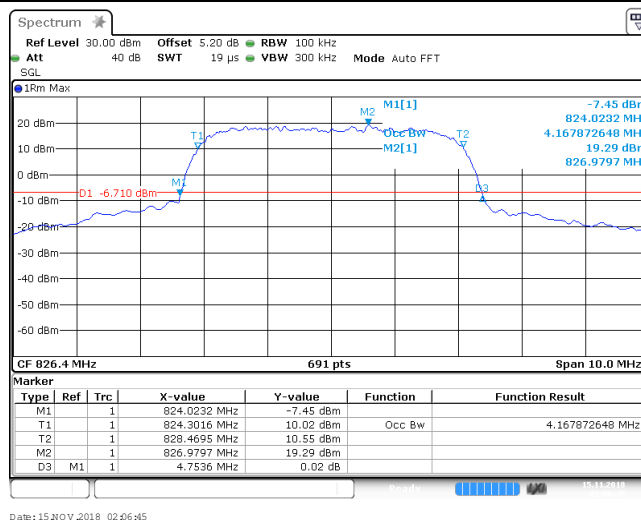


4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

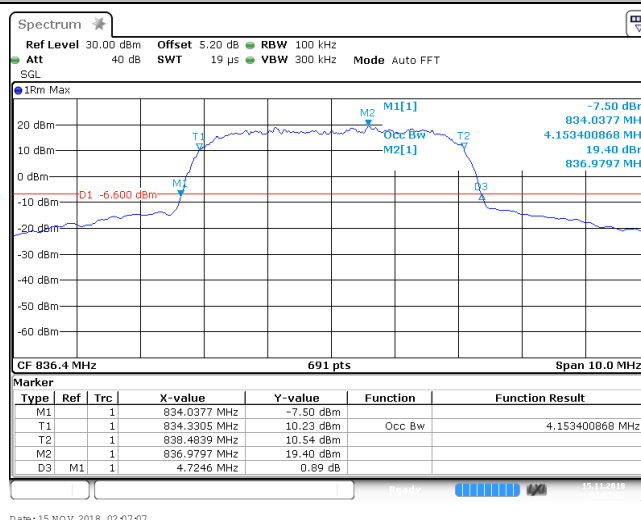
BAND	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
Band V	4132	4167.9	4754	---	PASS
Band V	4182	4153.4	4725	---	PASS
Band V	4233	4153.4	4725	---	PASS

