

## **Radio Test Report**

**Model: Class B AIS Transponder**  
**Type: FA-50**

**Report No: K05-17-368**

**Date of Issue: 31 August 2007**

**Based on: IEC62287-1 First edition 2006**  
**Clause 11 Physical Tests**  
**Annex C.4 DSC receiver Tests**



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This report comprises of five modules. The total number of pages is: 65

## Main module

### 1 Introduction

This report contains the results of measurements and tests performed by:

Company name : Furuno Electric Co., Ltd.  
Address : Ashihara-cho 9-52  
Zipcode : 662-8580  
City/town : Nishinomiya  
Country : Japan

## 2 Product

The following was tested:

Product category : Class B Automatic Identification System  
Manufacturer : Furuno Electric Co., Ltd.  
Trade mark : FURUNO  
Type designation : FA-50  
Hardware version : not provided  
Software version : Transponder : 0550233-01; GPS : 4850264005  
Serial number : 3559-0021

## 3 Test schedule

Tests were carried out in accordance with the specification detailed in chapter 6 "Summary" of this report.

Tests were carried out at the following location:

- R&D Furuno Electric Co., Ltd.

Tests were carried out between:

- 23 July 2007 to 31 August 2007

## 4 Product documentation

For production of this report the following product documentation was used:

Description	Date
Operator's manual OME-44420	August 2007
Installation manual IME-44420	August 2007

## 5 Observations and comments

This test report covers IEC 62287-1 Chapter 11 test results and Annex C.4 tests results of the FA-50. Tests according to EN 60945 have been performed by Furuno Labotech International (FLI). A detailed photograph documentation of the FA-50 has been issued by FLI and is available separately.

## 6 Summary

The product is intended for use in the following application area:

Class B Automatic Identification System

The sample was tested according to the following specifications:

IEC 62287-1: (2006-03),	Clause 11	Physical Tests.
	Annex C.4	DSC receiver Tests



## Test results module

# 1 Summary

## LIST OF VERIFICATION RESULTS

The list of measured or checked parameters called for in IEC 62287-1 Clause 11 is given below.

IEC62287 Clause	GENERAL REQUIREMENTS	Performed verification (yes/no/n.a)
11 Physical tests		
11.1 TDMA transmitter		
11.1.1	Frequency error	Yes
11.1.2	Carrier power	Yes
11.1.3	Transmission spectrum	Yes
11.1.4	Modulation accuracy	Yes
11.1.5	Transmitter output power versus time function	Yes
11.2 TDMA receivers		
11.2.1	Sensitivity	Yes
11.2.2	Error behavior at high input levels	Yes
11.2.3	Co-channel rejection	Yes
11.2.4	Adjacent channel selectivity	Yes
11.2.5	Spurious response rejection	Yes
11.2.6	Intermodulation response rejection	Yes
11.2.7	Blocking or desensitization	Yes
11.3 Conducted spurious emissions		
11.3.1	Spurious emissions from the receiver	Yes
11.3.2	Spurious emissions from the transmitter	Yes
C.4 DSC receiver tests		
C.4.1	Maximum sensitivity	Yes
C.4.2	Error behavior at high input levels	Yes
C.4.3	Co-channel rejection	Yes
C.4.4	Adjacent channel selectivity	Yes
C.4.5	Spurious response rejection	Yes
C.4.6	Intermodulation response rejection	Yes
C.4.7	Blocking or desensitization	Yes



## 2 Test results

### 2.1 11 Physical tests

#### 2.1.1 11.1 TDMA transmitter

##### 2.1.1.1 11.1 .1 Frequency error

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

Date of test: 10 Aug. 2007

Ambient temp.: 25 °C

R.H.: 47 %

TEST CONDITIONS		FREQUENCY ERROR (Hz)	
		156.025 MHz	162.025 MHz
Temperature	Voltage		
<i>T<sub>nom</sub></i> ( + 15 – 35 °C)	<i>V<sub>nom</sub></i> ( 12.0 V )	156.024721 MHz Δ - 0.279 kHz	162.024710 MHz Δ - 0.290 kHz
<i>T<sub>min</sub></i> ( - 15 °C)	<i>V<sub>min</sub></i> ( 9.6 V )	156.024726 MHz Δ - 0.274 kHz	162.024711 MHz Δ - 0.289 kHz
	<i>V<sub>max</sub></i> ( 31.2 V )	156.024725 MHz Δ - 0.275 kHz	162.024713 MHz Δ - 0.287 kHz
<i>T<sub>max</sub></i> ( + 55 °C)	<i>V<sub>min</sub></i> ( 9.6 V )	156.024812 MHz Δ - 0.188 kHz	162.024809 MHz Δ - 0.191 kHz
	<i>V<sub>max</sub></i> ( 31.2 V )	156.024817 MHz Δ - 0.183 kHz	162.024811 MHz Δ - 0.189 kHz
Measurement uncertainty		± 4 Hz	
Limits		≤ ± 0.5 kHz under normal conditions, ≤ ± 1 kHz under extreme conditions.	

Measuring equipment used: 06, 07, 12

## 2.1.1.2 11.1 .2 Carrier power

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

Date of test: 10 Aug. 2007

Ambient temp.: 25 °C

R.H.: 47 %

TEST CONDITIONS		CARRIER POWER (dBm)	
		156.025 MHz	162.025 MHz
Temperature	Voltage		
<i>T<sub>nom</sub></i> (+ 15 – 35 °C)	<i>V<sub>nom</sub></i> ( 12.0 V )	33.06	32.72
<i>T<sub>min</sub></i> ( - 15 °C)	<i>V<sub>min</sub></i> ( 9.6 V )	32.94	32.5
	<i>V<sub>max</sub></i> ( 31.2 V )	32.93	32.54
<i>T<sub>max</sub></i> ( + 55 °C)	<i>V<sub>min</sub></i> ( 9.6 V )	33.13	32.75
	<i>V<sub>max</sub></i> ( 31.2 V )	33.13	32.74
Measurement uncertainty		0.5 dB	
Limits		<u>Normal test conditions:</u> between 31.5 and 34.5 dBm. <u>Extreme test conditions:</u> between 30.0 and 36.0 dBm.	

Measurement equipment used: 01, 07, 12

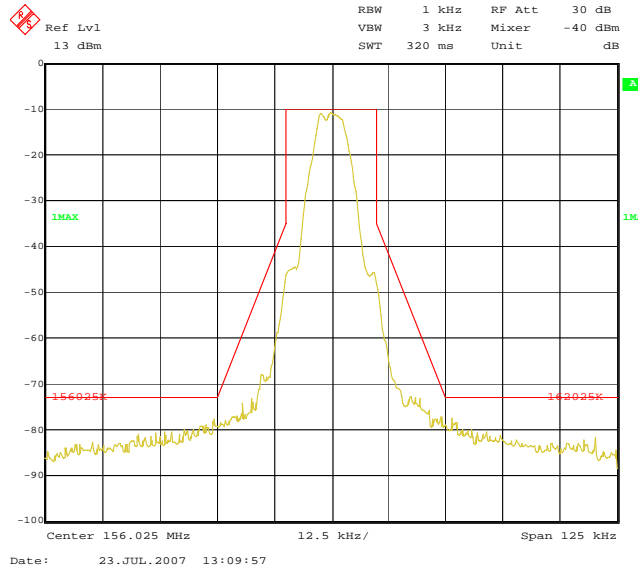
## 2.1.1.3 11.1 .3 Transmission spectrum

Date of test: 23 Jul. 2007

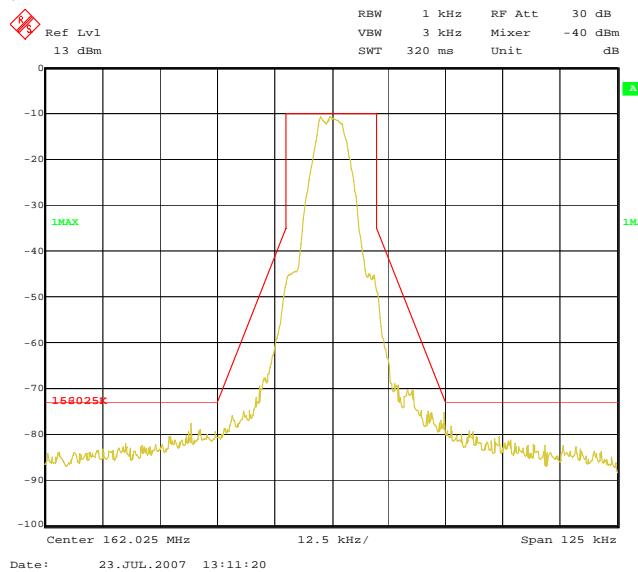
Ambient temp.: 26 °C

R.H.: 60 %

(1) TX freq.: 156.025 MHz :



(2) TX freq.: 162.025 MHz :



Remark: Reference levels are relative

Limit : within the mask specified in figure 10, Clause 11.1.3, IEC 62287-1.

(Emission mask):

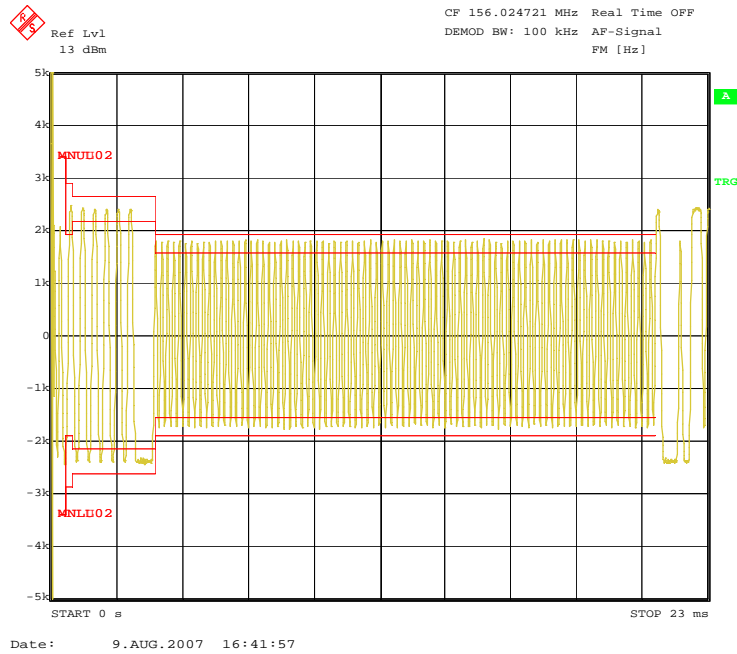
- At  $\pm 10$  kHz removed from the carrier, the modulation and transient sidebands is below - 25 dBc.
- At  $\pm 25$  kHz to  $\pm 62,5$  kHz removed from the carrier, the modulation and transient sidebands is below the lower value of - 30 dBm;
- in the region between  $\pm 10$  kHz and  $\pm 25$  kHz removed from the carrier, the modulation and transient sidebands is below a line specified between these two points.

Measurement equipment used: 01, 07, 12

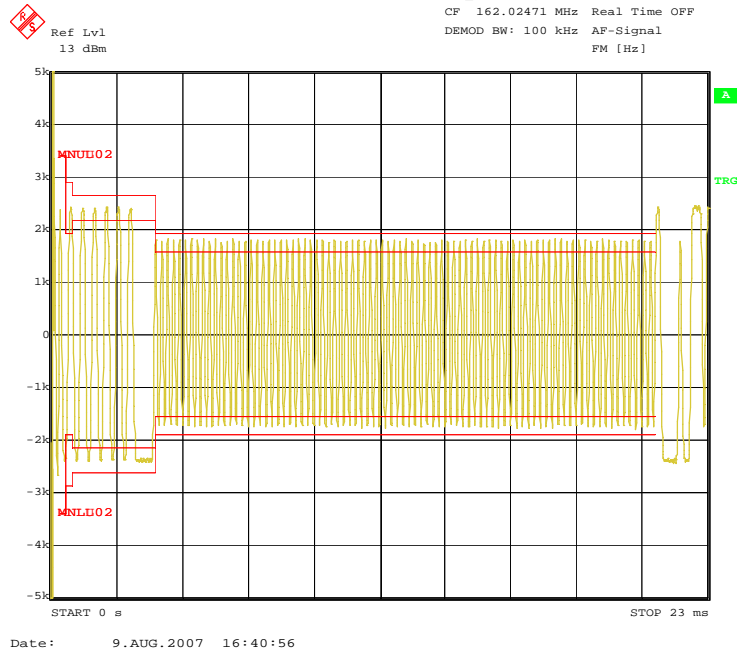


(1-1) Tnom ( + 15 – 35 °C ), Vnom ( 12.0 V )

TX freq.:156.025 MHz  
(Center freq. 156.024721 MHz . see 2.1.1.1 11.1 .1 Frequency error)



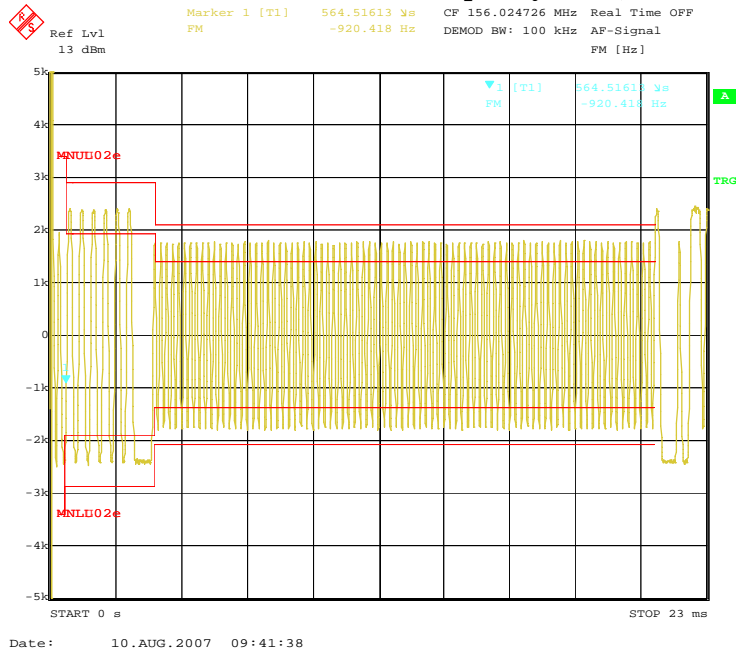
TX freq.:162.025 MHz  
(Center freq. 162.024710 MHz . see 2.1.1.1 11.1 .1 Frequency error)



(1-2) Tmin ( - 15 °C), Vmin ( 9.6 V )

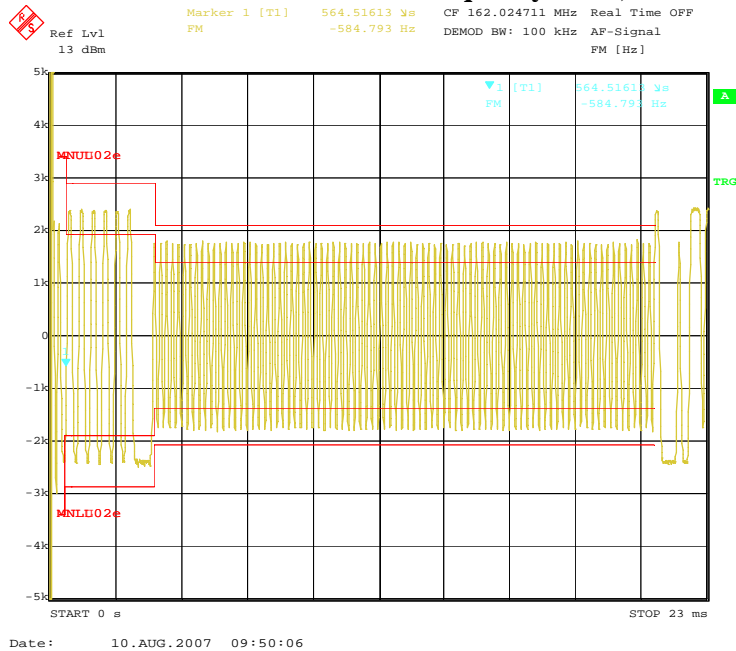
TX freq.:156.025 MHz

(Center freq. 156.024726 MHz . see 2.1.1.1 **11.1 .1 Frequency error**)



