Friday, July 07, 2006

Appendix B – Frequency Stability V's Temperature

EXLT03-A5 EX-5r

Object:
To ensure that system emissions are maintained within the band of interest when exposed to extremes of temperature and voltage. Testing of the system's frequency stability was performed over the manufacturer's guaranteed extremes of temperature and voltage.

Test results and plots for Frequency Stability are reported within this Appendix.

Test Configuration
Variant tested was 7.5 MHz QPSK on the two band edge channels 5,260 MHz and 5,332 MHz. To measure the carrier a software script was written to expose the carrier using the Single Side Band signature.

Test Conditions
Variant was tested at;

- Ambient temperature and nominal voltage (48Vdc)
- Temperature -40°C, voltage variation 40 Vdc, 60Vdc
- Temperature +65°C, voltage variation 40 Vdc, 60Vdc

NOTE: Voltage variation was on the dc input to the EUT and not the ac mains.

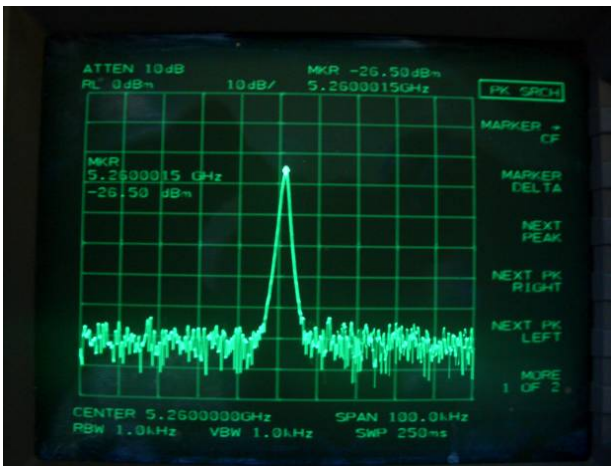
Limit ±10ppm @ 5,260 MHz = 52.6 KHz

Summary
The intentional radiator stays within the band of interest, (maximum deviation 8.2 KHz) over temperature and voltage extremes thus maintaining compliance irrespective of environmental conditions. Voltage variation did not effect frequency variation.

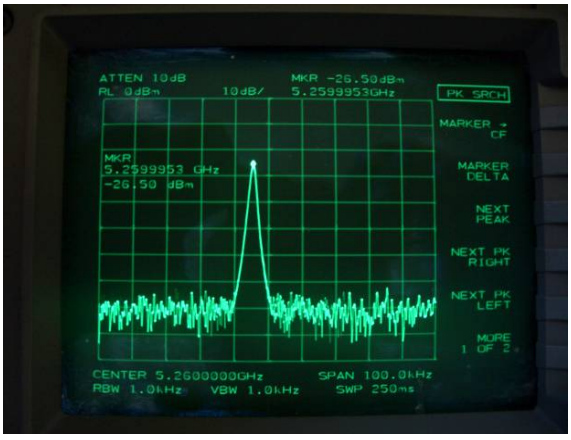
EX-5r Frequency Stability Test over Temperature and Supply Voltage (DC)

Tuned to 5260MHz, 7.5MHz BW

Temperature	Voltage	Measured Frequency	ppm
Ambient	48V	5260.0015	+0.29
-40C	40V	5259.9953	-1.56
-40C	60V	5259.9953	-1.56
+65C	40V	5260.0035	+0.67
+65C	60V	5260.0035	+0.67

