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July 17, 2015

Prüfbericht / *Test Report* Nr. / *No.* 5010259831-61030-2 (Edition 3)

Applicant:	Abitron Control Systems GmbH
Type of equipment:	Transceiver Module
Type designation:	CS429TR
Order No.:	81400010
Test standards:	FCC Code of Federal Regulations: CFR 47, Part 90, Section 90.217 (a), (b), (c)

Note:

The test data of this report is related only to the individual item which has been tested. This report shall not be reproduced except in full extent without the written approval of the testing laboratory.

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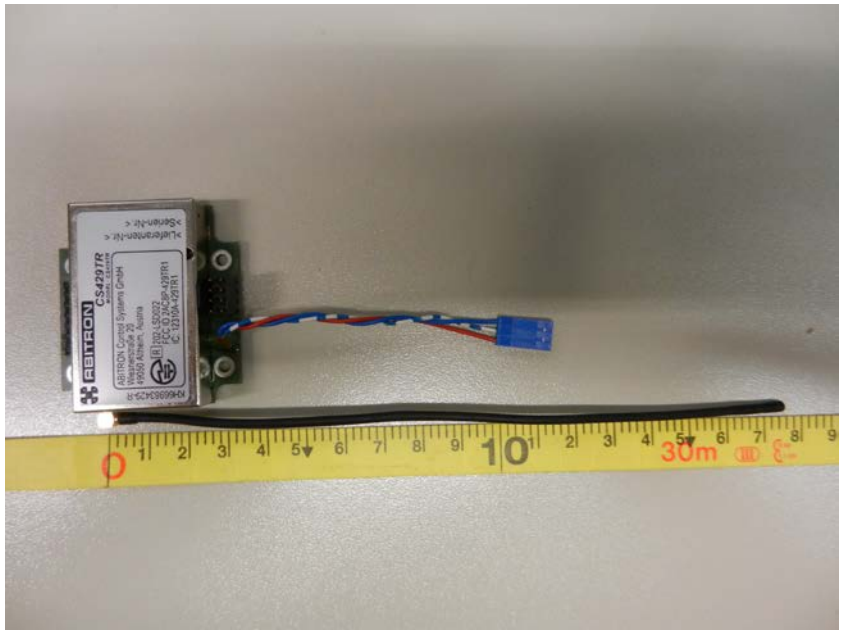
1 Description of the Equipment Under Test (EUT)

General data of EUT	
Type designation[1]:	CS429TR
Parts[2]:	
Serial number(s):	N/A
Manufacturer:	Abitron
Type of equipment:	Transceiver Module
Version:	
FCC ID:	2AC8P-429TR1
Additional parts/accessories:	
Device Under Test	

[1] Type designation of the system if EUT consists of more than one part.
[2] Type designations of the parts of the system, if applicable.

Technical data of EUT	
Description:	The UHF FM narrow band semi-duplex radio data module CS429TR is a high performance transceiver designed for use in industrial applications requiring long range, high performance and reliability. All high frequency circuits are enclosed inside a robust housing to provide superior resistance against shock and vibration. A narrow band technique enables high interference rejection and concurrent operation with multiple modules. The frequency settings are configurable by the DIP switch to select the frequency channel of the module.
Application frequency range:	N/A
Frequency range:	429.2500 – 429.7375 MHz
Operating frequency:	429.250 MHz (channel tested)
Output power:	< 10 mW (conducted)
Type of modulation:	FSK
Number of RF-channels:	40 **Note:**Maximum number of channels available. Depending on the channel bandwidth used, not all 40 channels may be available.
Channel spacing:	---
Channel bandwidth:	6.25 kHz @ 4800 bps 12.5 kHz @ 9600 bps 25 kHz @ 19.200 bps
Designation of emissions[3]:	**4800 bps: 15K2F1D** **9600 bps: 16K5F1D** **19200 bps: 19K1F1D**
Type of antenna:	Wire antenna, gain = 2.15 dBi
Size/length of antenna:	185 mm
Connection of antenna:	☒ detachable ☐ not detachable
Type of power supply:	DC supply
Specifications for power supply:	nominal voltage: 5.0 V minimum voltage: 3.4 V maximum voltage: 12 V

[3] Also known as "Class of Emission".