TX freq.:162.025 MHz

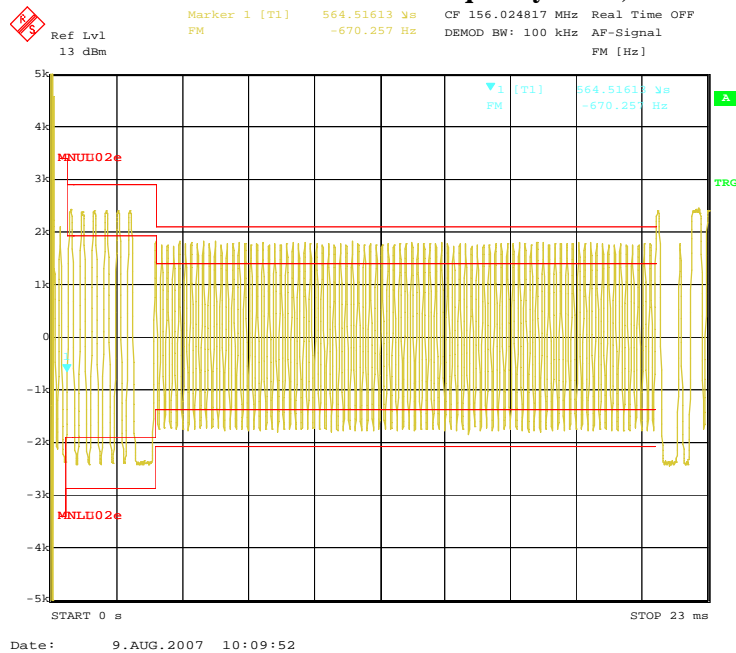
(Center freq. 162.024711 MHz . see 2.1.1.1 **11.1 .1 Frequency error**)



(1-3) Tmax ( 55 °C), Vmax ( 31.2 V )

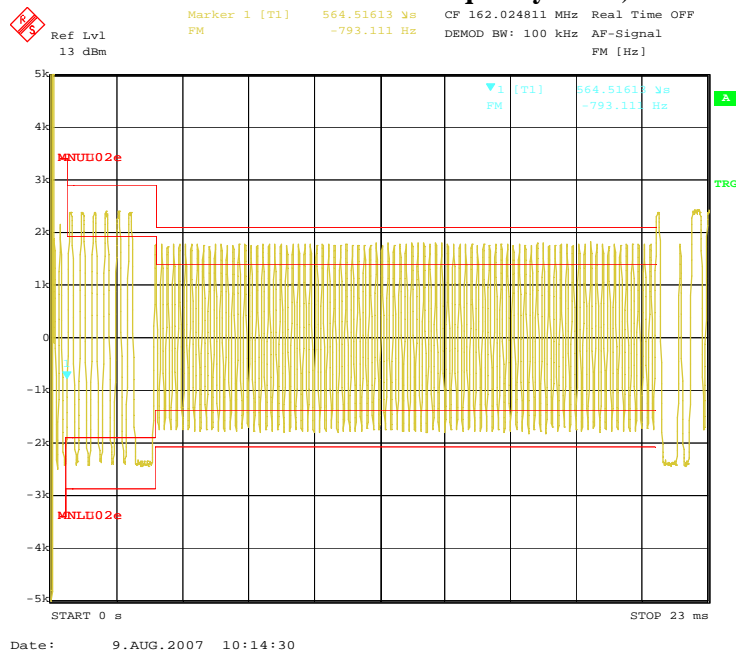
TX freq.:156.025 MHz

(Center freq. 156.024817 MHz . see 2.1.1.1 11.1 .1 Frequency error)



TX freq.:162.025 MHz

(Center freq. 162.024811 MHz . see 2.1.1.1 11.1 .1 Frequency error)



## (2) Standard test signal number 3

Limit : within the mask specified in table 22, Clause 11.1.4, IEC 62287-1.

Temperature	$T_{nom}$ ( + 15 – 35 °C)	$T_{min}$ ( - 15 °C)		$T_{max}$ ( + 55 °C)	
Voltage	$V_{nom}$ ( 12.0 V)	$V_{min}$ ( 9.6 V)	$V_{max}$ ( 31.2 V)	$V_{min}$ ( 9.6 V)	$V_{max}$ ( 31.2 V)
Bit 0 to bit 1	< 3400 Hz				
Bit 2 to bit 3	$2400 \pm 480$ Hz				
Bit 4 to bit 31	$2400 \pm 240$ Hz	$2400 \pm 480$ Hz			
Bit 32 to bit 199	$2400 \pm 240$ Hz	$2400 \pm 480$ Hz			
Measurement uncertainty	$\pm 4$ Hz				

Limit mask :

- At bit 0 to bit 1 peak frequency deviation is between 3400 Hz to – 3400 Hz under normal and extreme test condition.
- At bit 2 to bit 3 peak frequency deviation is between 2880 Hz to 1920 Hz and between - 1920 Hz to - 2880 Hz under normal and extreme test condition.
- At bit 4 to bit 31 peak frequency deviation is between 2640 Hz to 2160 Hz and between - 2160 Hz to - 2640 Hz under normal test condition, peak frequency deviation is between 2880 Hz to 1920 Hz and between - 1920 Hz to - 2880 Hz under extreme test condition.
- At bit 32 to bit 199 peak frequency deviation is between 2640 Hz to 2160 Hz and between - 2160 Hz to - 2640 Hz under normal test condition, peak frequency deviation is between 2880 Hz to 1920 Hz and between - 1920 Hz to - 2880 Hz under extreme test condition.

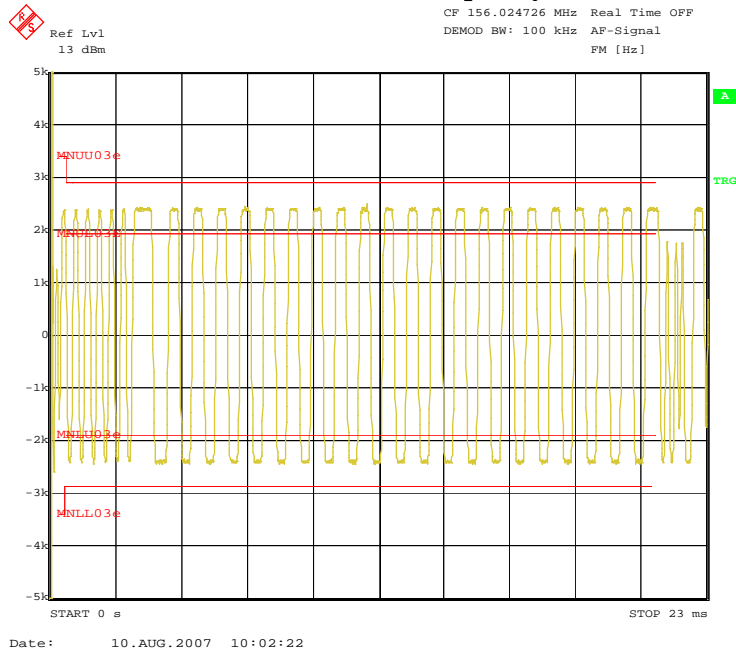




(2-2) Tmin ( - 15 °C), Vmin ( 9.6 V )

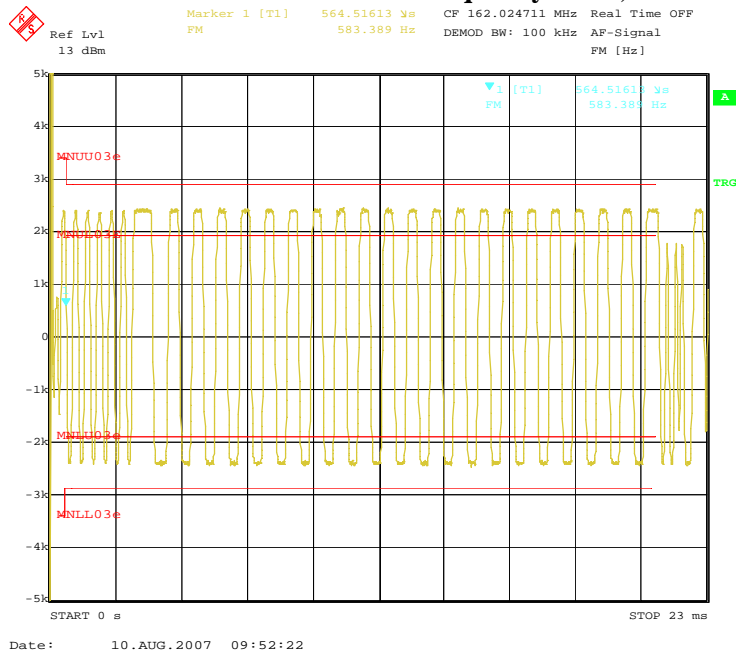
TX freq.:156.025 MHz

(Center freq. 156.024726 MHz . see 2.1.1.1 11.1 .1 Frequency error)



TX freq.:162.025 MHz

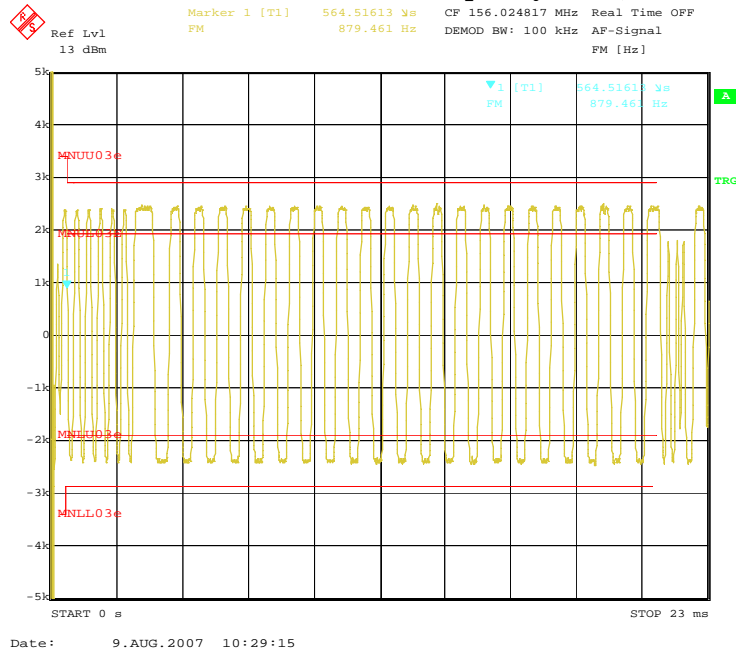
(Center freq. 162.024711 MHz . see 2.1.1.1 11.1 .1 Frequency error)



(2-3) Tmax ( 55 °C), Vmax ( 31.2 V )

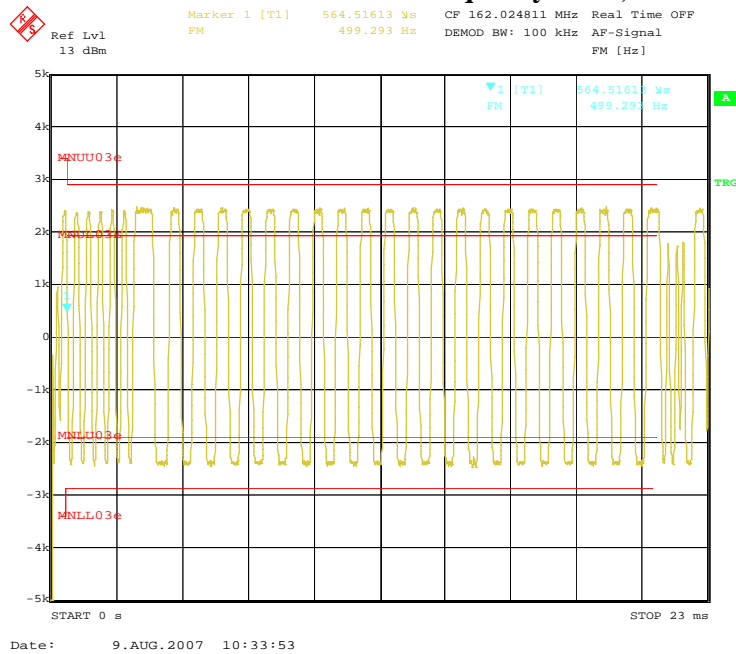
TX freq.:156.025 MHz

(Center freq. 156.024817 MHz . see 2.1.1.1 11.1 .1 Frequency error)



TX freq.:162.025 MHz

(Center freq. 162.024811 MHz . see 2.1.1.1 11.1 .1 Frequency error)



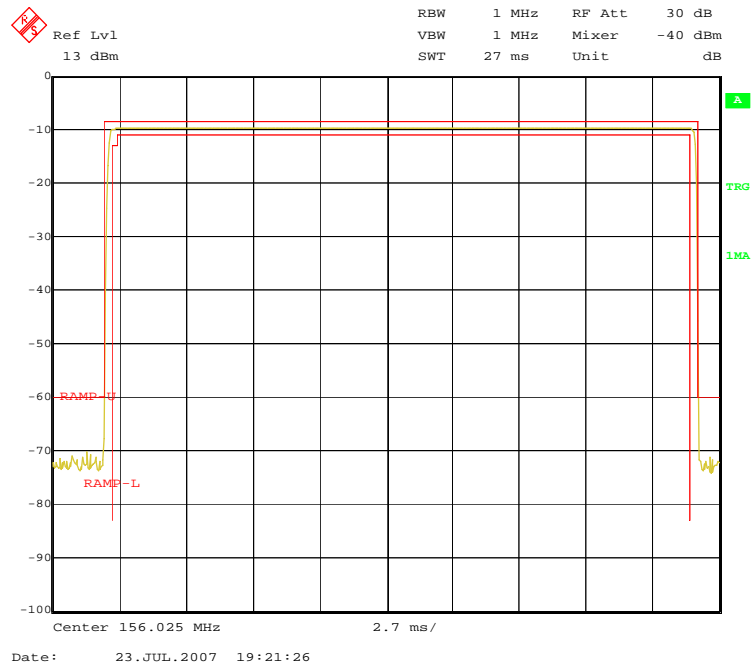
Measurement equipment used: 01, 07, 12

## 2.1.1.5 11.1 .5 Transmitter output power versus time function

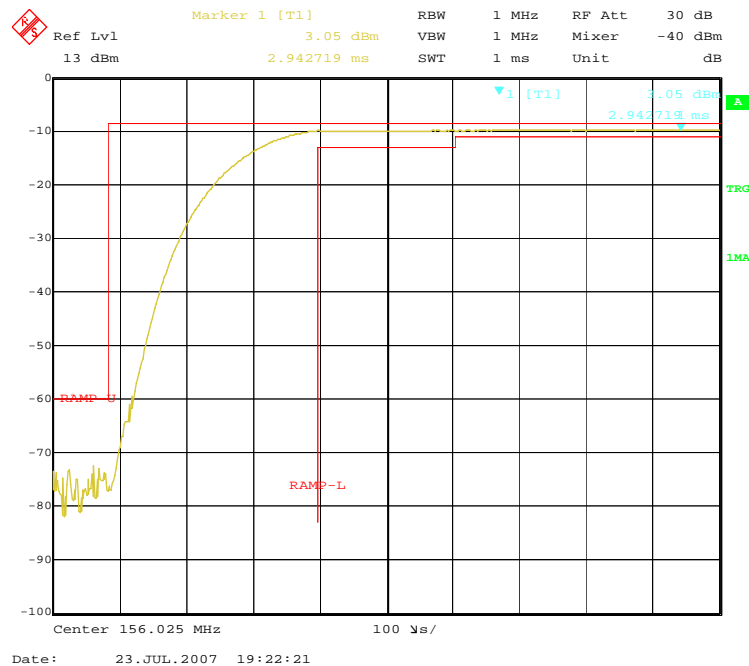
Date of test: 23 Jul. 2007      Ambient temp.: 26 °C      R.H.: 60 %

TX freq.: 156.025 MHz (Standard test signal number 2 + 1 bit)