4.2. Test Plots



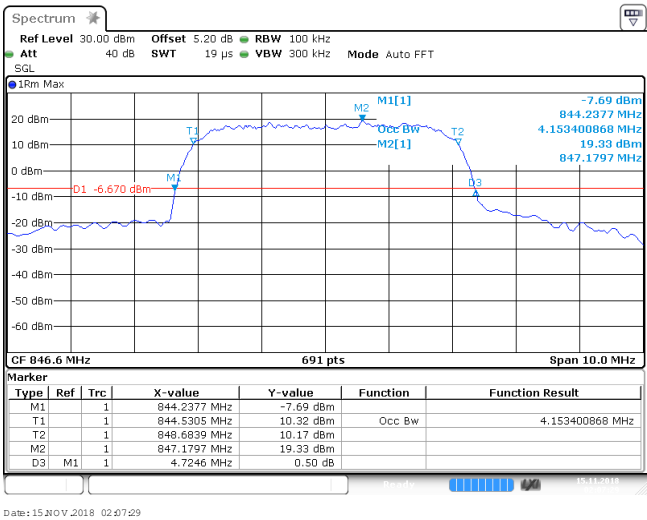
Date: 15 NOV. 2018 02:26:45

Band V_4132



Date: 15 NOV. 2018 02:27:07

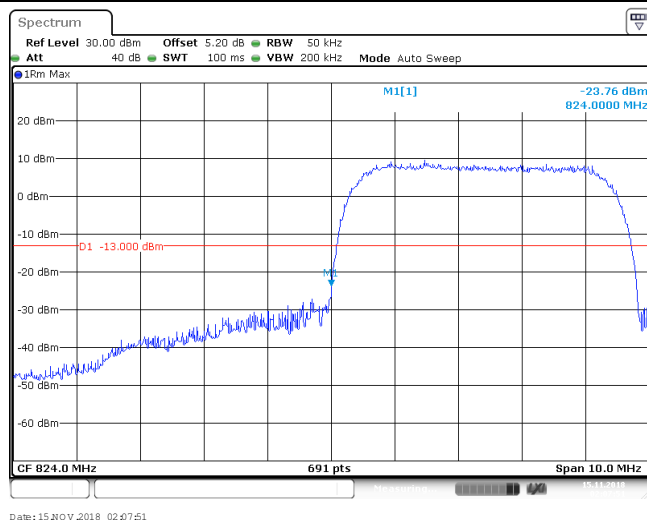
Band V_4182



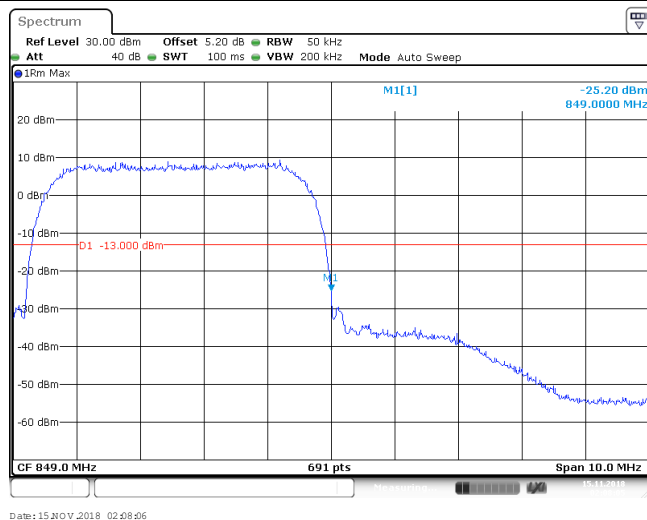
Band V_4233

5. Band Edge Compliance

5.1. Test Plots



Band V_4132



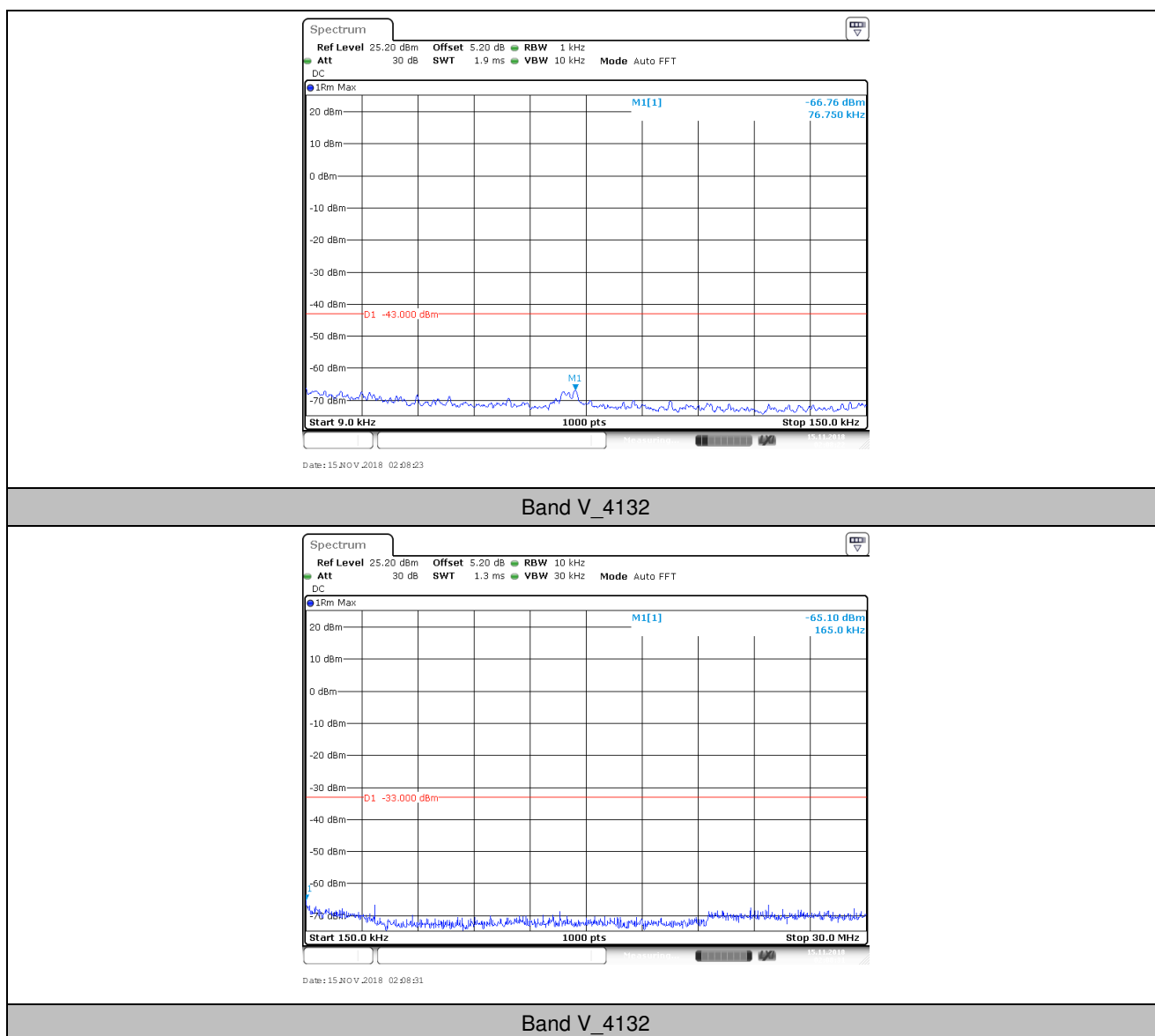
