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Report Title: **Testing of Adjacent Channel Conditions for PMSE Receivers Operating in the 2.0 - 2.5 GHz Bands**

Addendum to Final Report

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ERA Report Number: 2007-0447
ERA Project Number: 7G0403802
Report Version: Addendum 1

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September 2007

Ref. SPM/vs/62/04038/Rep-6160 Addendum

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This report ("report") has been prepared by ERA Technology Ltd for Ofcom, in connection with the award of wireless telegraphy licences to use the three spectrum bands at 2500 – 2690 MHz, 2010 – 2025 MHz and 2290 – 2300 MHz (the "Spectrum Bands").

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Limitations

The results detailed in this report apply only to the tests made at that time, using the test equipment detailed and are indicative. They do not indicate that on another date an identical set of results may be achieved, due to changes in the characteristics of different receivers, test equipments or other factor which may or may not have an effect on the measurement results obtained at that future time.

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1. Introduction

In December 2006 Ofcom launched a consultation on the award of available spectrum in the 2500 – 2690 MHz, 2010 – 2015 MHz and 2290 – 2300 MHz bands. This award has the potential to impact on radio equipment used for Programme Making and Special Events (PMSE), which has frequency allocations in the band 2.0 – 2.5 GHz.

Ofcom commissioned a study to quantify, through a measurement programme, the susceptibility of PMSE receivers to interference from adjacent channel UMTS and WiMAX transmissions. In addition, Ofcom requested that prototype filters be constructed and characterised in order to test the assertion that adjacent channel interference can be greatly reduced through filtering at the PMSE receiver.

After analysis by ERA one of the filters was found to be non-compliant with the required performance specification. This filter was subsequently returned to the manufacturer for retuning.

2. Filter Characteristics

Table 7 of the report should be replaced with the table below, showing the re-measured performance for filter A. It can be seen that filter A now meets the required performance specification, and offers 36.7 dB rejection at 2502.5 MHz.

Table 7: Measured filter performance

Parameter	Filter “B”	Filter “A”	Re-measured Filter “A”
Insertion loss (2495 ± 4 MHz)	< 2.5 dB	< 1.7 dB	< 1.8 dB
Ripple (2495 ± 4 MHz)	< 0.2 dB	< 0.3 dB	< 0.4 dB
Nominal BW (-1 dB)	7.8 MHz	9.6 MHz	10.0 MHz
Nominal BW (-3 dB)	9.3 MHz	11.3 MHz	11.3 MHz
Rejection (2502.5 MHz)	30.5 dB	22.3 dB	36.7 dB
Frequency (-30 dBc)	2502.5 MHz	2502.8 MHz	2502.0 MHz
Impedance Match (return loss)	> 18 dB	> 11 dB	> 21 dB

The graphical representation of filter A, displayed as Figure 10 within the original report, should be replaced with the figure below.

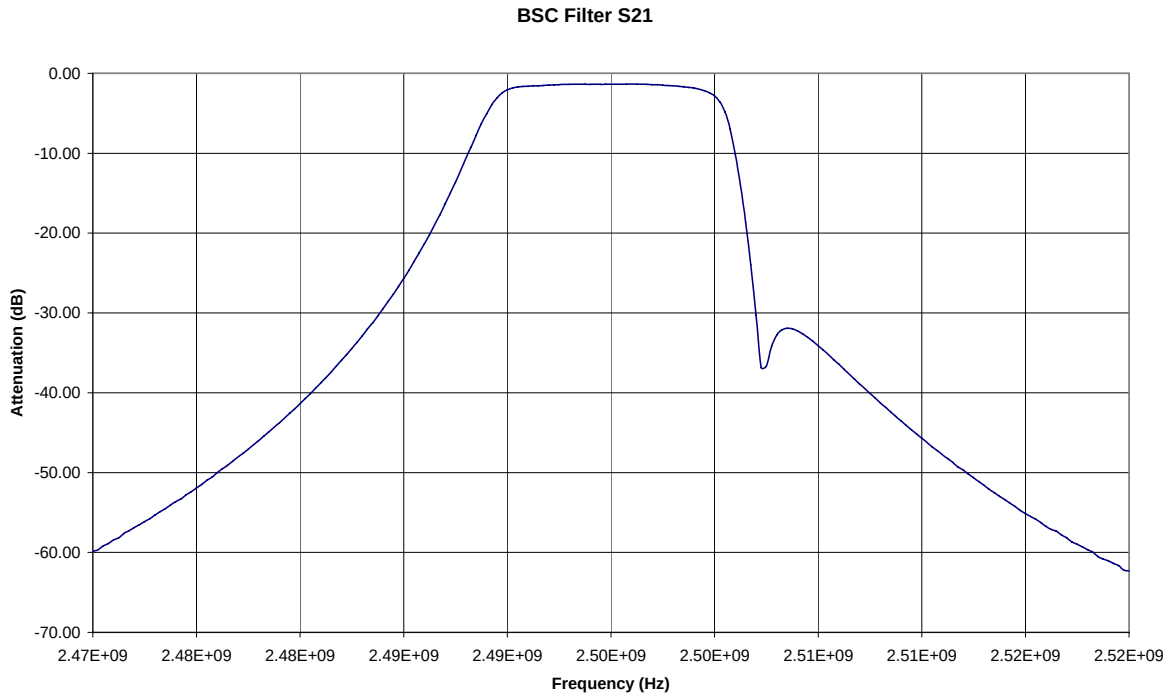

Figure 10: Frequency response of filter A

Filter A was measured to determine its ability to reject adjacent band UMTS and WiMAX signals. A spectrum analyser was used to measure both the transmit power of the wanted signal (measured in a 5 MHz bandwidth for UMTS or 10 MHz for WiMAX) and the adjacent channel power falling into the PMSE receiver bandwidth (measured in an 8 MHz bandwidth). The results are shown below.

Table 8bis: Signal rejection measurements on Filter A

UMTS Signal Rejection	Power at 2495 MHz (dBm) (8 MHz b/w)	Power at 2502.5 MHz (dBm) (5 MHz b/w)	Power at 2507.5 MHz (dBm) (5 MHz b/w)	Power at 2512.5 MHz (dBm) (5 MHz b/w)
UMTS at 2502.5 MHz without Filter	-49.3	5.2		
UMTS at 2502.5 MHz with Filter	-56.1	-11.6		
UMTS at 2507.5 MHz without Filter	-56.4		5.2	
UMTS at 2507.5 MHz with Filter	-57.8		-34.3	
UMTS at 2512.5 MHz without Filter	-58.0			5.15
UMTS at 2512.5 MHz with Filter	-			-45.0
WiMAX Signal Rejection	Power at 2495 MHz (dBm) (8 MHz b/w)	Power at 2505 MHz (dBm) (10 MHz b/w)	Power at 2515 MHz (dBm) (10 MHz b/w)	
WiMAX at 2505 MHz without Filter	-44.9	2.8		
WiMAX at 2505 MHz with Filter	-46.7	-22.2		
WiMAX at 2515 MHz without Filter	-60.6		2.9	
WiMAX at 2515 MHz with Filter	-62.8		-49.6	

From the above table it can be seen that the filter gives the following signal attenuation:

UMTS signal rejection in 2500 – 2505 MHz band: 16.8 dB

UMTS signal rejection in 2510 – 2515 MHz band: 39.5 dB

UMTS signal rejection in 2515 – 2520 MHz band: 50.15 dB

WiMAX signal rejection in 2500 – 2510 MHz band: 25 dB

WiMAX signal rejection in 2510 – 2520 MHz band: 52.5 dB