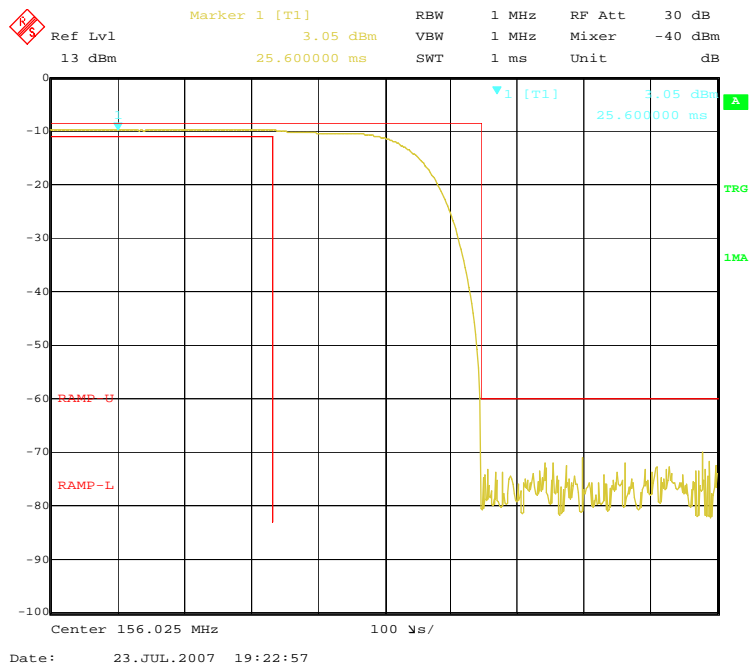
(1) Output power versus time



(2) Attack time

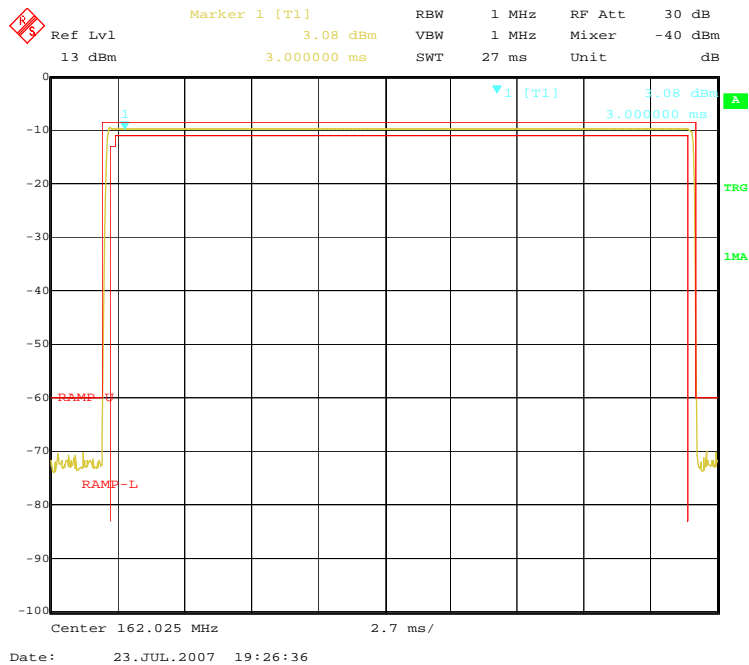


### (3) Release time

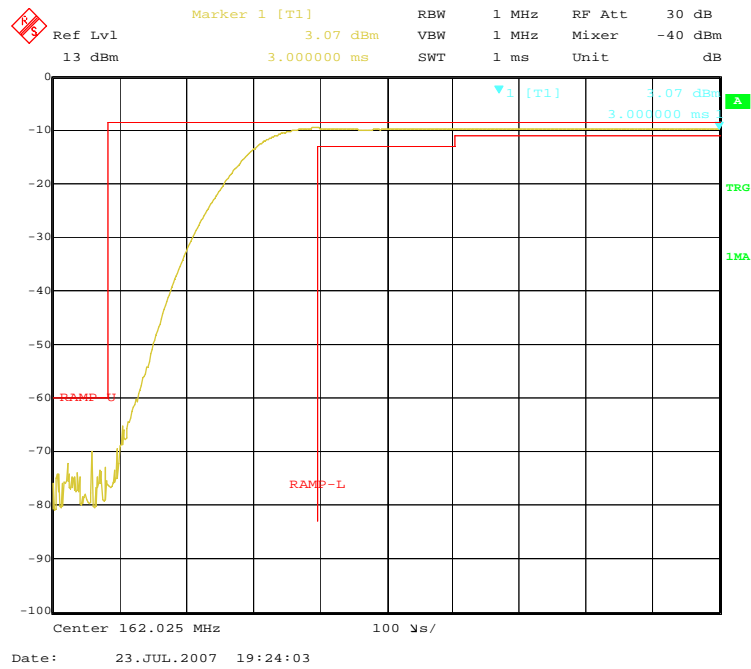


TX freq.: 162.025 MHz (Standard test signal number 2 + 1bit)

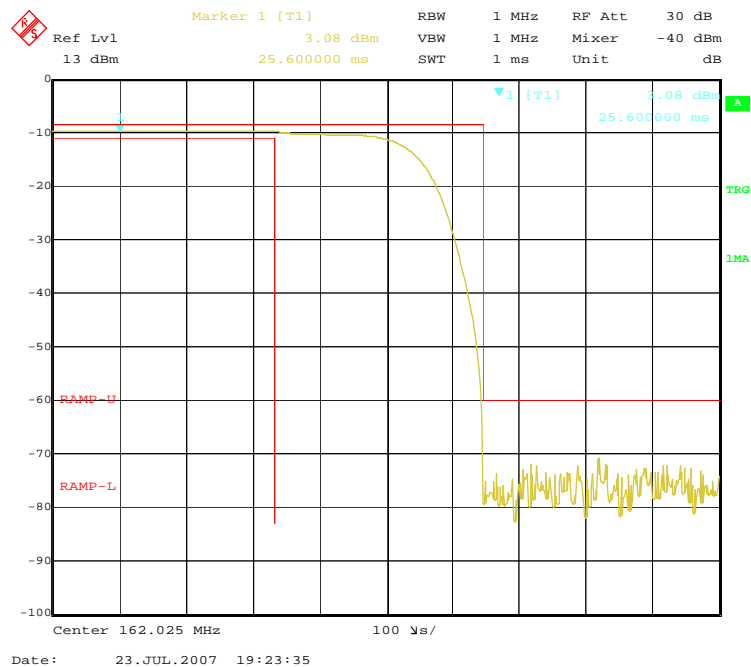
### (1) Output power versus time



## (2) Attack time



## (3) Release time



Limit: within the mask specified in figure 3, Clause 7. 3.1.4, IEC62287-1.

Measuring equipment used: 01, 07, 12

## 2.1.2 11.2 TDMA receivers

### 2.1.2.1 11.2 .1 Sensitivity

Date of test: 7 Aug. 2007	Ambient temp.: 26 °C	R.H.: 55 %
Date of test: 8 Aug. 2007	Ambient temp.: 25 °C	R.H.: 54 %
Date of test: 9 Aug. 2007	Ambient temp.: 26 °C	R.H.: 52 %

<CH A>

TEST CONDITIONS		SENSITIVITY LEVEL (dBm)					
		Fn = 156.025 MHz			Fn = 162.025 MHz		
		Fn - 500 Hz 156.0245 MHz	Fn	Fn + 500 Hz 162.0255 MHz	Fn - 500 Hz 162.0245 MHz	Fn	Fn + 500 Hz 162.0255 MHz
Temperature	Voltage	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)
<i>T<sub>nom</sub></i> (+ 15 – 35 °C)	<i>V<sub>nom</sub></i> ( 12.0 V )	- 112 (19.0 % PER)	- 112 (14.0 % PER)	- 112 (15.0 % PER)	- 111 (12.5 % PER)	- 111 (10.5 % PER)	- 111 (14.0 % PER)
<i>T<sub>min</sub></i> ( - 15 °C )	<i>V<sub>min</sub></i> ( 9.6 V )	/	- 113 (15.0 % PER)	/	/	- 112 (11.5 % PER)	/
	<i>V<sub>max</sub></i> ( 31.2 V )	/	- 113 (15.0 % PER)	/	/	- 112 (12.5 % PER)	/
<i>T<sub>max</sub></i> ( + 55 °C )	<i>V<sub>min</sub></i> ( 9.6 V )	/	- 111 (12.5 % PER)	/	/	- 110 (7.5 % PER)	/
	<i>V<sub>max</sub></i> ( 31.2 V )	/	- 111 (10.0 % PER)	/	/	- 110 (11.0 % PER)	/
Measurement uncertainty		± 1.2 dB					
Limits		≤ - 107 dBm @ ≤ 20 % PER under normal test conditions (Fn), ≤ - 104 dBm @ ≤ 20 % PER under normal test conditions (Fn ± 500 Hz), ≤ - 101 dBm @ ≤ 20 % PER under extreme test conditions.					

<CH B>

TEST CONDITIONS		SENSITIVITY LEVEL (dBm)					
		Fn = 156.025 MHz			Fn = 162.025 MHz		
		Fn - 500 Hz 156.0245 MHz	Fn	Fn + 500 Hz 156.0255 MHz	Fn - 500 Hz 162.0245 MHz	Fn	Fn + 500 Hz 162.0255 MHz
Temperature	Voltage	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)	RF level (dBm)
<i>T<sub>nom</sub></i> (+ 15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	- 113 (19.5 % PER)	- 113 (19.5 % PER)	- 113 (13.5 % PER)	- 112 (14.0 % PER)	- 112 (15.5 % PER)	- 112 (13.5 % PER)
<i>T<sub>min</sub></i> (- 15 °C)	<i>V<sub>min</sub></i> (9.6 V)	/	- 113 (5.5 % PER)	/	/	- 113 (7.5 % PER)	/
	<i>V<sub>max</sub></i> (31.2 V)	/	- 113 (12.5 % PER)	/	/	- 113 (9.0 % PER)	/
<i>T<sub>max</sub></i> (+ 55 °C)	<i>V<sub>min</sub></i> (9.6 V)	/	- 112 (12.5 % PER)	/	/	- 111 (9.0 % PER)	/
	<i>V<sub>max</sub></i> (31.2 V)	/	- 112 (15.0 % PER)	/	/	- 111 (10.5 % PER)	/
Measurement uncertainty		± 1.2 dB					
Limits		≤ - 107 dBm @ ≤ 20 % PER under normal test conditions (Fn), ≤ - 104 dBm @ ≤ 20 % PER under normal test conditions (Fn ± 500 Hz), ≤ - 101 dBm @ ≤ 20 % PER under extreme test conditions.					

Measuring equipment used: 02, 11, 12



## 2.1.2.2 11.2 .2 Error behavior at high input levels

Date of test: 2 Aug. 2007

Ambient temp.: 27 °C

R.H.: 60 %

<CH A>

TEST CONDITIONS		Packet Error Rate (%)			
		Fn = 156.025 MHz		Fn = 162.025 MHz	
Input signal (dBm)		- 77	- 7	- 77	- 7
Temperature	Voltage	0.0	0.0	0.0	0.0
<i>Tnom</i> (+15 – 35 °C)	<i>Vnom</i> (12.0 V)				
Measurement uncertainty		± 1.2 dB			
Limits		Input level - 77 dBm @ ≤ 2 % PER, Input level - 7 dBm @ ≤ 10 % PER.			

<CH B>

TEST CONDITIONS		Packet Error Rate (%)			
		Fn = 156.025 MHz		Fn = 162.025 MHz	
Input signal (dBm)		- 77	- 7	- 77	- 7
Temperature	Voltage	0.0	0.0	0.0	0.0
<i>Tnom</i> (+15 – 35 °C)	<i>Vnom</i> (12.0 V)				
Measurement uncertainty		± 1.2 dB			
Limits		Input level - 77 dBm @ ≤ 2 % PER, Input level - 7 dBm @ ≤ 10 % PER.			

Measuring equipment used: 02, 11, 12

## 2.1.2.3 11.2 .3 Co-channel rejection

Date of test: 24 Aug. 2007

Ambient temp.: 27 °C

R.H.: 60 %

<CH A>

TEST CONDITIONS		CO-CHANNEL REJECTION RATIO (dB)		
Temperature	Voltage	Funw	Fn = 156.025 MHz	Fn = 162.025 MHz
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> ( 12.0 V )	Fn + 1 kHz	- 8 (13.0 % PER)	- 8 (19.5 % PER)
		Fn	- 7 (18.0 % PER)	- 8 (13.5 % PER)
		Fn - 1 kHz	-8 (9.5 % PER)	- 8 (12.0 % PER)
Measurement uncertainty		± 2 dB		
Limits		Between - 10.0 dB and 0 dB @ ≤ 20 % PER.		

<CH B>

TEST CONDITIONS		CO-CHANNEL REJECTION RATIO (dB)		
Temperature	Voltage	Funw	Fn = 156.025 MHz	Fn = 162.025 MHz
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> ( 12.0 V )	Fn + 1 kHz	- 8 (7.0 % PER)	- 8 (7.5 % PER)
		Fn	- 8 (5.5 % PER)	- 7 (15.0 % PER)
		Fn - 1 kHz	- 7 (17.0 % PER)	- 8 (14.5 % PER)
Measurement uncertainty		± 2 dB		
Limits		Between - 10.0 dB and 0 dB @ ≤ 20 % PER.		

Remark: Unwanted signal modulated with GMSK, standard test signal number 4.

Funw = unwanted frequency

Measuring equipment used: 02, 03, 9, 11, 12

## 2.1.2.4 11.2 .4 Adjacent channel selectivity

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

<CH A>

TEST CONDITIONS		ADJACENT CHANNEL SELECTIVITY (dB)			
		Fn = 156.025 MHz		Fn = 162.025 MHz	
Temperature	Voltage	Funw = Fn + 25 kHz (156.050 MHz)	Funw = Fn - 25 kHz (156.000 MHz)	Funw = Fn + 25 kHz (162.050 MHz)	Funw = Fn - 25 kHz (162.000 MHz)
<i>Tnom</i> (+ 15 – 35 °C)	<i>Vnom</i> ( 12.0 V )	75 (13.0 % PER)	75 (9.5 % PER)	76 (12.5 % PER)	77 (13.5 % PER)
Measurement uncertainty		+ 2.3 / - 2.8 dB			
Limits		≥ 70.0 dB @ ≤ 20 % PER.			

<CH B>

TEST CONDITIONS		ADJACENT CHANNEL SELECTIVITY (dB)			
		Fn = 156.025 MHz		Fn = 162.025 MHz	
Temperature	Voltage	Funw = Fn + 25 kHz (156.050 MHz)	Funw = Fn - 25 kHz (156.000 MHz)	Funw = Fn + 25 kHz (162.050 MHz)	Funw = Fn - 25 kHz (162.000 MHz)
<i>Tnom</i> (+ 15 – 35 °C)	<i>Vnom</i> ( 12.0 V )	75 (6.5 % PER)	75 (11.0 % PER)	76 (9.5 % PER)	77 (17.0 % PER)
Measurement uncertainty		+ 2.3 / - 2.8 dB			
Limits		≥ 70.0 dB @ ≤ 20 % PER.			

Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.

Funw = unwanted frequency

Measuring equipment used: 02, 04, 9, 11, 12

**2.1.2.5 11.2 .5 Spurious response rejection**Date of test: 23 Aug. 2007  
Date of test: 26 Aug. 2007Ambient temp.: 27 °C  
Ambient temp.: 28 °CR.H.: 64 %  
R.H.: 61 %

&lt;CH A&gt; Fn = 156.025 MHz

Funw (MHz)	SPURIOUS RESPONSE REJECTION RATIO (dB)
181.59	78
181.595	77
Measurement uncertainty	+ 2.4 / - 2.9 dB
Limits	≥ 70 dB at   Funw - Fn   ≥ 50 kHz @ ≤ 20 % PER.

&lt;CH B&gt; Fn = 162.025 MHz

Funw (MHz)	SPURIOUS RESPONSE REJECTION RATIO (dB)
159.275	79
159.28	79
164.77	79
164.775	79
Measurement uncertainty	+ 2.4 / - 2.9 dB
Limits	≥ 70 dB at   Funw - Fn   ≥ 50 kHz @ ≤ 20 % PER.

*Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.*

Funw = unwanted frequency

\* : Rejection on other spurious responses was 80 dB.

- (1) Frequency of the receiver ( $f_R$ ): 156.025 and 162.025 MHz
- (2) Frequency of the local oscillator signal applied to the 1st mixer of the receiver ( $f_{LO}$ ): 207.161 and 213.261 MHz
- (3) Intermediate frequencies ( $f_{I1}$ ,  $f_{I2}$ ):  $f_{I1} = 51.136$  MHz and  $51.236$  MHz,  $f_{I2} = 36$  kHz
- (4) Switching range of the receiver (sr): 156.025 to 162.025 MHz

&lt;CH A&gt; Fn = 162.025 MHz

Funw (MHz)	SPURIOUS RESPONSE REJECTION RATIO (dB)
158.985	79
Measurement uncertainty	+ 2.4 / - 2.9 dB
Limits	$\geq 70$ dB at $  \text{Funw} - \text{Fn}   \geq 50$ kHz @ $\leq 20$ % PER.

&lt;CH B&gt; Fn = 156.025 MHz

Funw (MHz)	SPURIOUS RESPONSE REJECTION RATIO (dB)
181.64	78
181.645	77
Measurement uncertainty	+ 2.4 / - 2.9 dB
Limits	$\geq 70$ dB at $  \text{Funw} - \text{Fn}   \geq 50$ kHz @ $\leq 20$ % PER.

Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.

Funw = unwanted frequency

\* : Rejection on other spurious responses was 80 dB.

- (1) Frequency of the receiver ( $f_R$ ): 162.025 and 156.025 MHz
- (2) Frequency of the local oscillator signal applied to the 1st mixer of the receiver ( $f_{LO}$ ): 213.161 and 207.261 MHz
- (3) Intermediate frequencies ( $f_{I1}$ ,  $f_{I2}$ ):  $f_{I1} = 51.136$  MHz and  $51.236$  MHz,  $f_{I2} = 36$  kHz
- (4) Switching range of the receiver (sr): 156.025 to 162.025 MHz

Measuring equipment used: 02, 04, 9, 11, 12

## 2.1.2.6 11.2 .6 Intermodulation response rejection

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

<CH A>

TEST CONDITIONS		INTERMODULATION RESPONSE REJECTION RATIO (dB)	
Temperature	Voltage	Fn = 162.025 MHz	
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	Test #1 162.075 MHz, 162.125 MHz	Test #2 161.975 MHz, 161.925 MHz
		73 (15.0 % PER)	75 (1.5 % PER)
		Fn = 156.025 MHz	
		Test #3 156.075 MHz , 156.125 MHz	Test #4 155.975 MHz, 155.925 MHz
		72 (17.0 % PER)	74 (7.5 % PER)
Measurement uncertainty		+ 2.4 / - 2.8 dB	
Limits		≥ 65 dB @ ≤ 20 % PER.	