Band V_4233

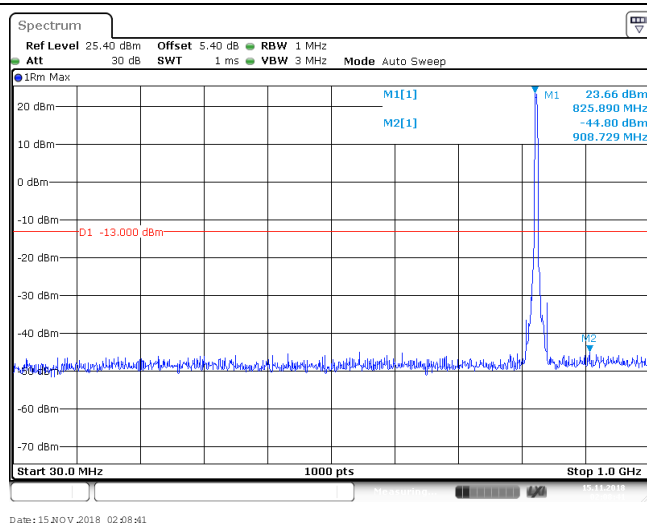
6. Spurious Emission at Antenna Terminal

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 = $k * (\text{Span} / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

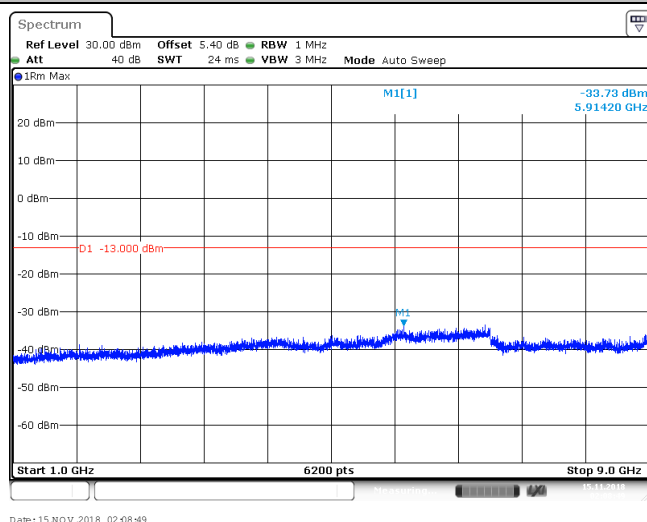
Remark2: only the worst case data displayed in this report.