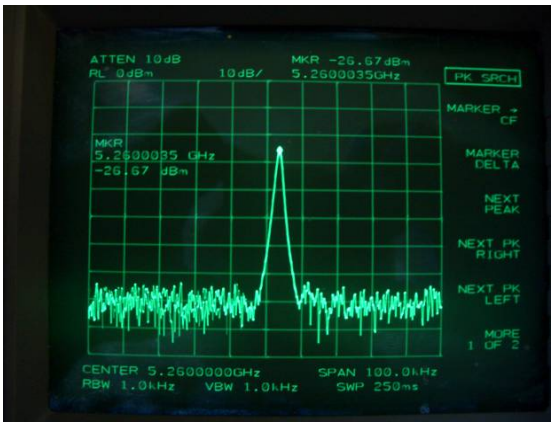


Ambient 48Vdc

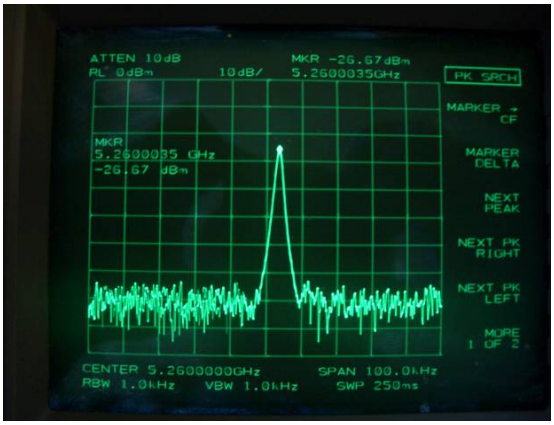


Cold -40°C, 60Vdc

Cold -40°C, 40Vdc



Hot +65°C, 60Vdc

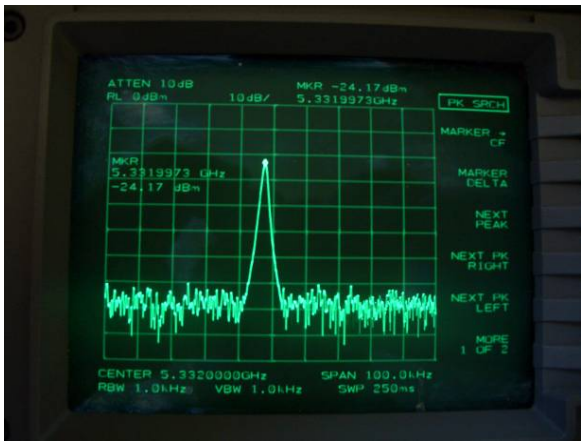


Hot +65°C, 40Vdc

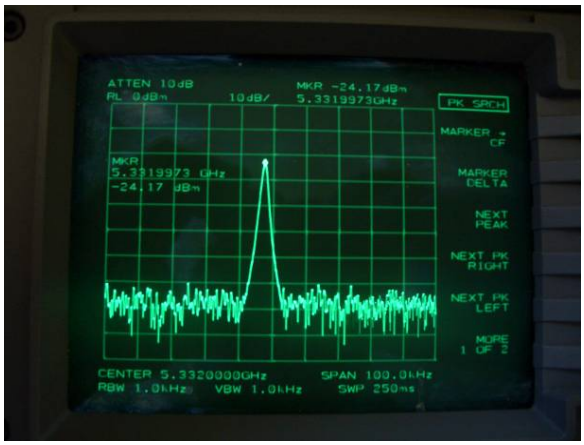
Tuned to 5332MHz, 7.5MHz BW

Temperature	Voltage	Measured Frequency	ppm
Ambient	48V	5332.0013	+0.24
-40C	40V	5331.9973	-0.51
-40C	60V	5331.9973	-0.51
+65C	40V	5532.0033	+0.62
+65C	60V	5532.0033	+0.62

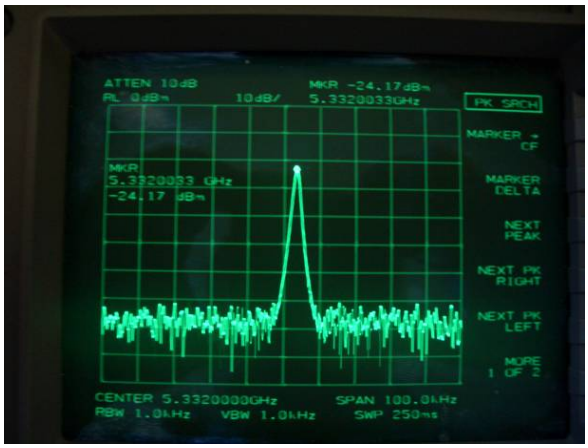
Ambient 48Vdc



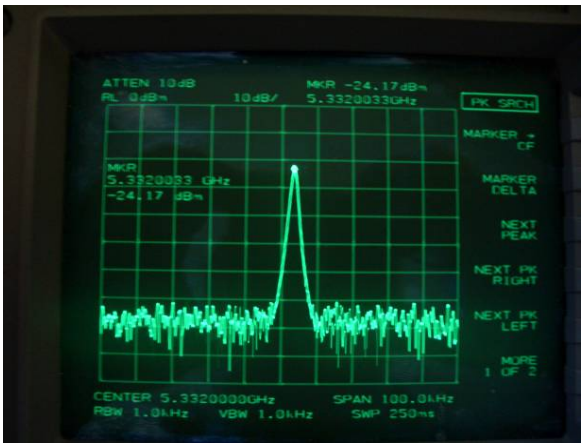
Cold -20°C, 60Vdc



Cold -20°C, 40Vdc



Hot +65°C, 60Vdc



Hot +65°C, 40Vdc