<CH B>

TEST CONDITIONS		INTERMODULATION RESPONSE REJECTION RATIO (dB)	
Temperature	Voltage	Fn = 162.025 MHz	
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	Test #1 162.075 MHz, 162.125 MHz	Test #2 161.975 MHz, 161.925 MHz
		72dB (9.0 % PER)	71dB (3.0 % PER)
		Fn = 156.025 MHz	
		Test #3 156.075 MHz, 156.125 MHz	Test #4 155.975 MHz, 155.925 MHz
		71dB (15.0 % PER)	71dB (6.5 % PER)
Measurement uncertainty		+ 2.4 / - 2.8 dB	
Limits		≥ 65 dB @ ≤ 20 % PER	

Remark: Unwanted signal unmodulated ( $F_n \pm 50$  kHz)

Unwanted signal modulated with 400 Hz / 3 kHz deviation ( $F_n \pm 100$  kHz)

Measuring equipment used: 02, 05, 9, 11, 12

**2.1.2.7 11.2 .7 Blocking or desensitization**

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

&lt;CH A&gt;

Fn = 162.025 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (152.025)	93 (18.0 % PER)
Fn - 5 (157.025)	93 (15.0 % PER)
Fn - 2 (160.025)	93 (10.5 % PER)
Fn - 1 (161.025)	93 (16.0 % PER)
Fn - 0.5 (161.525)	93 (19.5 % PER)
Fn + 0.5 (162.525)	93 (17.5 % PER)
Fn + 1 (163.025)	93 (12.5 % PER)
Fn + 2 (164.025)	93 (15.0 % PER)
Fn + 5 (167.025)	93 (9.5 % PER)
Fn + 10 (172.025)	95 (12.5 % PER)
Measurement uncertainty	+ 2.4 / - 2.8 dB
Limits	≥ 78dB at   Funw - Fn   < ± 5 MHz @ ≤ 20 % PER, ≥ 86dB at   Funw - Fn   ≥ ± 5 MHz @ ≤ 20 % PER.

Fn = 156.025 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (146.025)	94 (10.5 % PER)
Fn - 5 (151.025)	94 (15.0 % PER)
Fn - 2 (154.025)	93 (5.5 % PER)
Fn - 1 (155.025)	93 (12.0 % PER)
Fn - 0.5 (155.525)	93 (13.5 % PER)
Fn + 0.5 (156.525)	93 (12.0 % PER)
Fn + 1 (157.025)	94 (17.0 % PER)
Fn + 2 (158.025)	94 (10.5 % PER)
Fn + 5 (161.025)	94 (11.0 % PER)
Fn + 10 (166.025)	94 (8.0 % PER)
Measurement uncertainty	+ 2.4 / - 2.8 dB
Limits	≥ 78dB at   Funw - Fn   < ± 5 MHz @ ≤ 20 % PER, ≥ 86dB at   Funw - Fn   ≥ ± 5 MHz @ ≤ 20 % PER.

*Remark: Unwanted signal unmodulated.*

Funw = unwanted frequency

&lt;CH B&gt;

Fn = 162.025 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (152.025)	94 (19.0 % PER)
Fn - 5 (157.025)	93 (17.0 % PER)
Fn - 2 (160.025)	94 (17.5 % PER)
Fn - 1 (161.025)	93 (14.5 % PER)
Fn - 0.5 (161.525)	93 (12.5 % PER)
Fn + 0.5 (162.525)	93 (8.0 % PER)
Fn + 1 (163.025)	93 (12.0 % PER)
Fn + 2 (164.025)	94 (18.0 % PER)
Fn + 5 (167.025)	94 (15.5 % PER)
Fn + 10 (172.025)	96 (16.0 % PER)
Measurement uncertainty	+ 2.4 / - 2.8 dB
Limits	≥ 78dB at   Funw - Fn   < ± 5 MHz @ ≤ 20 % PER, ≥ 86dB at   Funw - Fn   ≥ ± 5 MHz @ ≤ 20 % PER.

Fn = 156.025 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (146.025)	95 (17.5 % PER)
Fn - 5 (151.025)	94 (9.0 % PER)
Fn - 2 (154.025)	94 (11.5 % PER)
Fn - 1 (155.025)	94 (16.0 % PER)
Fn - 0.5 (155.525)	94 (18.5 % PER)
Fn + 0.5 (156.525)	93 (14.0 % PER)
Fn + 1 (157.025)	94 (19.0 % PER)
Fn + 2 (158.025)	94 (16.5 % PER)
Fn + 5 (161.025)	95 (19.5 % PER)
Fn + 10 (166.025)	94 (6.5 % PER)
Measurement uncertainty	+ 2.4 / - 2.8 dB
Limits	≥ 78dB at   Funw - Fn   < ± 5 MHz @ ≤ 20 % PER, ≥ 86dB at   Funw - Fn   ≥ ± 5 MHz @ ≤ 20 % PER.

*Remark: Unwanted signal unmodulated*

Funw = unwanted frequency

Measuring equipment used: 02, 04, 09, 11, 12



## 2.1.3 11.3 Conducted spurious emissions

### 2.1.3.1 11.3.1 Spurious emissions from the receiver

Date of test: 9 Aug. 2007

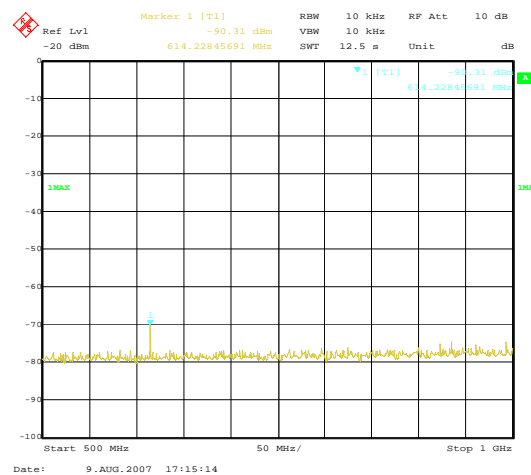
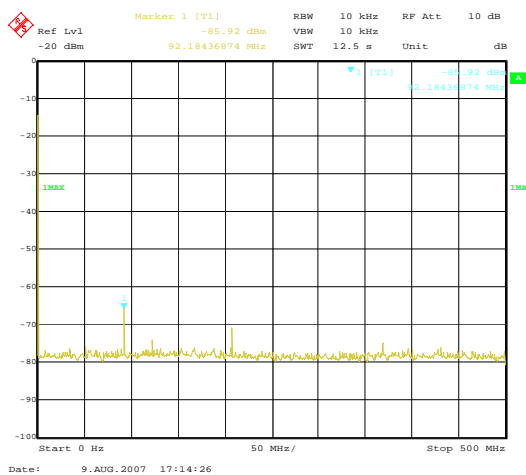
Ambient temp.: 26 °C

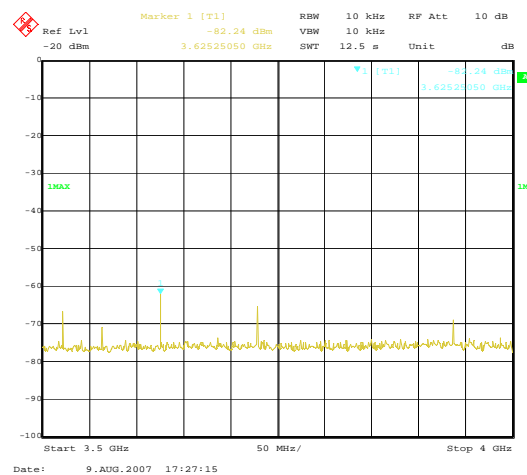
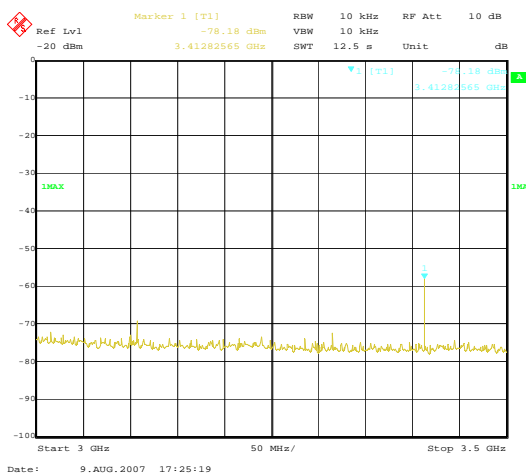
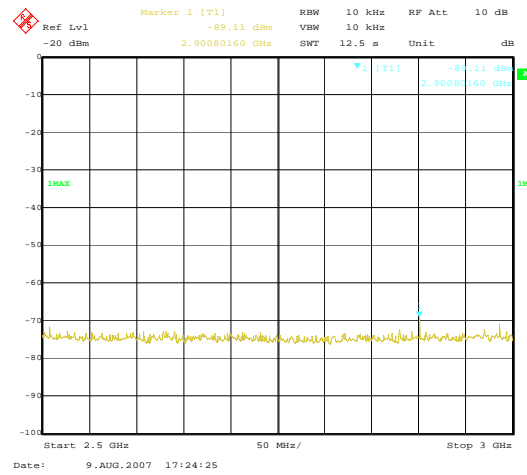
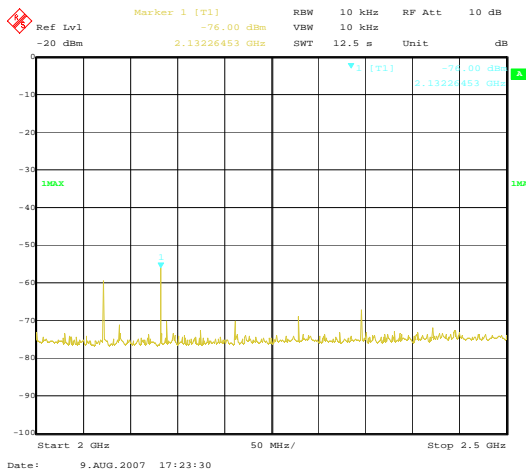
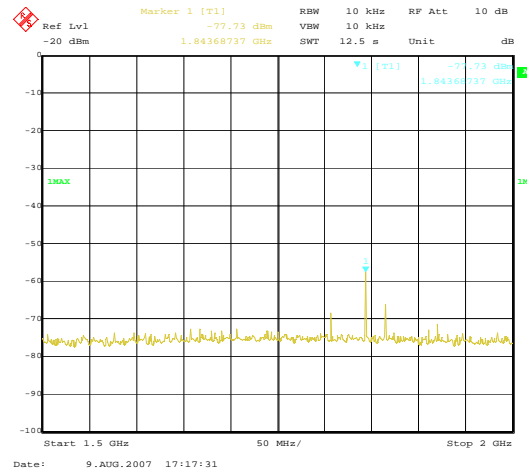
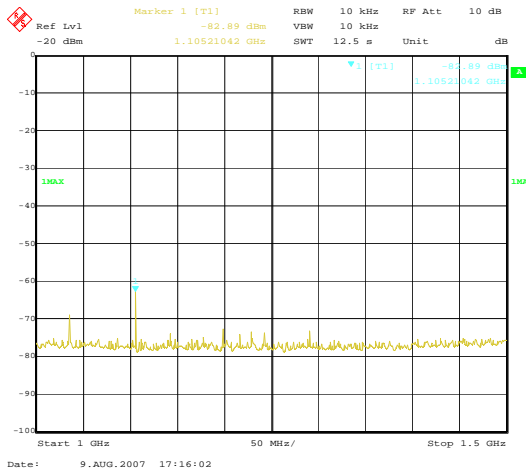
R.H.: 52 %

Fn = 156.025 MHz (CH A), 162.025 MHz (CH B)

SPURIOUS EMISSIONS POWER LEVEL	
Spurious frequency (MHz)	Power level (dBm)
921.84	- 85.2
1843.687	- 74.4
2132.265	- 72.1
2070.000	- 75.5
3412.826	- 73.3
Measurement uncertainty	+ 1.7 / - 1.9 dB
Limits (9 kHz – 4 GHz)	≤ - 57 dBm (2 nW) for 9 kHz – 1 GHz, ≤ - 47 dBm (20 nW) for 1 GHz – 4 GHz.

\* : other spurious emissions were at least 30 dB below the limit.





Measuring equipment used: 01, 12

## 2.1.3.2 11.3.2 Spurious emissions from the transmitter

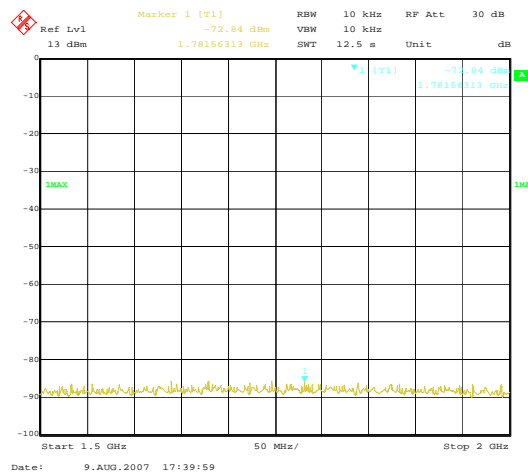
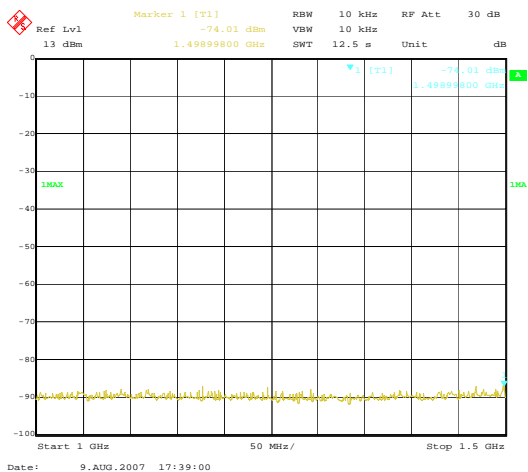
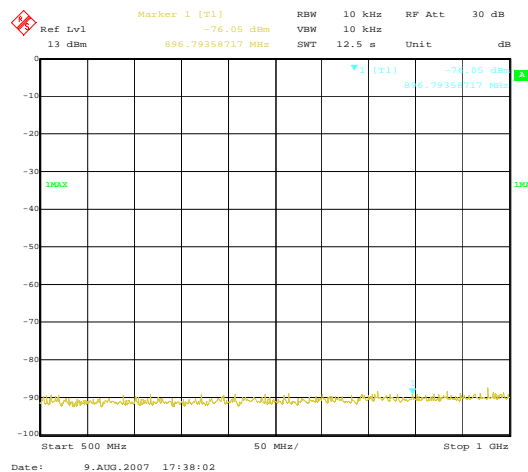
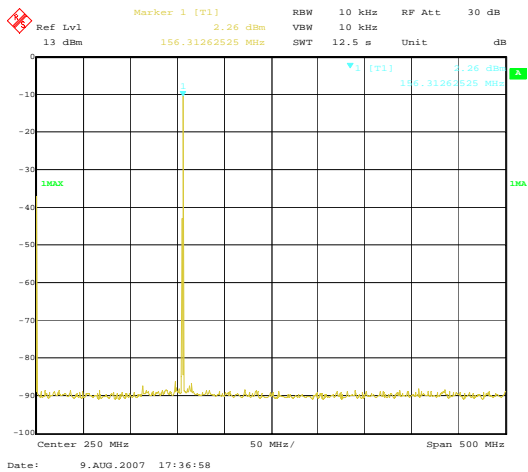
Date of test: 9 Aug. 2007