6.1. Test Plots

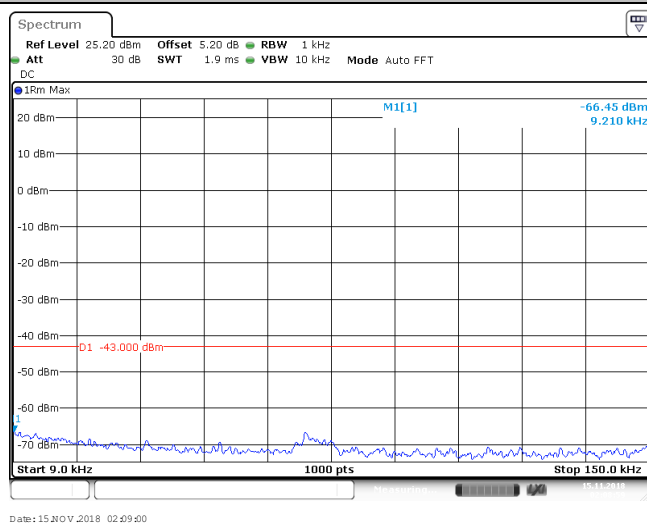




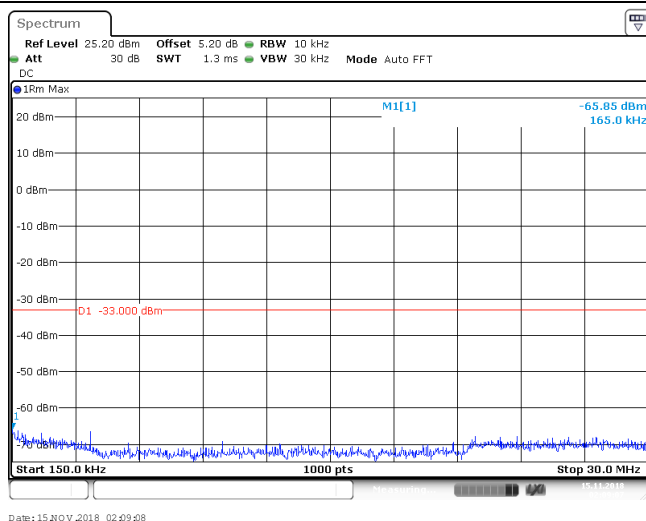
Band V_4132



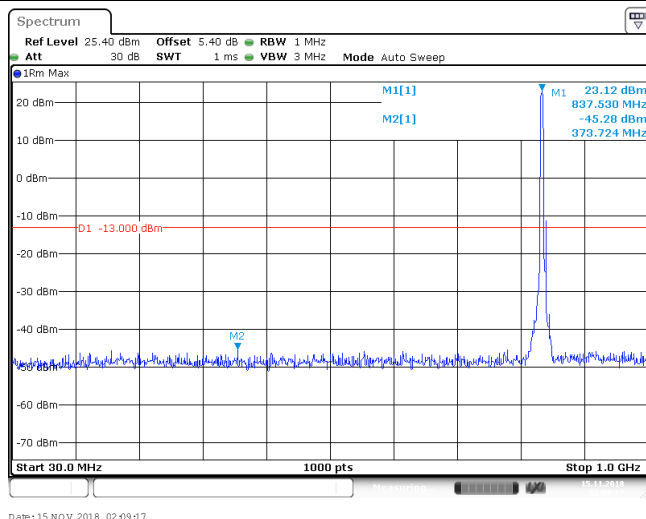
Band V_4132



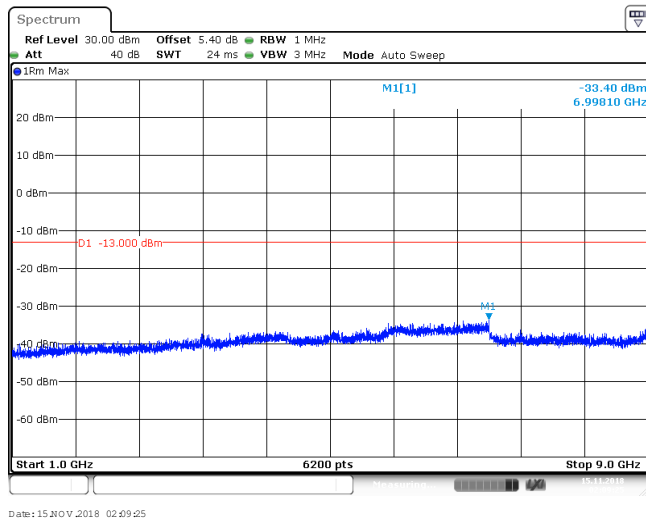
Band V_4182



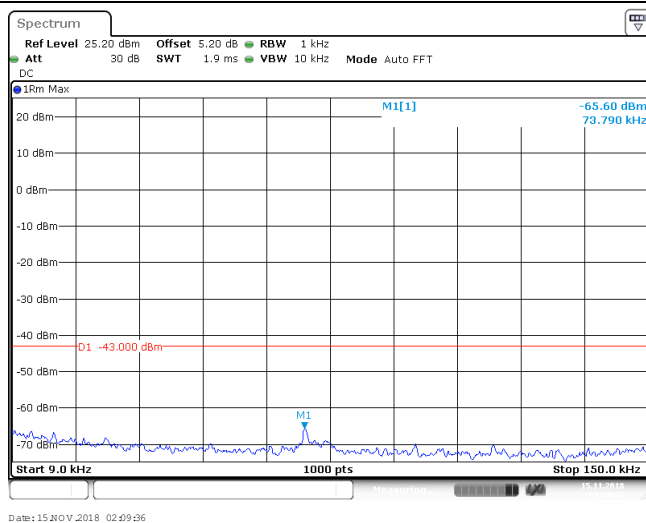
Band V_4182



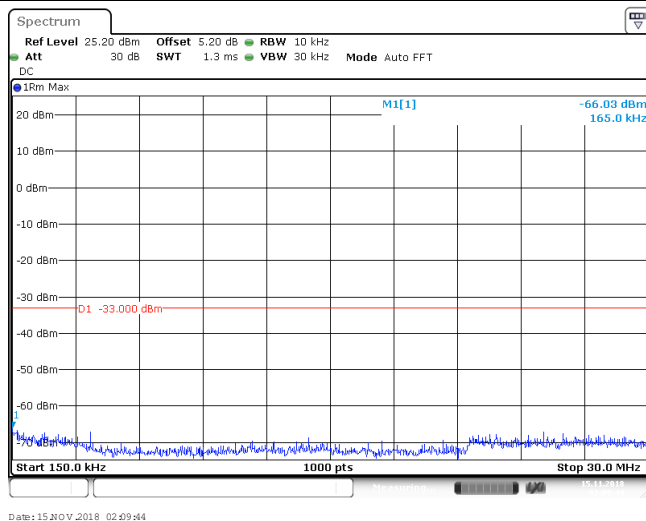
Band V_4182



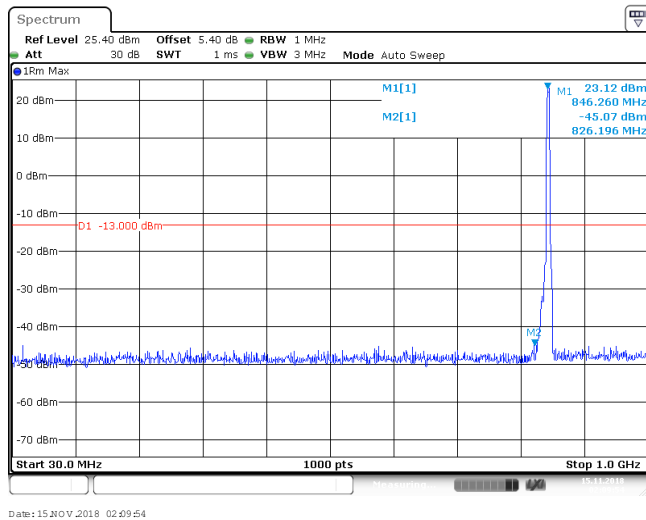
Band V_4182



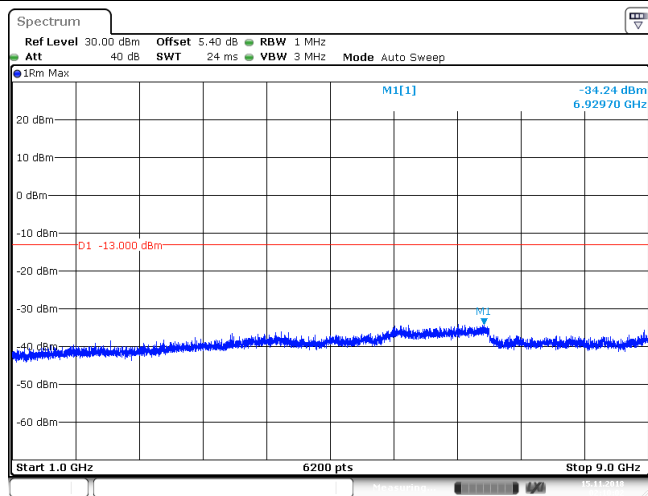
Band V_4233



Band V_4233



Band V_4233



Date: 15 NOV 2018 02:10:02

Band V_4233

7. Field Strength of Spurious Radiation

7.1. For WCDMA

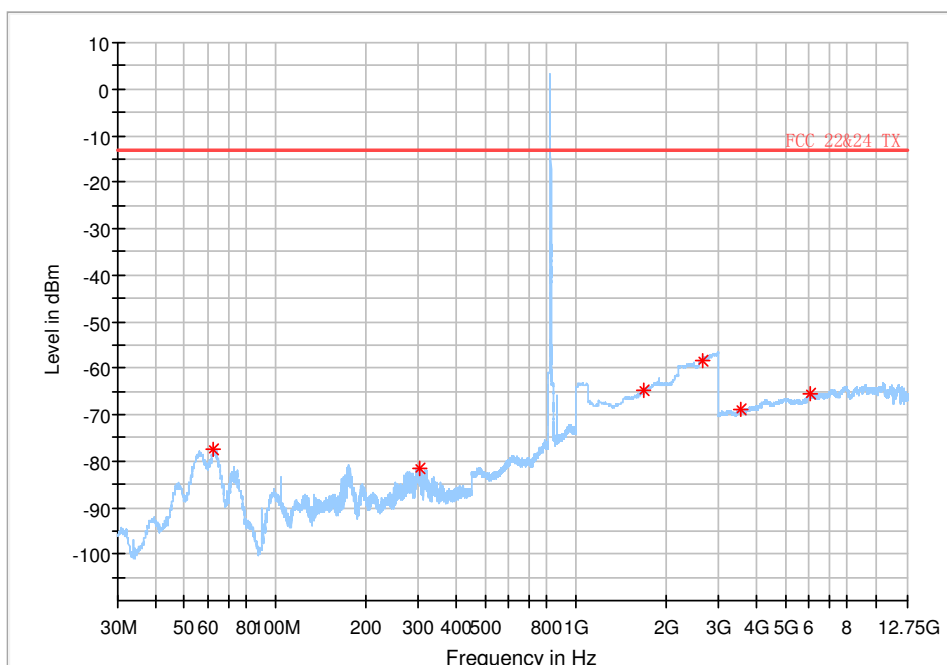