2 Administrative Data

Application details	
Applicant (full address):	Abitron Control Systems GmbH Wiesnerstr. 20 A-4950 Altheim
Contact person:	Mr. Roland Schöppl
Order number:	81400010
Receipt of EUT:	2015-03-20
Date(s) of test:	2015-04-20, 2015-07-17
Note(s):	

Report details	
Report number:	5010259831-61030-2
Edition:	3
Issue date:	2015-07-17

3 Identification of the Test Laboratory

Details of the Test Laboratory	
Company name:	TÜV SÜD Product Service GmbH
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory accreditation:	DAkkS Registration No. D-PL-11321-11-01
FCC test site registration number	90926
Contact person:	Mr. Johann Roidt Phone: +49 9421 5522-0 Fax: +49 9421 5522-99

4 Summary

Summary of test results
The tested sample complies with the requirements set forth in the **Code of Federal Regulations** **CFR 47, Part 90, Section 90.217 (a), (b), (c)** of the Federal Communication Commission (FCC)

Personnel involved in this report	
Laboratory Manager:	 Mr. Johann Roidt
Responsible for testing:	 Mr. Markus Biberger
Responsible for test report:	Mr. Markus Biberger

5 Operation Mode and Configuration of EUT

Operation Mode(s)
The EUT was operated in transmitting mode on one RF channel.

Configuration(s) of EUT
The EUT was configured as stand alone device with a test board. The data input was a TTL signal with 19200 baud, 511 bit preudo-random bit pattern

List of ports and cables

Port	*Description*	*Classification*[4]	*Cable type*	*Cable length*
1	DC supply	dc power	Unshielded	1.5 m
2	Data Input (combined with DC)	signal/control port	Unshielded	1.5 m
3	General Data IO (IO1, IO2, IO3, TX/RX, Dec/Green LED, Tell-Off, DK-Sync, TT Out) [5]	signal/control port	Unshielded	N/A
4	Antenna port (50 Ω)	signal/control port	Shielded	185 mm

List of devices connected to EUT

Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	Antenna	---	---	Abitron

List of support devices

Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	HP 1645A	Data Error Analyzer	2407 A 04589	HP

[4] Ports shall be classified as ac power, dc power or signal/control port
[5] For further information about the data port, please refer to integration manual pages 3/14 and 4/14.

6 Test Results for Transmitter

FCC CFR 47 Part 90, Section 90.217			
Section(s)	*Test*	*Page*	*Result*
90.207	Designation of emission	10	Calculated
90.217 (a), (b), (c)	Conducted output power	11	Test passed
90.217 (a), (b), (c)	Spectrum mask	15	Test passed
90.217 (a), (b), (c)	Occupied bandwidth	21	Recorded
90.217 (a), (b), (c)	Conducted emission 25 MHz to 5 GHz	27	Test passed
90.217 (a), (b), (c)	Radiated emission 25 MHz to 5 GHz	32	Test passed
90.217 (a), (b), (c)	Carrier frequency stability	32	Test passed
2.1091	RF exposure requirement	45	Test passed

6.1 Designation of Emissions

Rules and specifications:	CFR 47 Part 2, sections 2.201 and 2.202
Guide:	ANSI C63.4 :2009

Type of modulation:	Binary Frequency Shift Keying (FSK)

B_n = Necessary Bandwidth	B_n = 3.86D + 0.27B (for 0.03 < 2D/R < 1.0)
D = Peak deviation	D = 3.6 kHz
B = Modulation rate	**B = 4800 bps**
Calculation:	**B_n = 3.86 · (3.6 kHz) + 0.27 · (4.8 kbps) = 15.19 kHz**