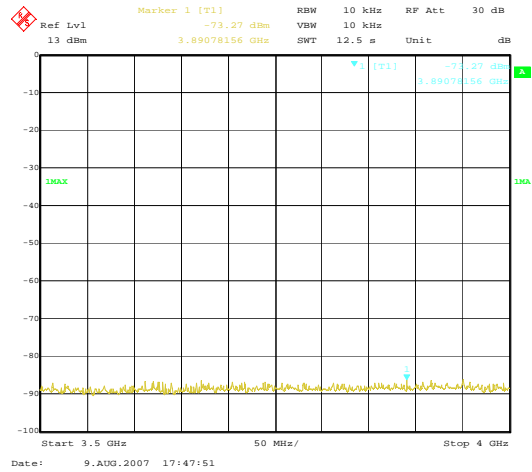
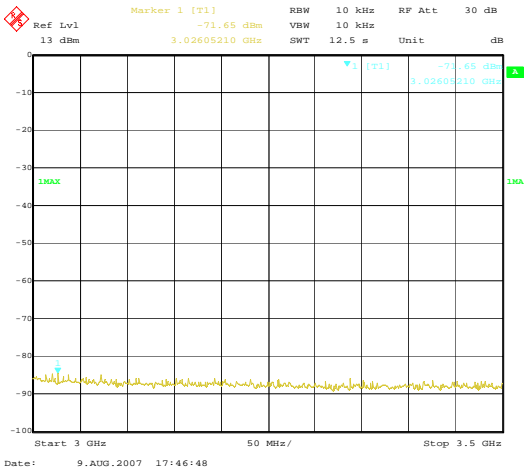
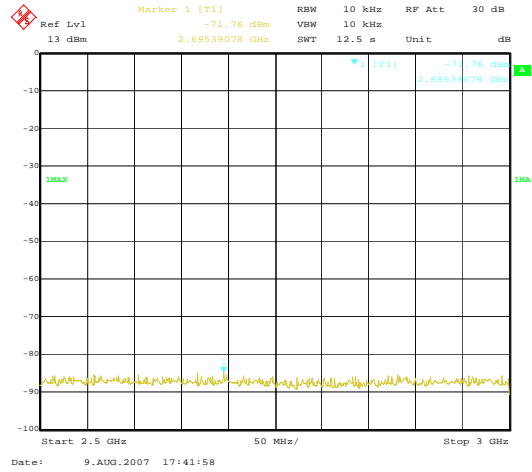
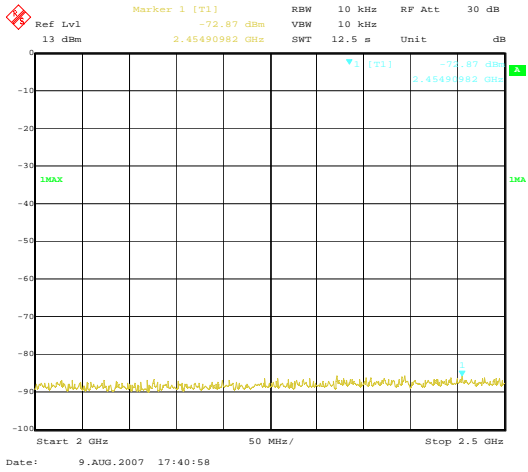
Ambient temp.: 26 °C

R.H.: 52 %

SPURIOUS EMISSIONS POWER LEVEL	
Fn = 156.025 MHz	
Spurious frequency (MHz)	Power level (dBm)
896.79	- 43.8
2695.3	- 37.43
3026.1	- 37.32
Measurement uncertainty	+ 1.7 / - 1.9 dB
Limits (9 kHz – 4 GHz)	≤ - 36 dBm (0.25 μW) for 9 kHz – 1 GHz, ≤ - 30 dBm (1 mW) for 1 GHz – 4 GHz.

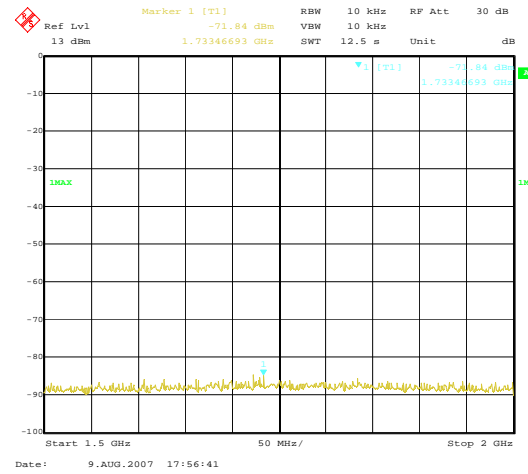
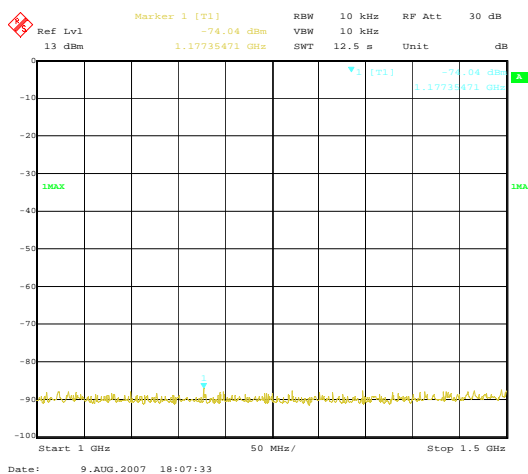
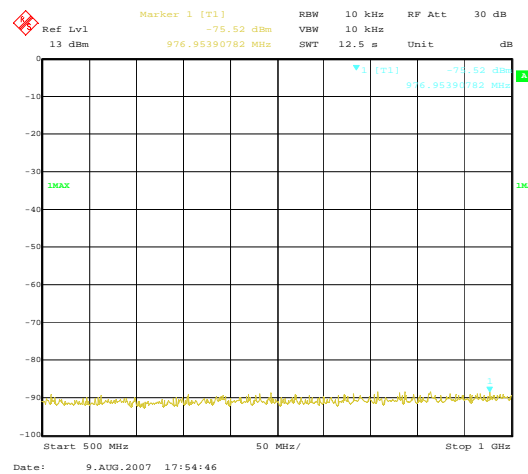
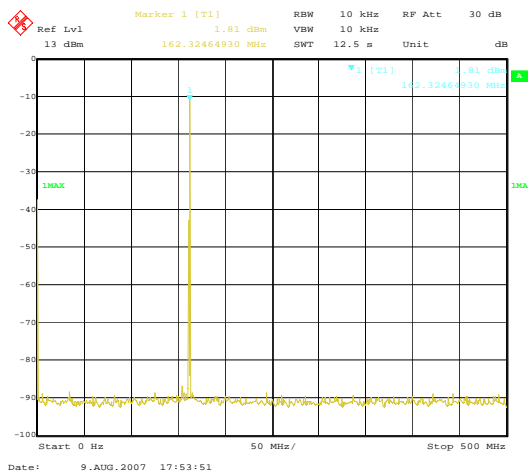
\* : other spurious emissions were at least 7 dB below the limits.

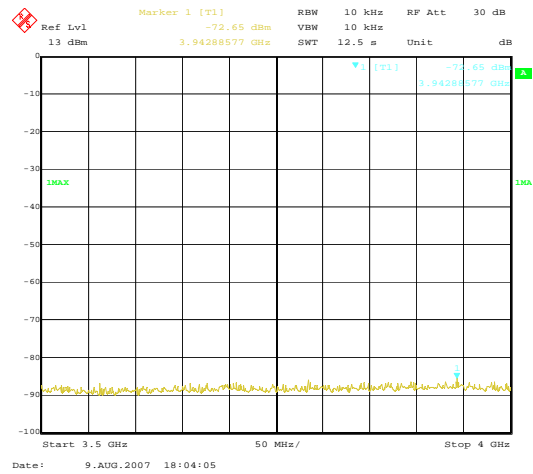
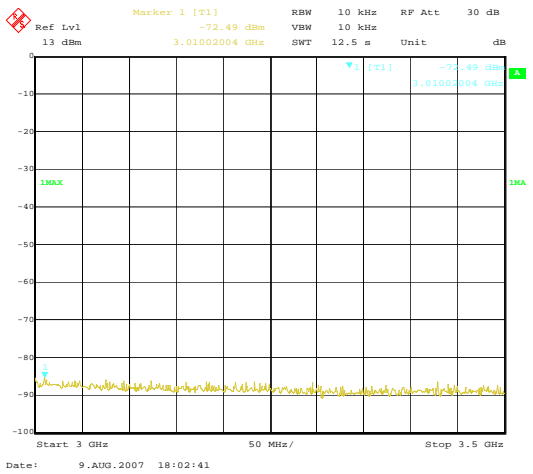
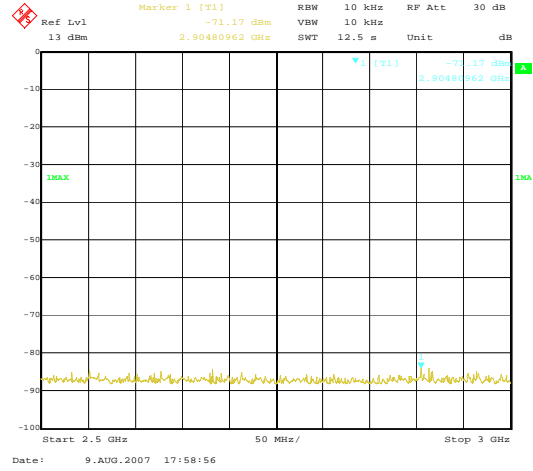
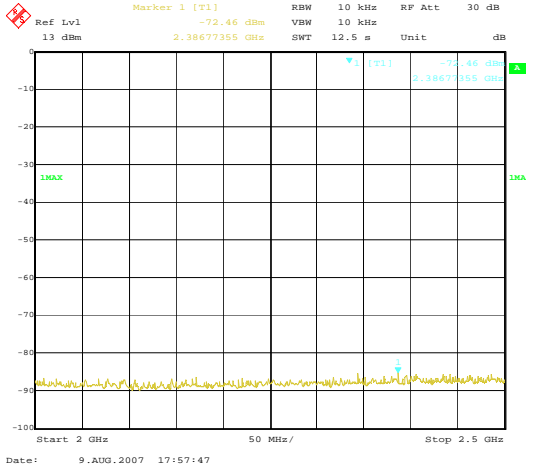




SPURIOUS EMISSIONS POWER LEVEL	
Fn = 162.025 MHz	
Spurious frequency (MHz)	Power level (dBm)
155.0	- 43.13
976.95	- 43.27
2904.8	- 36.84
3942.9	- 37.46
Measurement uncertainty	+ 1.7 / - 1.9 dB
Limit (9 kHz – 4 GHz)	≤ - 36 dBm (0.25 μW) for 9 kHz – 1 GHz, ≤ - 30 dBm (1 mW) for 1 GHz – 4 GHz.

\* : other spurious emissions were at least 7 dB below the limits.





Measuring equipment used: 01, 07, 12

## 2.2 C.4 DSC receiver tests

### 2.2.1 C.4.1 Maximum sensitivity

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

<CH A>

TEST CONDITIONS		SENSITIVITY LEVEL (dBm)		
		Fn = 156.525 MHz (CH 70)		
Temperature	Voltage	Fn	Fn - 1.5 kHz (156.5235 MHz)	Fn + 1.5 kHz (156.5265 MHz)
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	- 115 (0.6 % BER)	- 113 (0.7 % BER)	- 114 (0.3 % BER)
<i>T<sub>min</sub></i> (- 15 °C)	<i>V<sub>min</sub></i> (9.6 V)	- 116 (0.6 % BER)	- 115 (0.3 % BER)	- 114 (0.6 % BER)
	<i>V<sub>max</sub></i> (31.2 V)	- 116 (0.9 % BER)	- 115 (0.4 % BER)	- 114 (0.6 % BER)
<i>T<sub>max</sub></i> (+ 55 °C)	<i>V<sub>min</sub></i> (9.6 V)	- 114 (0.4 % BER)	- 112 (0.7 % BER)	- 114 (0.9 % BER)
	<i>V<sub>max</sub></i> (31.2 V)	- 114 (0.6 % BER)	- 112 (0.7 % BER)	- 114 (0.8 % BER)
Measurement uncertainty		± 1.2 dB		
Limits		≤ - 107 dBm @ ≤ 1 % BER under normal test conditions, ≤ - 101 dBm @ ≤ 1 % BER under extreme test conditions.		

## &lt;CH B&gt;

TEST CONDITIONS		SENSITIVITY LEVEL (dBm)		
		Fn = 156.525 MHz (CH 70)		
Temperature	Voltage	Fn	Fn - 1.5 kHz (156.5235 MHz)	Fn + 1.5 kHz (156.5265 MHz)
<i>Tnom</i> (+15 – 35 °C)	<i>Vnom</i> (12.0 V)	- 115 (0.4 % BER)	- 114 (0.6 % BER)	- 115 (0.3 % BER)
<i>Tmin</i> (-15 °C)	<i>Vmin</i> (9.6 V)	- 116 (0.3 % BER)	- 115 (0.4 % BER)	- 115 (0.2 % BER)
	<i>Vmax</i> (31.2 V)	- 116 (0.2 % BER)	- 115 (0.4 % BER)	- 115 (0.7 % BER)
<i>Tmax</i> (+55 °C)	<i>Vmin</i> (9.6 V)	- 115 (0.7 % BER)	- 113 (0.3 % BER)	- 115 (0.9 % BER)
	<i>Vmax</i> (31.2 V)	- 114 (0.3 % BER)	- 114 (0.7 % BER)	- 115 (0.9 % BER)
Measurement uncertainty		± 1.2 dB		
Limits		≤ - 107 dBm @ ≤ 1 % BER under normal test conditions, ≤ - 101 dBm @ ≤ 1 % BER under extreme test conditions.		

Measuring equipment used: 02, 10, 12





## 2.2.2 C.4.2 Error behavior at high input levels

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

&lt;CH A&gt;

TEST CONDITIONS		BIT ERROR RATE (%)
		Fn = 156.525 MHz (CH 70)
Input signal (dBm)		- 7
Temperature	Voltage	0.0
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	
Measurement uncertainty		± 1.2 dB
Limits		≤ 1 % BER.

&lt;CH B&gt;

TEST CONDITIONS		BIT ERROR RATE (%)
		Fn = 156.525 MHz (CH 70)
Input signal (dBm)		- 7
Temperature	Voltage	0.0
<i>T<sub>nom</sub></i> (+15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	
Measurement uncertainty		± 1.2 dB
Limits		≤ 1 % BER.

Measuring equipment used: 02, 10, 12

## 2.2.3 C.4.3 Co-channel rejection

Date of test: 21 Aug. 2007

Ambient temp.: 26 °C

R.H.: 57 %

<CH A>

TEST CONDITIONS		CO-CHANNEL REJECTION RATIO (dB)	
Temperature	Voltage	Funw	Fn = 156.525 MHz
<i>T<sub>nom</sub></i> (+ 15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	Fn + 3 kHz	- 4 (0.23 % BER)
		Fn + 2 kHz	- 4 (0.42 % BER)
		Fn + 1 kHz	- 4 (0.50 % BER)
		Fn	- 4 (0.45 % BER)
		Fn - 1 kHz	- 4 (0.15 % BER)
		Fn - 2 kHz	- 3 (0.25 % BER)
		Fn - 3 kHz	- 2 (0.8 % BER)
Measurement uncertainty		± 1.1 dB	
Limits		Between - 10.0 dB and 0 dB @ ≤ 1 % BER.	

<CH B>

TEST CONDITIONS		CO-CHANNEL REJECTION RATIO (dB)	
Temperature	Voltage	Funw	Fn = 156.525 MHz
<i>T<sub>nom</sub></i> (+ 15 – 35 °C)	<i>V<sub>nom</sub></i> (12.0 V)	Fn + 3 kHz	- 3 (0.25% BER)
		Fn + 2 kHz	- 3 (0.23% BER)
		Fn + 1 kHz	- 3 (0.25% BER)
		Fn	- 3 (0.40% BER)
		Fn - 1 kHz	- 3 (0.17% BER)
		Fn - 2 kHz	- 2 (0.50% BER)
		Fn - 3 kHz	- 2 (0.70% BER)
Measurement uncertainty		± 1.1 dB	
Limits		Between - 10.0 dB and 0 dB @ ≤ 1 % BER.	

Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.

Funw = unwanted frequency

Measuring equipment used: 02, 04, 9, 10, 12

## 2.2.4 C.4.4 Adjacent channel selectivity

Date of test: 9 Aug. 2007

Ambient temp.: 26 °C

R.H.: 52 %

&lt;CH A&gt;

TEST CONDITIONS		ADJACENT CHANNEL SELECTIVITY (dB)	
		Fn = 156.525 MHz (CH 70)	
Temperature	Voltage	Funw = Fn + 25 kHz (156.550 MHz)	Funw = Fn - 25 kHz (156.500 MHz)
Tnom (+ 15 - 35 °C)	Vnom (12.0 V)	78 (0.60 % BER)	79 (0.78 % BER)
Tmin (- 15 °C)	Vmin (9.6 V)	78 (0.30 % BER)	78 (0.17 % BER)
	Vmax (31.2 V)	78 (0.33 % BER)	78 (0.68 % BER)
Tmax (+ 55 °C)	Vmin (9.6 V)	77 (0.35 % BER)	78 (0.50 % BER)
	Vmax (31.2 V)	77 (0.65 % BER)	78 (0.85 % BER)
Measurement uncertainty		+ 2.3 / - 2.8 dB	
Limits		≥ 70.0 dB @ ≤ 1 % BER under normal test conditions, ≥ 60.0 dB @ ≤ 1 % BER under extreme test conditions.	

Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.