7.1.1. Test Band = WCDMA BAND V

7.1.1.1. Test Mode = UMTS/TM1

7.1.1.1.1. Test Channel = LCH

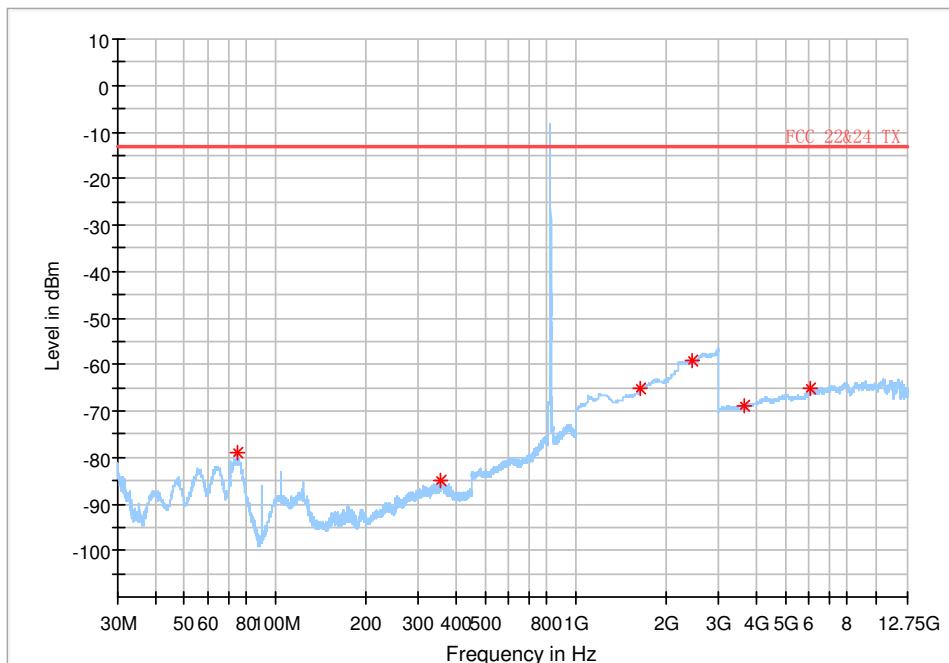
7.1.1.1.1.1. Polarity=Horizontal

Full Spectrum



7.1.1.1.2. Polarity=Vertical

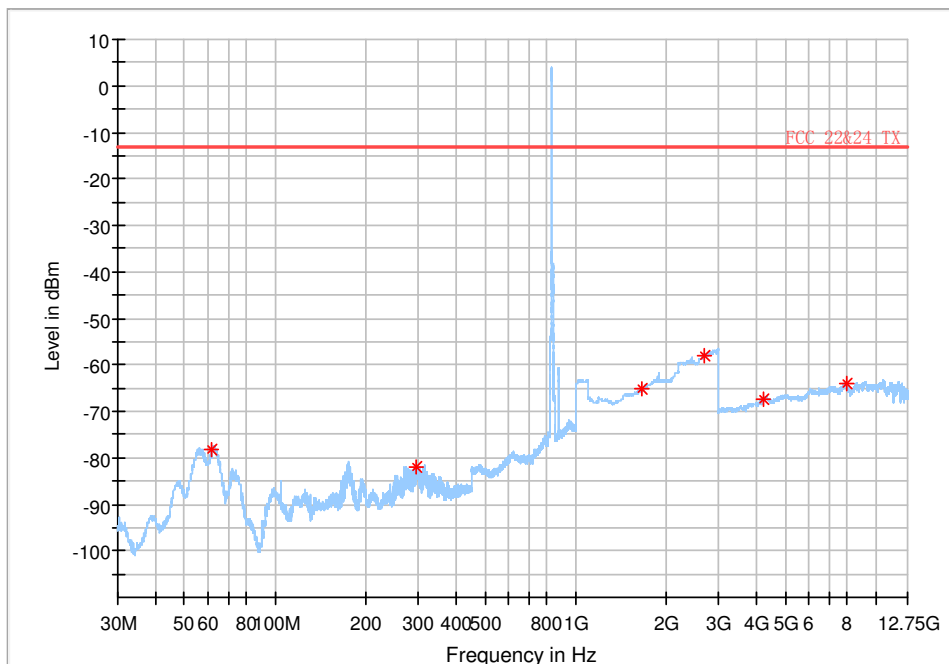
Full Spectrum



7.1.1.1.2. Test Channel = MCH

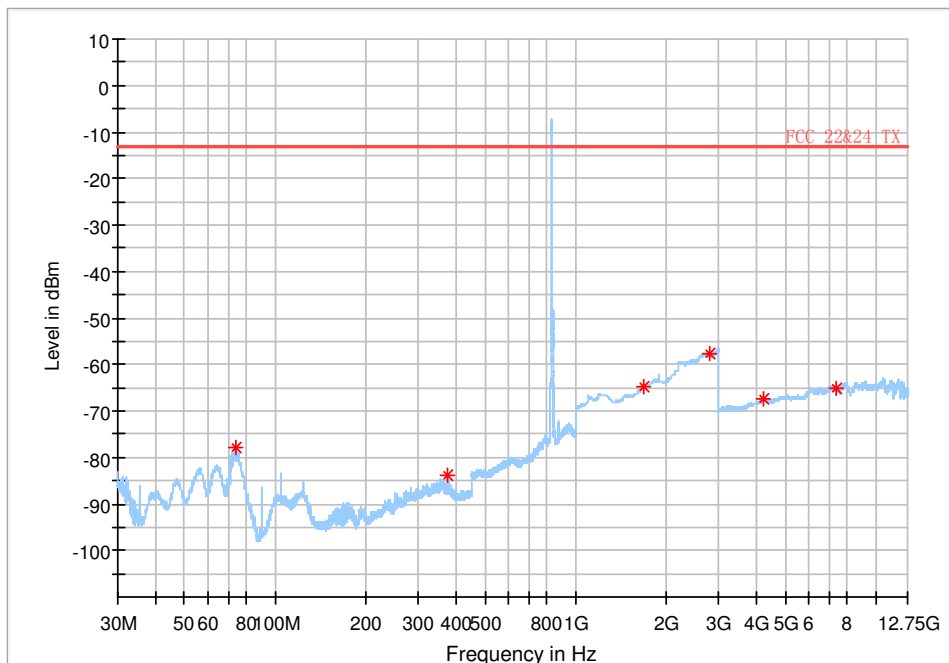
7.1.1.1.2.1. Polarity=Horizontal

Full Spectrum



7.1.1.1.2.2. Polarity=Vertical

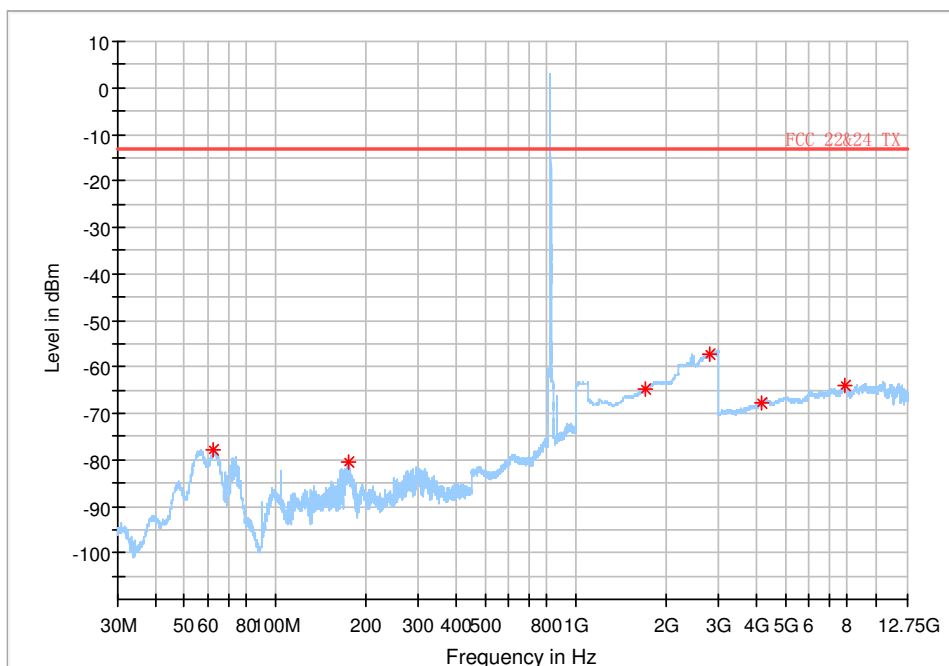
Full Spectrum



7.1.1.1.3. Test Channel = HCH

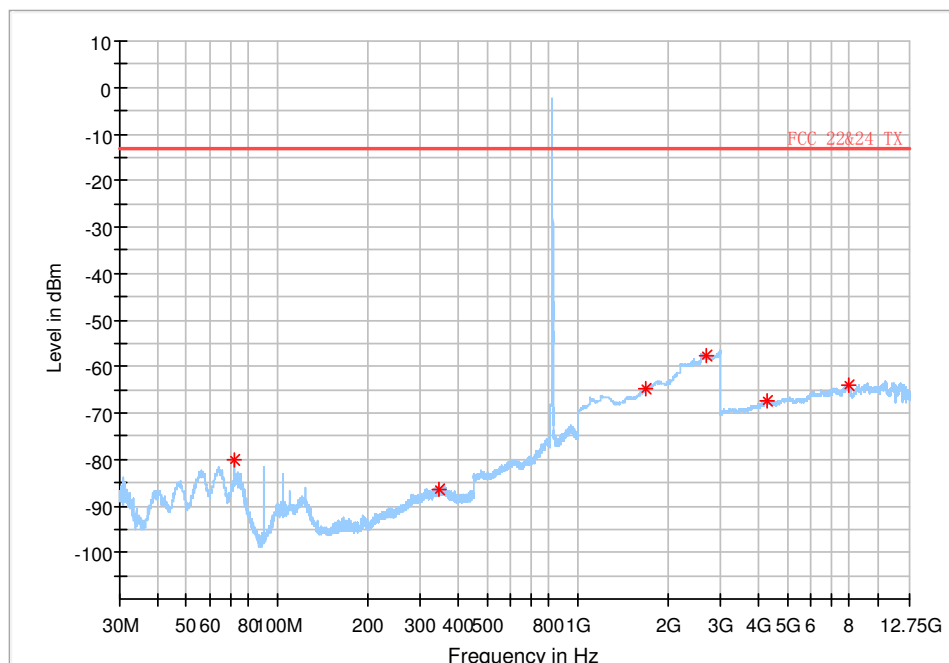
7.1.1.1.3.1. Polarity=Horizontal

Full Spectrum



7.1.1.1.3.2. Polarity=Vertical