B_n = Necessary Bandwidth	B_n = 3.86D + 0.27B (for 0.03 < 2D/R < 1.0)
D = Peak deviation	D = 3.6 kHz
B = Modulation rate	**B = 9600 bps**
Calculation:	**B_n = 3.86 · (3.6 kHz) + 0.27 · (9.6 kbps) = 16.49 kHz**

B_n = Necessary Bandwidth	B_n = 3.86D + 0.27B (for 0.03 < 2D/R < 1.0)
D = Peak deviation	D = 3.6 kHz
B = Modulation rate	**B = 19.2 kbps**
Calculation:	**B_n = 3.86 · (3.6 kHz) + 0.27 · (19.2 kbps) = 19.08 kHz**

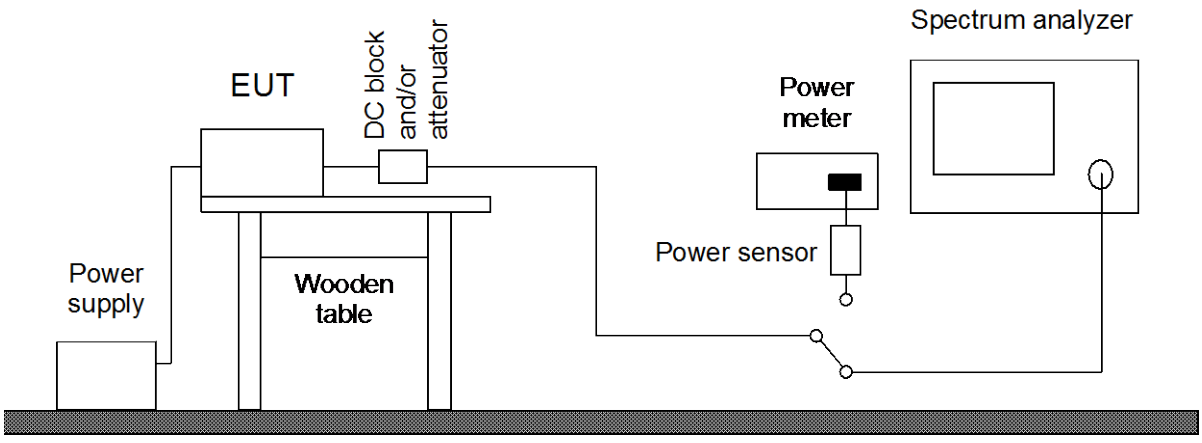
Designation of Emissions:	**4800 bps: 15K2F1D** **9600 bps: 16K5F1D** **19200 bps: 19K1F1D**