Funw = unwanted frequency

<CH B>

TEST CONDITIONS		ADJACENT CHANNEL SELECTIVITY (dB)	
		Fn = 156.525 MHz (CH 70)	
Temperature	Voltage	Funw = Fn + 25 kHz (156.550 MHz)	Funw = Fn - 25 kHz (156.500 MHz)
Tnom (+ 15 – 35 °C)	Vnom (12.0 V)	78 (0.45 % BER)	78 (0.15 % BER)
Tmin (- 15 °C)	Vmin (9.6 V)	79 (0.80 % BER)	79 (0.78 % BER)
	Vmax (31.2 V)	78 (0.33 % BER)	79 (0.65 % BER)
Tmax (+ 55 °C)	Vmin (9.6 V)	78 (0.47 % BER)	78 (0.23 % BER)
	Vmax (31.2 V)	78 (0.63 % BER)	78 (0.30 % BER)
Measurement uncertainty		+ 2.3 / - 2.8 dB	
Limits		≥ 70.0 dB @ ≤ 1 % BER under normal test conditions, ≥ 60.0 dB @ ≤ 1 % BER under extreme test conditions.	

*Remark: Unwanted signal modulated with 400 Hz / 3 kHz deviation.*

Funw = unwanted frequency

Measuring equipment used: 02, 04, 09, 10, 12





## 2.2.6 C.4.6 Intermodulation response rejection

Date of test: 22 Aug. 2007

Ambient temp.: 26 °C

R.H.: 55 %

<CH A> Fn: 156.525 MHz

TEST CONDITIONS		INTERMODULATION RESPONSE REJECTION RATIO (dB)	
Temperature	Voltage	Funw 156.575 MHz, 156.625 MHz	Funw 156.475 MHz, 156.425 MHz
$T_{nom}$ (+ 15 – 35 °C)	$V_{nom}$ (12.0 V)	72 (0.93 % BER)	72 (0.40 % BER)
Measurement uncertainty		+ 2.4 / - 2.8 dB	
Limits		≥ 65.0 dB @ ≤ 1 % BER.	

<CH B> Fn: 156.525 MHz

TEST CONDITIONS		INTERMODULATION RESPONSE REJECTION RATIO (dB)	
Temperature	Voltage	Funw 156.575 MHz, 156.625 MHz	Funw 156.475 MHz, 156.425 MHz
$T_{nom}$ (+15 – 35 °C)	$V_{nom}$ (12.0 V)	70 (0.05 % BER)	72 (0.82 % BER)
Measurement uncertainty		+ 2.4 / - 2.8 dB	
Limits		≥ 65.0 dB @ ≤ 1 % BER.	

Remark: Unwanted signal unmodulated. ( $F_n \pm 50$  kHz)

Unwanted signal modulated with 400 Hz / 3 kHz deviation. ( $F_n \pm 100$  kHz)

Funw = unwanted frequency

Measuring equipment used: 02, 03, 04, 08, 10, 12

## 2.2.7 C.4.7 Blocking or Desensitisation

Date of test: 21 Aug. 2007

Ambient temp.: 26 °C

R.H.: 57 %

&lt;CH A&gt; Fn = 156.525 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (146.525)	97 (0.65 % BER)
Fn - 9 (147.525)	97 (0.55 % BER)
Fn - 8 (148.525)	96 (0.40 % BER)
Fn - 7 (149.525)	97 (0.93 % BER)
Fn - 6 (150.525)	96 (0.47 % BER)
Fn - 5 (151.525)	97 (0.85 % BER)
Fn - 4 (152.525)	96 (0.38 % BER)
Fn - 3 (153.525)	96 (0.40 % BER)
Fn - 2 (154.525)	96 (0.45 % BER)
Fn - 1 (155.525)	96 (0.33 % BER)
Fn + 1 (157.525)	96 (0.63 % BER)
Fn + 2 (158.525)	97 (0.85 % BER)
Fn + 3 (159.525)	97 (0.63 % BER)
Fn + 4 (160.525)	97 (0.60 % BER)
Fn + 5 (161.525)	97 (0.53 % BER)
Fn + 6 (162.525)	97 (0.35 % BER)
Fn + 7 (163.525)	97 (0.55 % BER)
Fn + 8 (164.525)	97 (0.80 % BER)
Fn + 9 (165.525)	97 (0.50 % BER)
Fn + 10 (166.525)	97 (0.55 % BER)
Measurement uncertainty	+ 2.3 / - 2.8 dB
Limit	≥ 84 dB @ ≤ 1 % BER except at spurious response frequencies.

Remark: Unwanted signal unmodulated.

Funw = unwanted frequency

\* : Rejection on other spurious responses was 90 dB.



&lt;CH B&gt; Fn = 156.525 MHz

Funw (MHz)	BLOCKING RATIO (dB)
Fn - 10 (146.525)	98 (0.78% BER)
Fn - 9 (147.525)	97 (0.40% BER)
Fn - 8 (148.525)	98 (0.90% BER)
Fn - 7 (149.525)	97 (0.47% BER)
Fn - 6 (150.525)	97 (0.65% BER)
Fn - 5 (151.525)	97 (0.45% BER)
Fn - 4 (152.525)	97 (0.75% BER)
Fn - 3 (153.525)	97 (0.53% BER)
Fn - 2 (154.525)	97 (0.93% BER)
Fn - 1 (155.525)	97 (0.70% BER)
Fn + 1 (157.525)	97 (0.60% BER)
Fn + 2 (158.525)	97 (0.68% BER)
Fn + 3 (159.525)	97 (0.63% BER)
Fn + 4 (160.525)	98 (0.95% BER)
Fn + 5 (161.525)	97 (0.53% BER)
Fn + 6 (162.525)	97 (0.30% BER)
Fn + 7 (163.525)	97 (0.28% BER)
Fn + 8 (164.525)	97 (0.20% BER)
Fn + 9 (165.525)	98 (0.85% BER)
Fn + 10 (166.525)	97 (0.42% BER)
Measurement uncertainty	+ 2.3 / - 2.8 dB
Limit	≥ 84 dB @ ≤ 1 % BER except at spurious response frequencies.

Remark: Unwanted signal unmodulated.

Funw = unwanted frequency

\* : Rejection on other spurious responses was 90 dB.

Measuring equipment used: 02, 04, 9, 10, 12

## Used test equipment module

This module contains the total list of test equipment used.

### TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No.	Instrument/Ancillary	Type	Serial No.	Manufacturer	Calibration Due date
01	Signal analyzer	FSIQ7	100219	R&S	07. 2008
02	Vector Signal generator	SMIQ03	829874/019	R& S	07. 2008
03	Vector Signal generator	SMIQ03HD	100024	R& S	04. 2008
04	Signal generator	2041	119333/015	MARCONI	12. 2007
05	Multisource generator	2026B	202601/524	IfR	07. 2008
06	Frequency counter	R5362A	13720092	ANRITSU	12. 2007
07	Attenuator (30dB)	23-30-34	BN3609	MCE/Weinschel	-----
08	RF combiner	ZFSC-3-1	09719	Mini-Circuit	-----
09	RF combiner	ZFSC-2-1+	BF078700727	Mini-Circuit	-----
10	AIS/DSC SIMULATOR	AS-150	-----	Furuno	-----
11	AIS SIMULATOR	AS-50	-----	Furuno	-----
12	Personal Computer	-----	-----	Furuno	-----
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

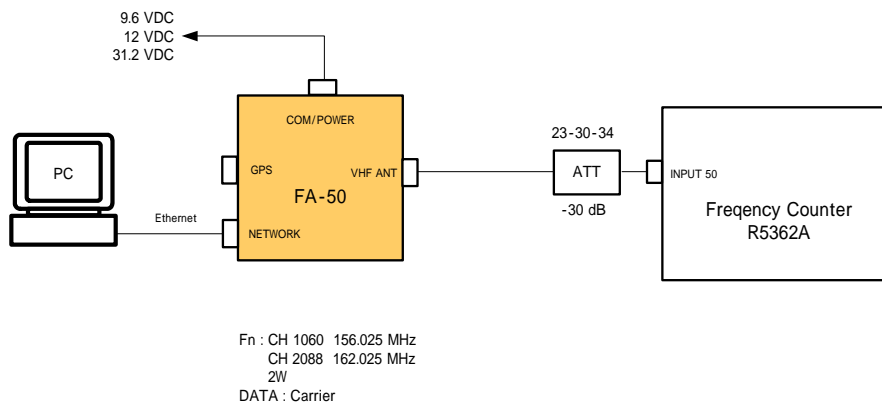


## EUT Arrangement

### 1.1 11 Physical tests

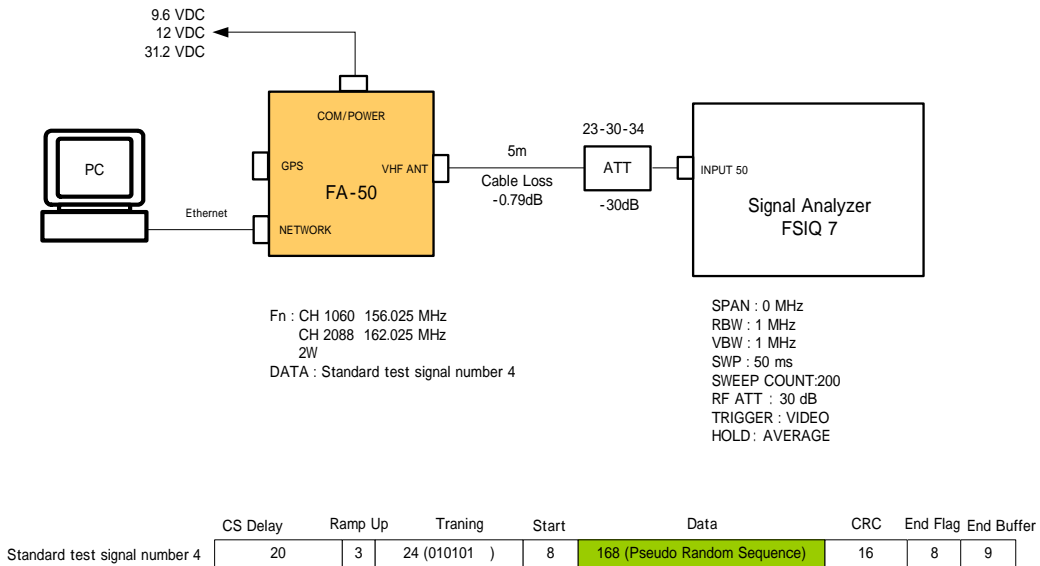
#### 1.1.1 11.1 TDMA transmitter

##### 1.1.1.1 11.1 .1 Frequency error



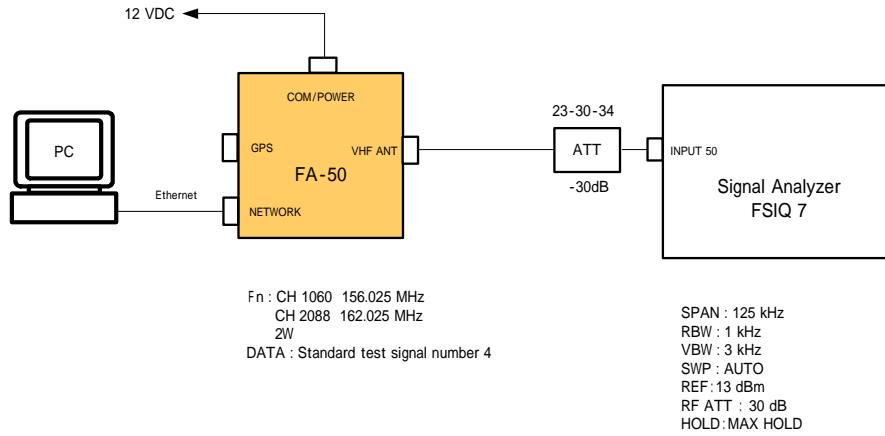
Measuring equipment used: 06, 07, 12

## 1.1.1.2 11.1 .2 Carrier power



Measuring equipment used: 01, 07, 12

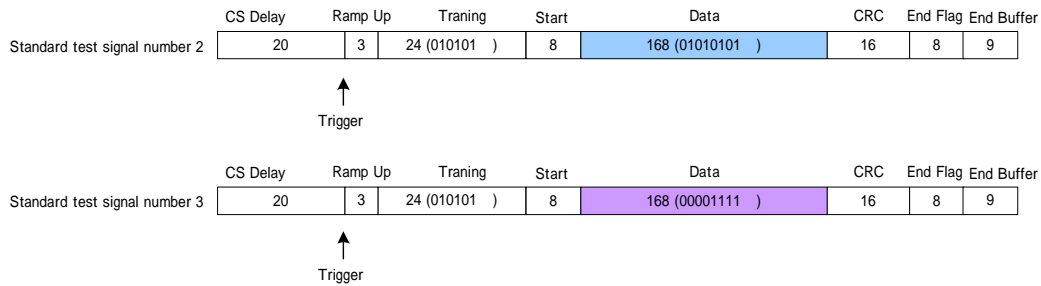
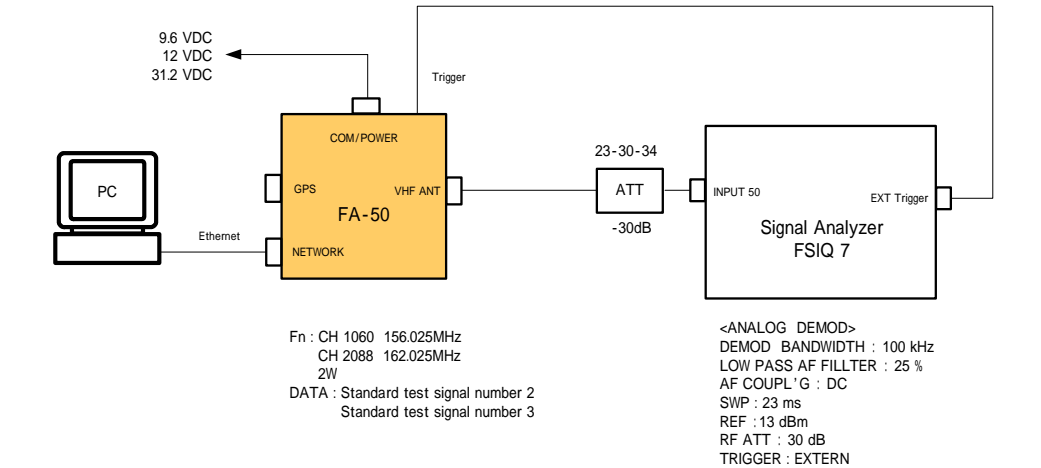
## 1.1.1.3 11.1 .3 Transmission spectrum



	CS Delay	Ramp Up	Traning	Start	Data	CRC	End Flag	End Buffer
Standard test signal number 4	20	3	24 (010101 )	8	168 (Pseudo Random Sequence)	16	8	9