Full Spectrum



Remark:

- 1) The disturbance above 12.75GHz and 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

8.1. Frequency Vs Voltage

Voltage							
BAND	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band V	4132	VL	TN	12.30	0.014878	±2.5	PASS
Band V	4132	VN	TN	-17.24	-0.020859	±2.5	PASS
Band V	4132	VH	TN	8.84	0.010698	±2.5	PASS
Band V	4182	VL	TN	2.35	0.002813	±2.5	PASS
Band V	4182	VN	TN	-23.81	-0.028468	±2.5	PASS
Band V	4182	VH	TN	-2.15	-0.002565	±2.5	PASS
Band V	4233	VL	TN	3.90	0.004604	±2.5	PASS
Band V	4233	VN	TN	7.21	0.008516	±2.5	PASS
Band V	4233	VH	TN	29.53	0.034876	±2.5	PASS

8.2. Frequency Vs Temperature

Temperature							
BAND	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band V	4132	VN	-30	7.47	0.009036	±2.5	PASS
Band V	4132	VN	-20	12.36	0.014956	±2.5	PASS
Band V	4132	VN	-10	-3.66	-0.004431	±2.5	PASS
Band V	4132	VN	0	-16.43	-0.019881	±2.5	PASS
Band V	4132	VN	10	3.48	0.004215	±2.5	PASS
Band V	4132	VN	20	1.80	0.002181	±2.5	PASS
Band V	4132	VN	30	-7.42	-0.008984	±2.5	PASS
Band V	4132	VN	40	31.23	0.037788	±2.5	PASS
Band V	4132	VN	50	24.38	0.029497	±2.5	PASS
Band V	4182	VN	-30	21.94	0.026236	±2.5	PASS
Band V	4182	VN	-20	12.77	0.015265	±2.5	PASS
Band V	4182	VN	-10	-8.13	-0.009723	±2.5	PASS
Band V	4182	VN	0	45.78	0.054730	±2.5	PASS
Band V	4182	VN	10	-36.59	-0.043750	±2.5	PASS
Band V	4182	VN	20	4.83	0.005772	±2.5	PASS
Band V	4182	VN	30	-9.97	-0.011921	±2.5	PASS
Band V	4182	VN	40	25.37	0.030333	±2.5	PASS
Band V	4182	VN	50	-9.61	-0.011493	±2.5	PASS
Band V	4233	VN	-30	-5.04	-0.005956	±2.5	PASS
Band V	4233	VN	-20	-18.05	-0.021316	±2.5	PASS



Band V	4233	VN	-10	6.13	0.007240	±2.5	PASS
Band V	4233	VN	0	7.69	0.009082	±2.5	PASS
Band V	4233	VN	10	-19.13	-0.022591	±2.5	PASS
Band V	4233	VN	20	18.56	0.021924	±2.5	PASS
Band V	4233	VN	30	28.48	0.033642	±2.5	PASS
Band V	4233	VN	40	-9.74	-0.011507	±2.5	PASS
Band V	4233	VN	50	16.01	0.018908	±2.5	PASS

The End