6.2 Conducted Output Power

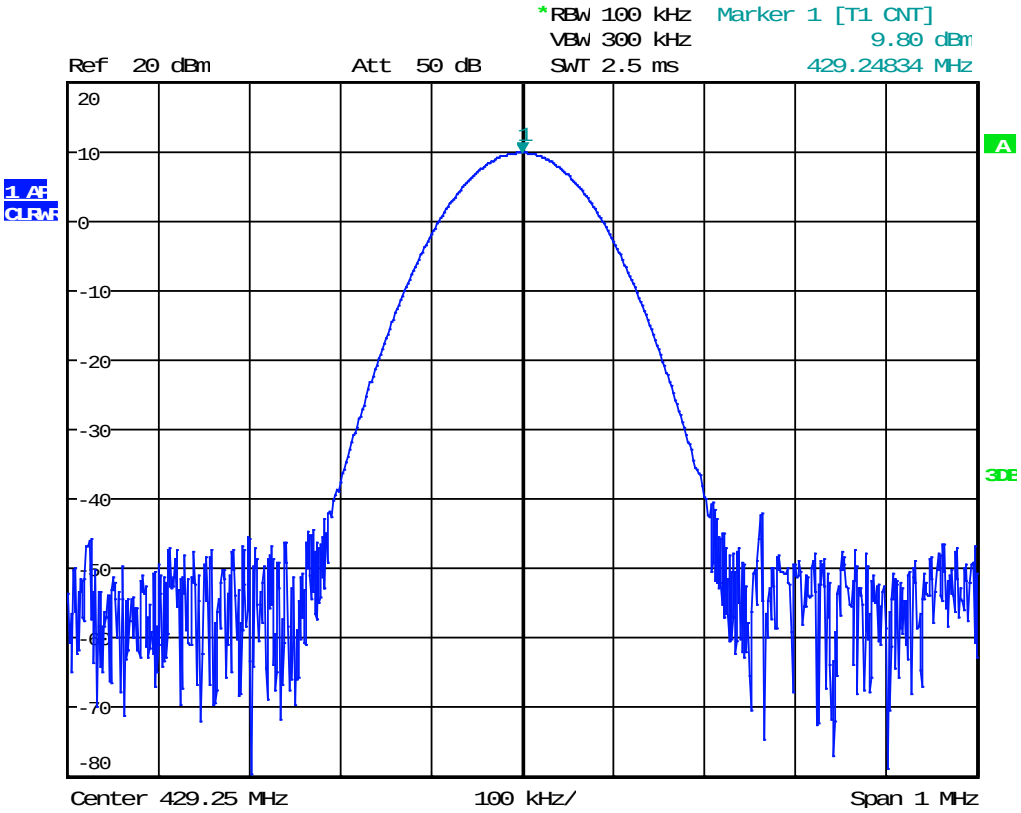
Rules and specifications:	CFR 47 Part 90, section 90.217, (a), (b), (c)
Description:	Except as noted herein, transmitters used as stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz wich have an output power not exceeding 120 mW (20.79 dBm) are excempt from the technical requirements set out in subpart, but must instead comply with the following. Conducted output power shall be measured at the RF output terminals (e.g. antenna connector if antenna is detachable) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

6.2.1 Measurement Procedure

Guide:	CFR 47 Part 2, section 2.1046 (a)
Conducted output power is measured at the RF output terminals (e.g. antenna connector if antenna is detachable) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer and/or a power meter with appropriate sensor. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable. If a spectrum analyzer is used and no other settings are specified resolution bandwidth shall be selected according to the carrier frequency f_c and set to 10 kHz (150 kHz $\leq f_c <$ 30 MHz), 100 kHz (30 MHz $\leq f_c <$ 1 GHz) or 1 MHz ($f_c \geq$ 1 GHz). The video bandwidth shall be at least three times greater than the resolution bandwidth. The settings used have to be indicated within the appropriate test record(s).	



6.2.2 Measurement Results – Conducted Output Power



Conducted Measurement							
Mode	Frequency (MHz)	Power Type	Reading (dBm)	Correction (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
TX	429,3	Peak	9,8	0,0	9,8	20,8	**11,0**