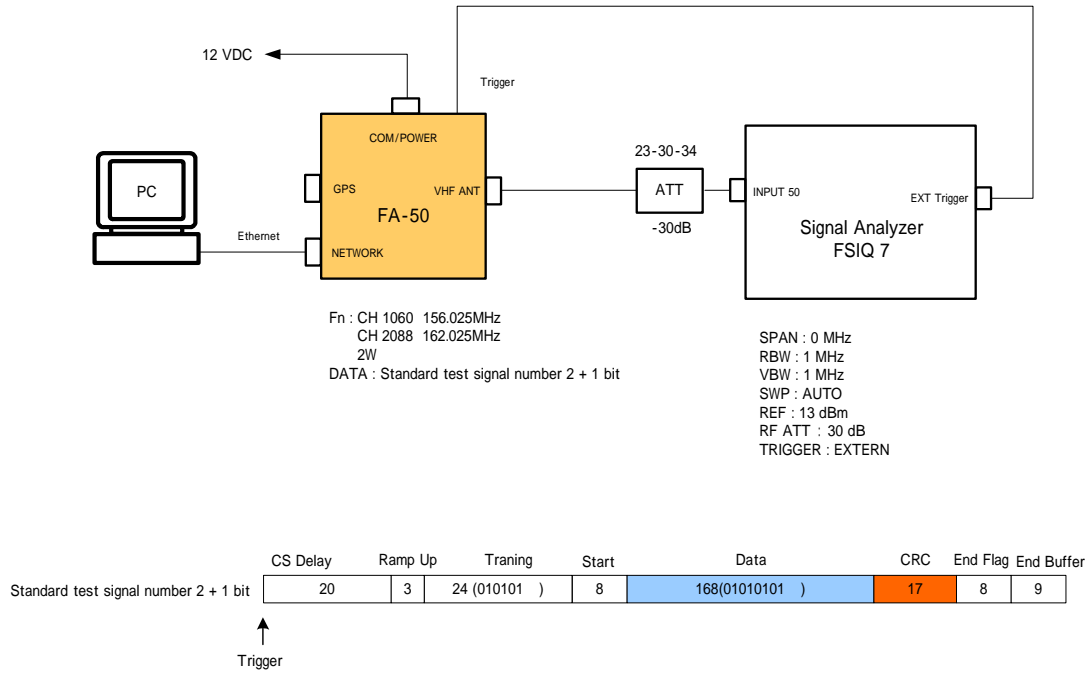
Measuring equipment used: 01, 07, 12

## 1.1.1.4 11.1 .4 Modulation accuracy



Measuring equipment used: 01, 07, 12

## 1.1.1.5 11.1 .5 Transmitter output power versus time function

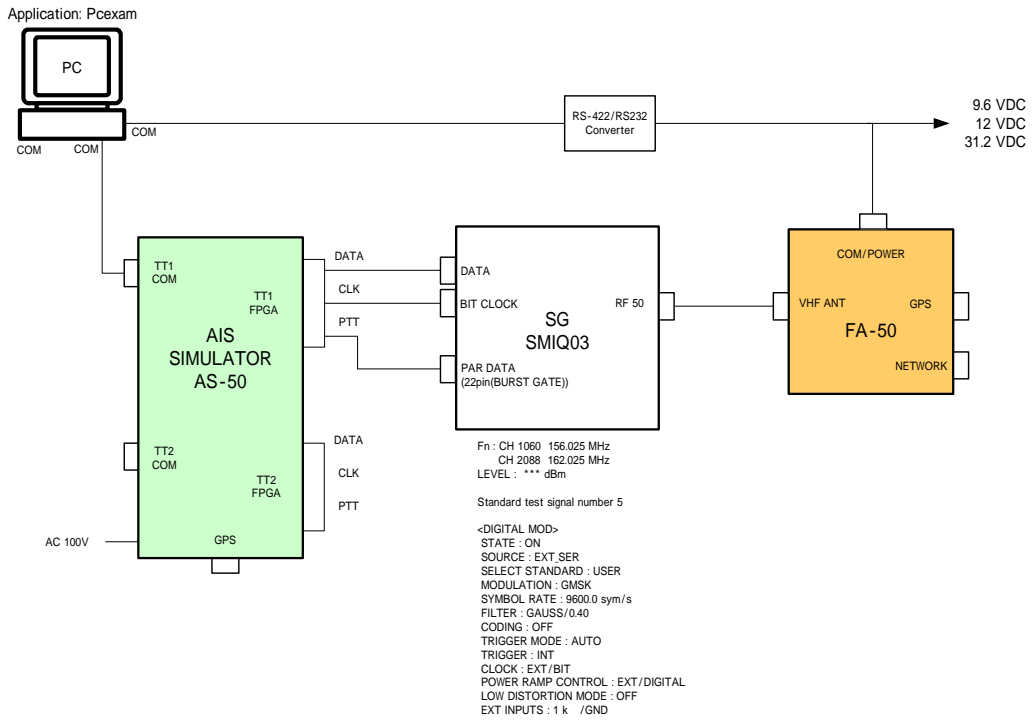


Measuring equipment used: 01, 07, 12

## 1.1.2 11.2 TDMA receivers

### 1.1.2.1 11.2 .1 Sensitivity

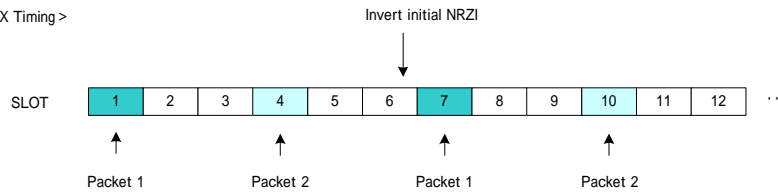
### 1.1.2.2 11.2 .2 Error behavior at high input levels



< TX DATA >  
 Standard test signal number 5

	Ramp Up	Traning	Start	Data	CRC	END
Packet 1	10	22 (010101 )	8	168 (Pseudo Random)	16	8
Packet 2	10	22 (101010 )	8	168 (Pseudo Random)	16	8

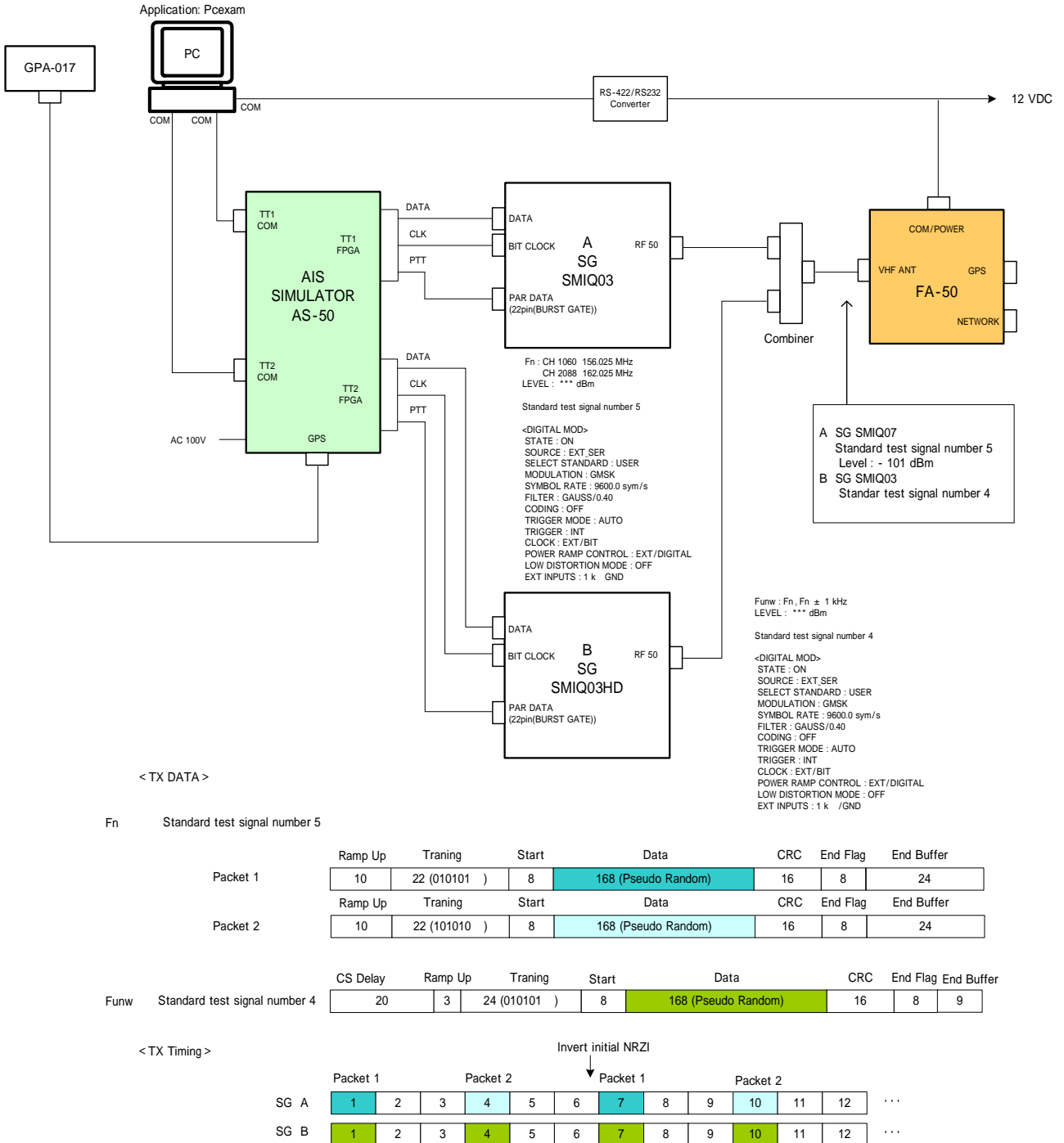
< TX Timing >



Measuring equipment used: 02, 11, 12

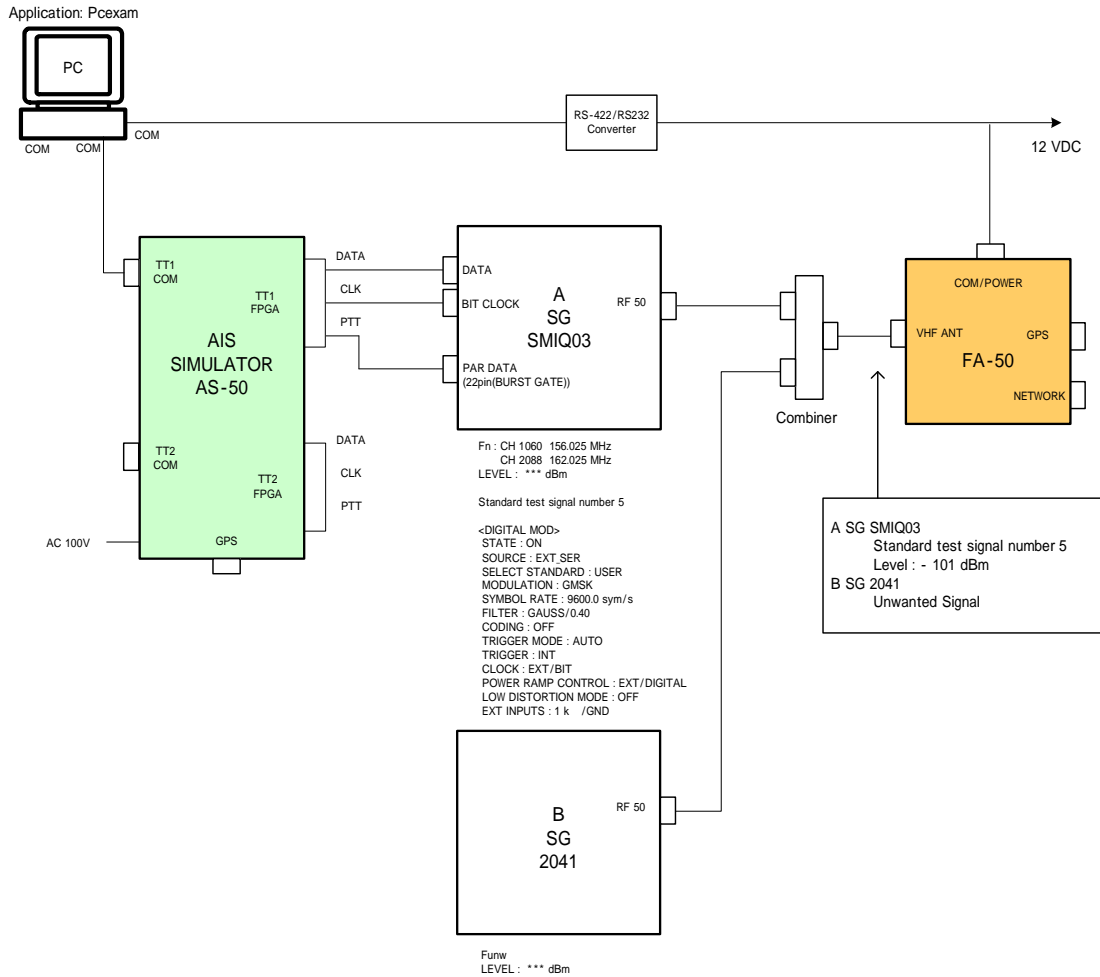


## 1.1.2.3 11.2 .3 Co-channel rejection



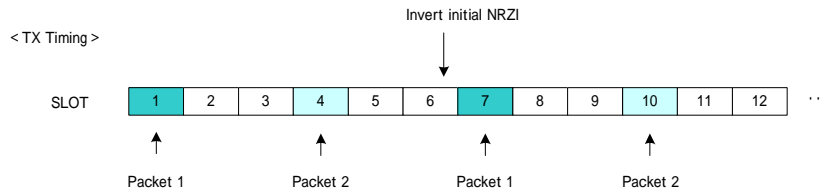
Measuring equipment used: 02, 03, 9, 11, 12

**1.1.2.4 11.2 .4 Adjacent channel selectivity**  
**1.1.2.5 11.2 .5 Spurious response rejection**  
**1.1.2.7 11.2 .7 Blocking or desensitization**



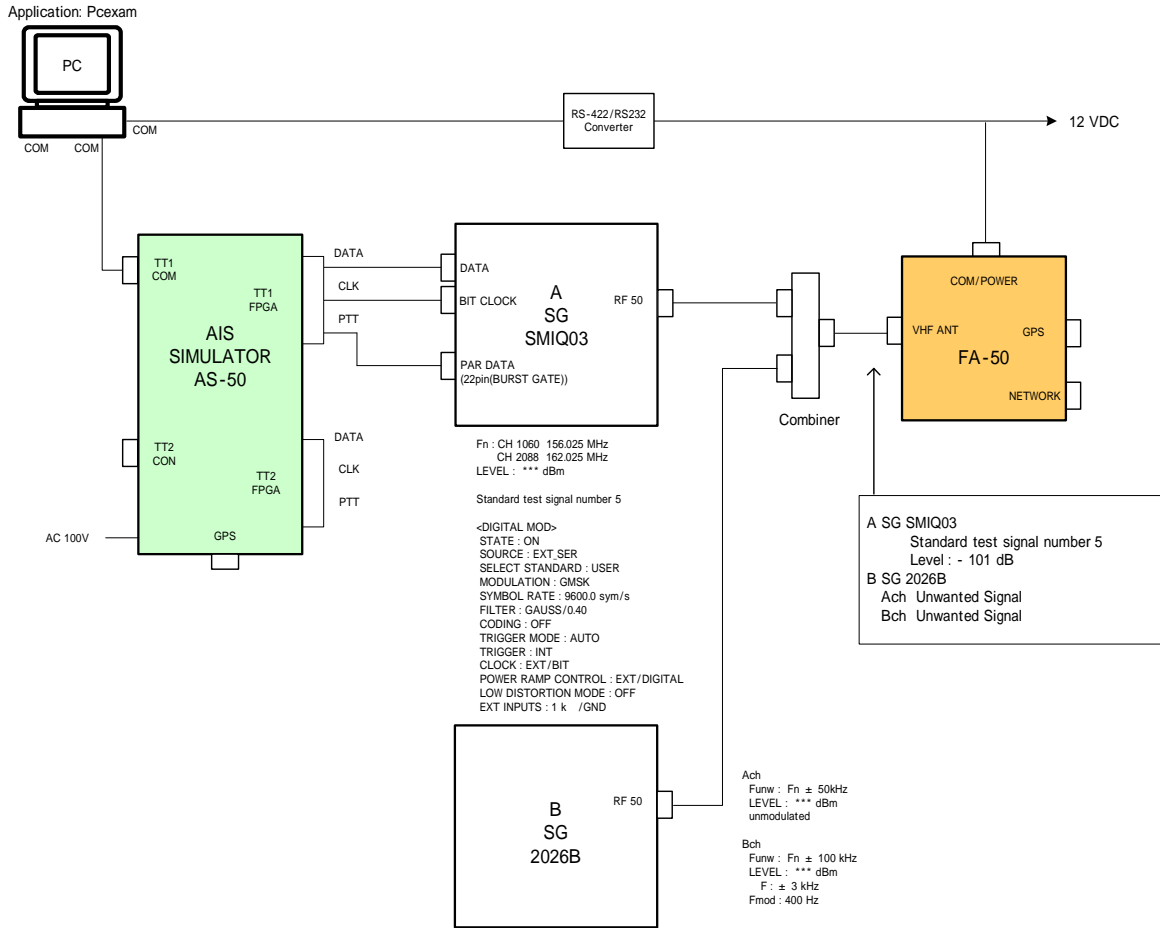
< TX DATA >  
 Standard test signal number 5

	Ramp Up	Training	Start	Data	CRC	END
Packet 1	10	22 (010101 )	8	168 (Pseudo Random)	16	8
Packet 2	10	22 (101010 )	8	168 (Pseudo Random)	16	8



Measuring equipment used: 02, 04, 9, 11, 12

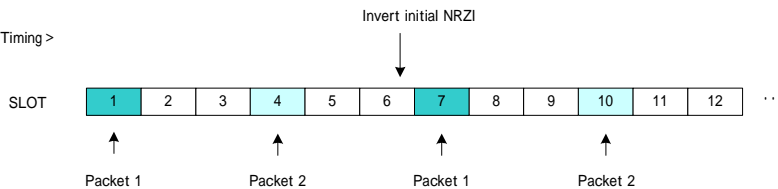
## 1.1.2.6 11.2 .6 Intermodulation response rejection



< TX DATA >  
 Standard test signal number 5

	Ramp Up	Traning	Start	Data	CRC	END
Packet 1	10	22 (010101 )	8	168 (Pseudo Random)	16	8
Packet 2	10	22 (101010 )	8	168 (Pseudo Random)	16	8