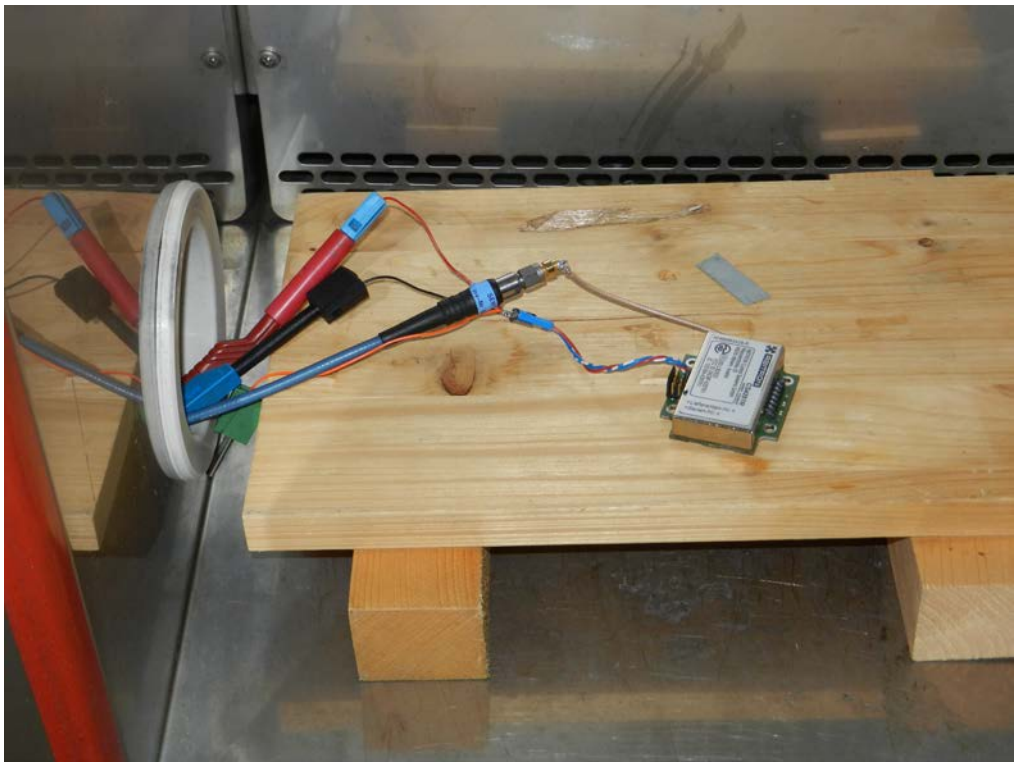
Comment:	Test condition: unmodulated carrier - CW A spectrum analyzer with peak detector has been used for this test.
Date of test:	2015-04-20
Test site:	Unshielded room

Test Result:	Test passed

6.2.3 Test Instrument used

	Type	*Designation*	*Inv.-no.*	*Serial No. or ID*	*Manufacturer*
☒	Spectrum analyzer	FSP30	1666	100063	Rohde & Schwarz
☐	EMI test receiver	ESPI7	1711	836914/0002	Rohde & Schwarz
☐	EMI test receiver	ESMI	1569	839379/013 839587/006	Rohde & Schwarz
☐	Power meter	NRVS	1264	836856/015	Rohde & Schwarz
☐	Peak power sensor	NRV-Z31	1701	8579604.03	Rohde & Schwarz
☐	Power sensor	NRV-Z52	1499	837901/030	Rohde & Schwarz
☐	Power sensor	NRV-Z4	1034	863828/015	Rohde & Schwarz
☒	RF cable	ST 18/SMAm/SMAm/48	1949	84003373	Huber + Suhner
☐	DC-block	7006	1636	A2798	Weinschel
☐	Attenuator	4776-10	1638	9412	Narda
☐	Attenuator	4776-20	1639	9503	Narda

6.2.4 Test Setup Photographs



6.3 Spectrum Mask

Rules and specifications:	CFR 47 Part 90, section 90.217(a), (b), (c)
Description:	Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following: (a) For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (b) For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shallbe adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (c) For equipment designed to operate with a 6.25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 12.5 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