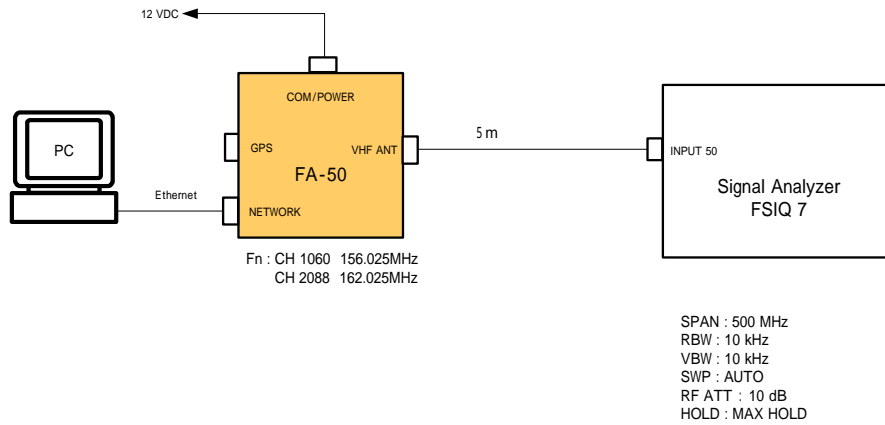
< TX Timing >



Measuring equipment used: 02, 05, 9, 11, 12

## 1.1.3 11.3 Conducted spurious emissions

### 1.1.3.1 11.3.1 Spurious emissions from the receiver

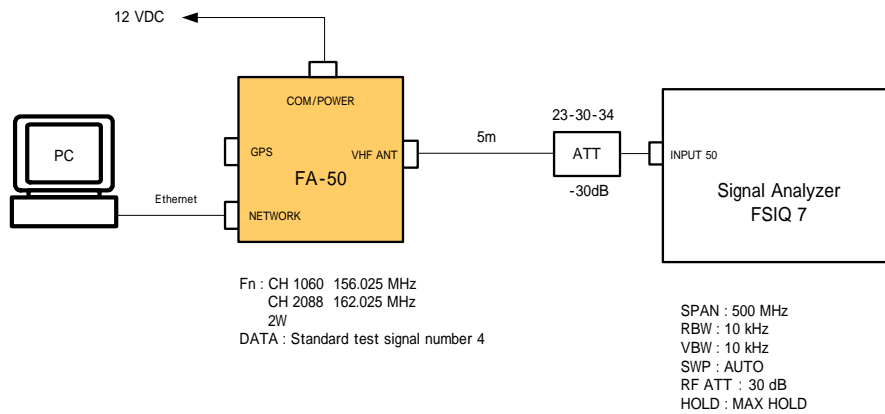


Cable Length = 5 m

CORRECTION VALUE	
Frequency (MHz)	Loss (dB)
50	0.45
100	0.67
200	1.01
500	1.54
1000	2.25
1500	2.84
2000	3.30
2500	3.85
3000	4.33
3500	4.81
4000	5.19

Measuring equipment used: 01, 12

## 1.1.3.2 11.3.2 Spurious emissions from the transmitter



Cable Length = 5 m

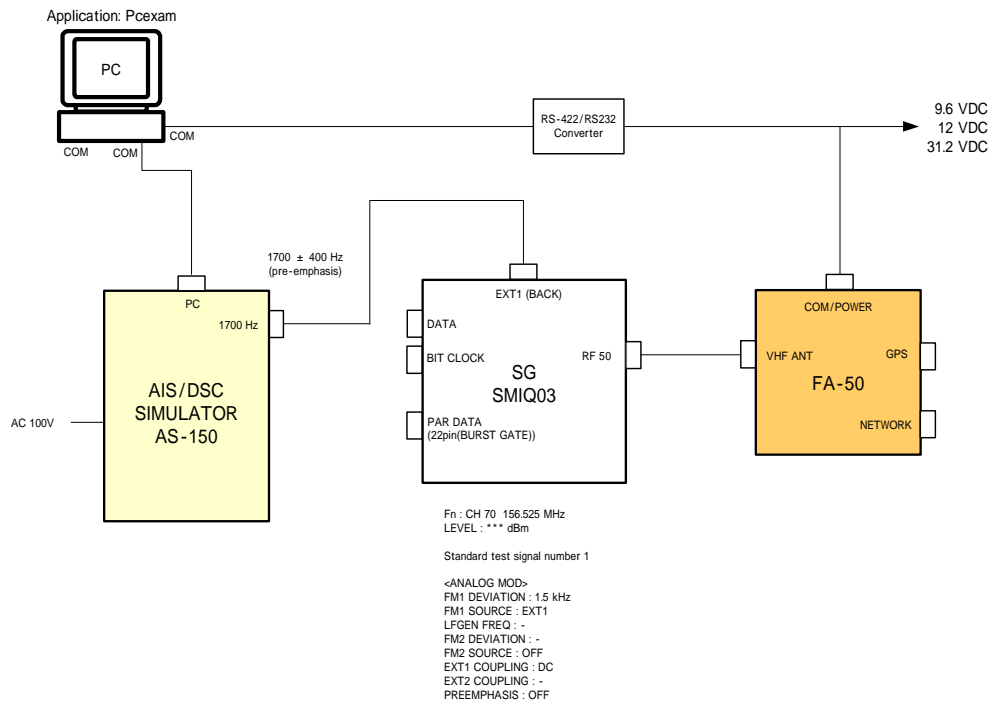
CORRECTION VALUE	
Frequency (MHz)	Loss (dB)
50	0.45
100	0.67
200	1.01
500	1.54
1000	2.25
1500	2.84
2000	3.30
2500	3.85
3000	4.33
3500	4.81
4000	5.19

Measuring equipment used: 01, 07, 12

## 1.2 C.4 DSC receiver tests

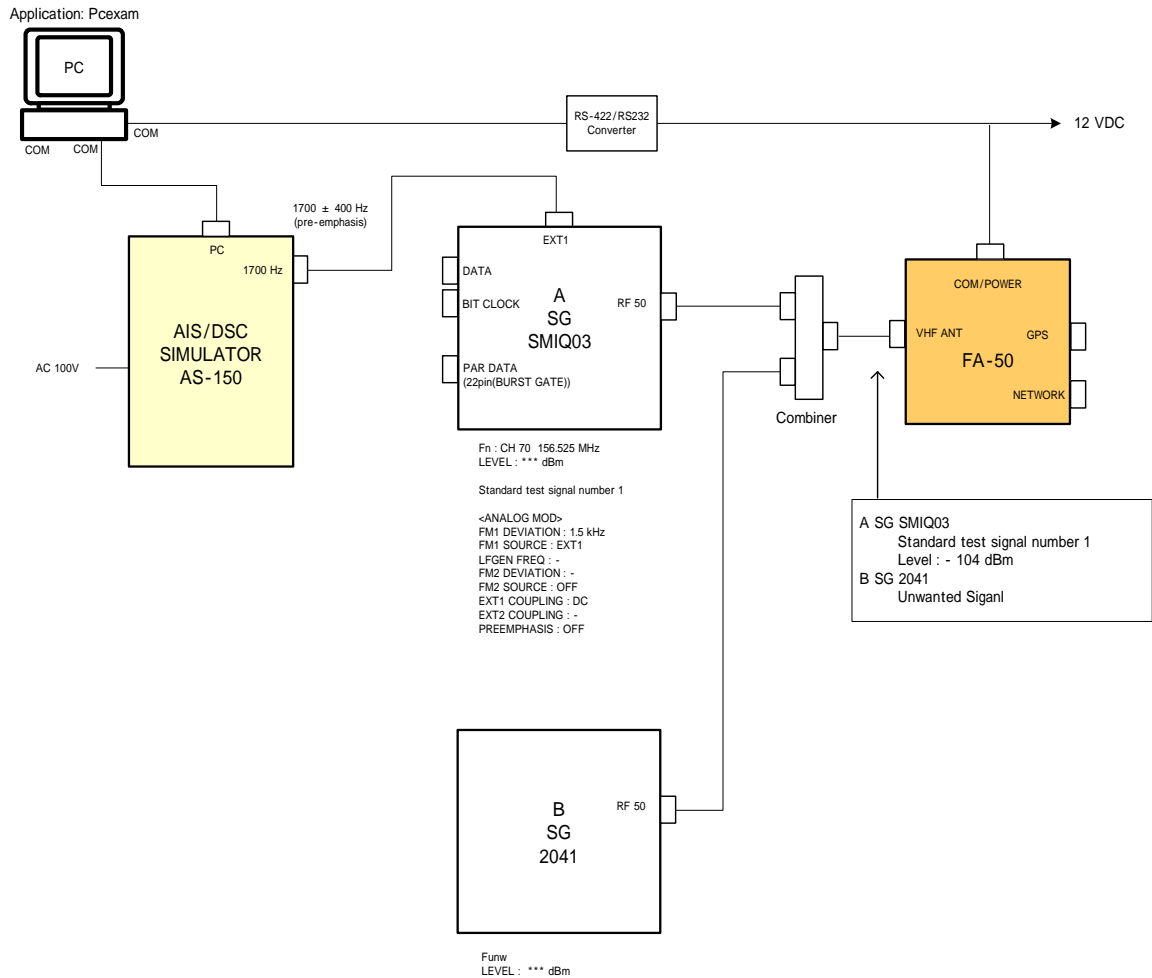
### 1.2.1 C.4.1 Maximum sensitivity

### 1.2.2 C.4.2 Error behavior at high input levels



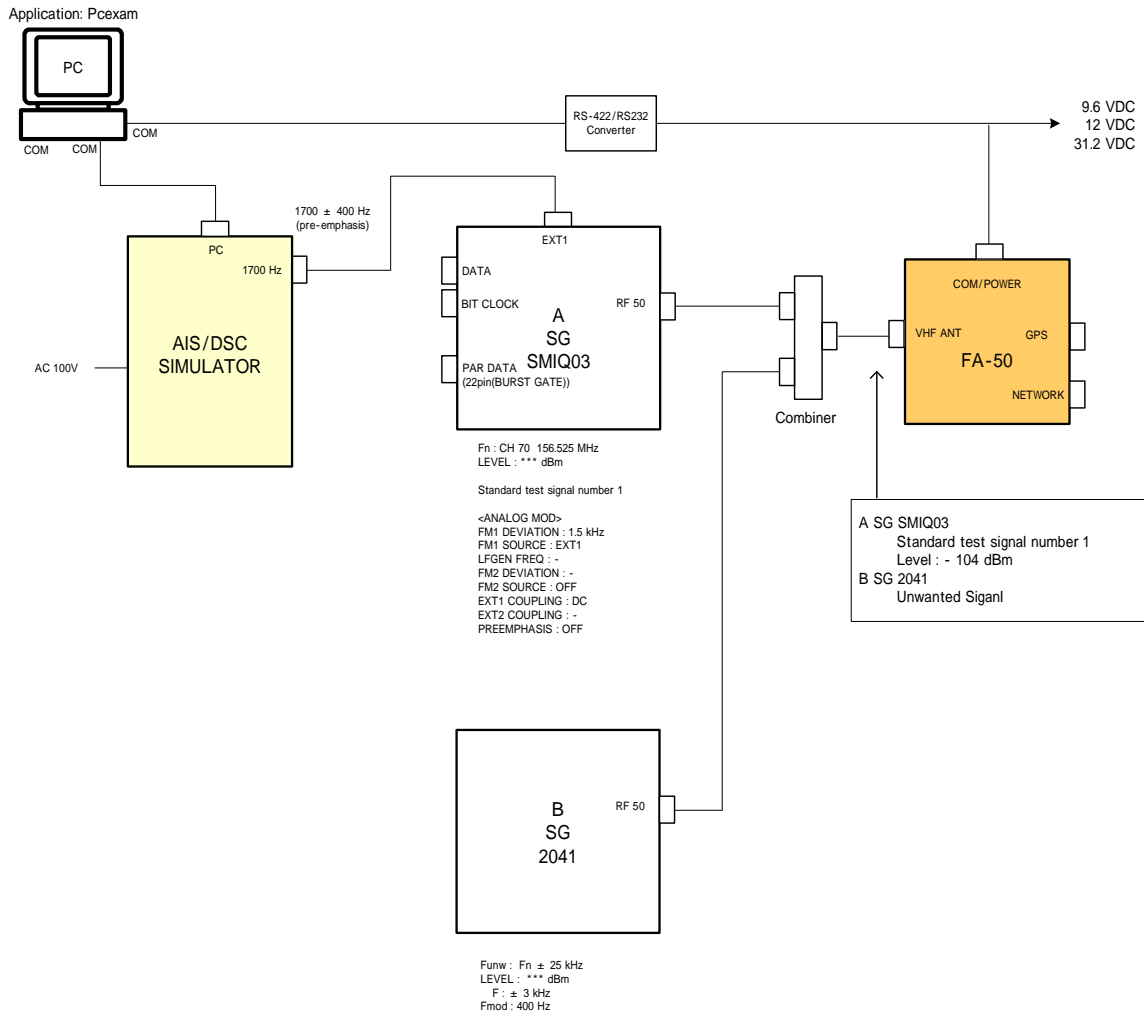
Measuring equipment used: 02, 10, 12

**1.2.3 C.4.3 Co-channel rejection**  
**1.2.5 C.4.5 Spurious response rejection**  
**1.2.7 C.4.7 Blocking or desensitisation**



Measuring equipment used: 02, 04, 9, 10, 12

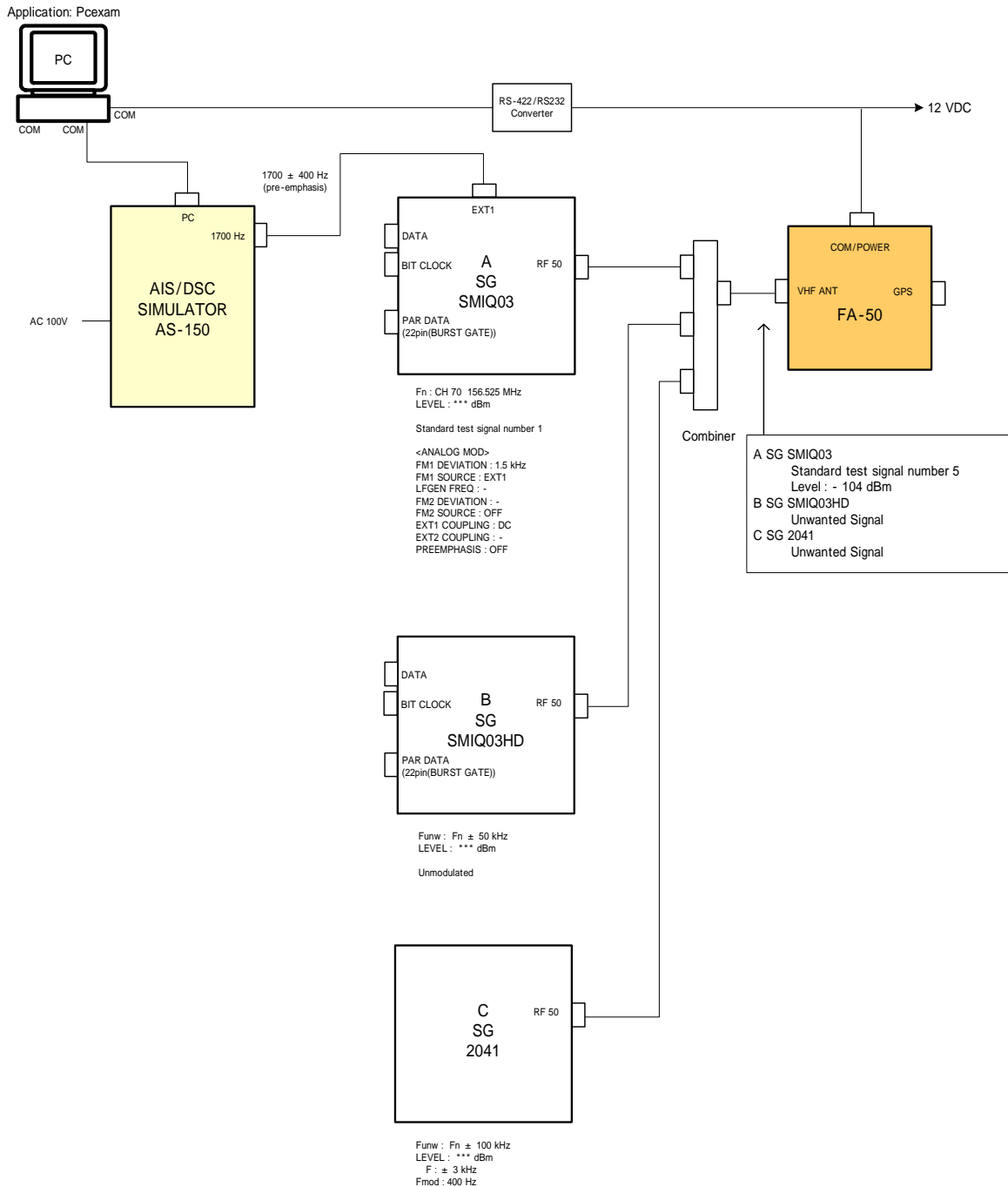
## 1.2.4 C.4.4 Adjacent channel selectivity



Measuring equipment used: 02, 04, 09, 10, 12



## 1.2.6 C.4.6 Intermodulation response rejection



Measuring equipment used: 02, 03, 04, 08, 10, 12