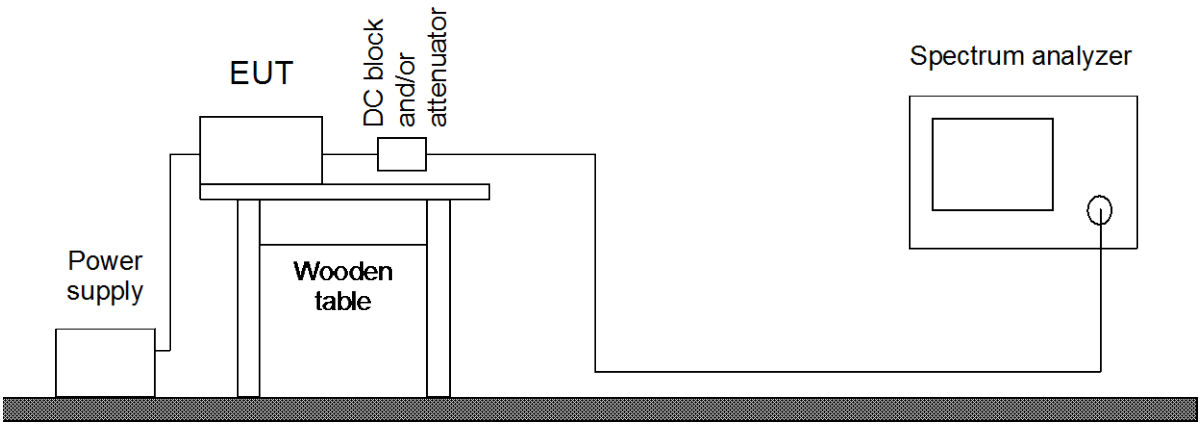
6.3.1 Measurement Procedure

Guide:	CFR 47 Part 2, section 2.1049	
Measurement setup:	☒ Conducted:	See below
	☐ Radiated:	

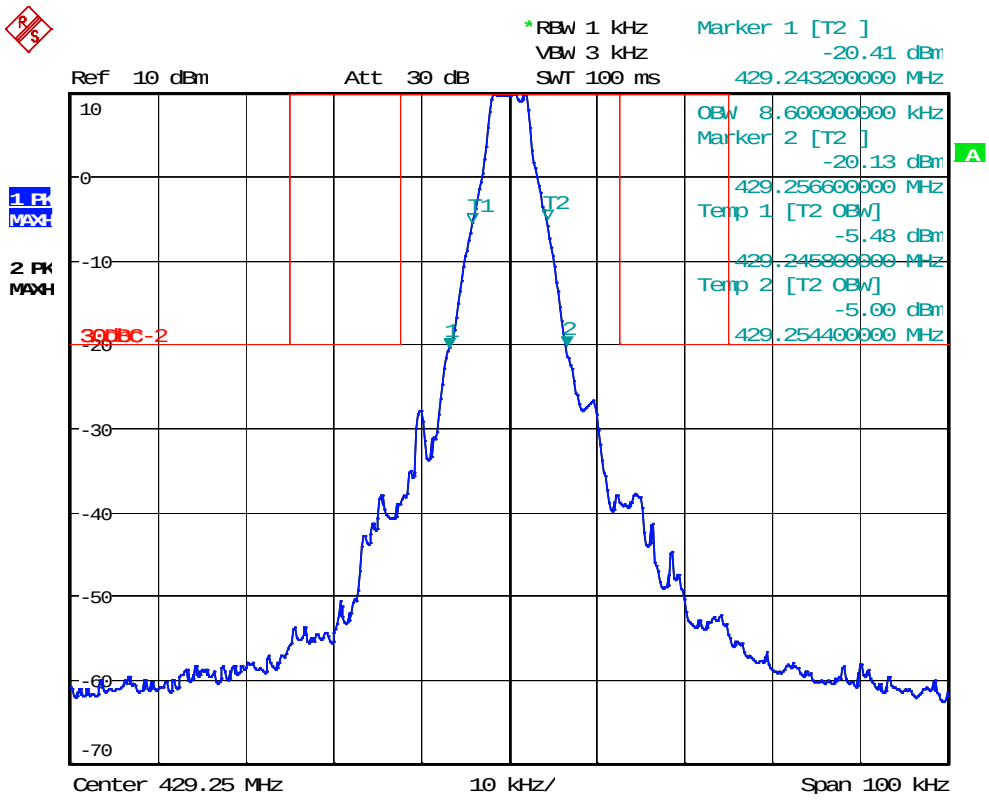
If antenna is detachable bandwidth measurements shall be performed at the antenna connector (conducted measurement) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.

If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.

The analyzer settings are specified by the test description of the appropriate test record(s).


EUT
DC block
and/or
attenuator
Spectrum analyzer
Power
supply
Wooden
table

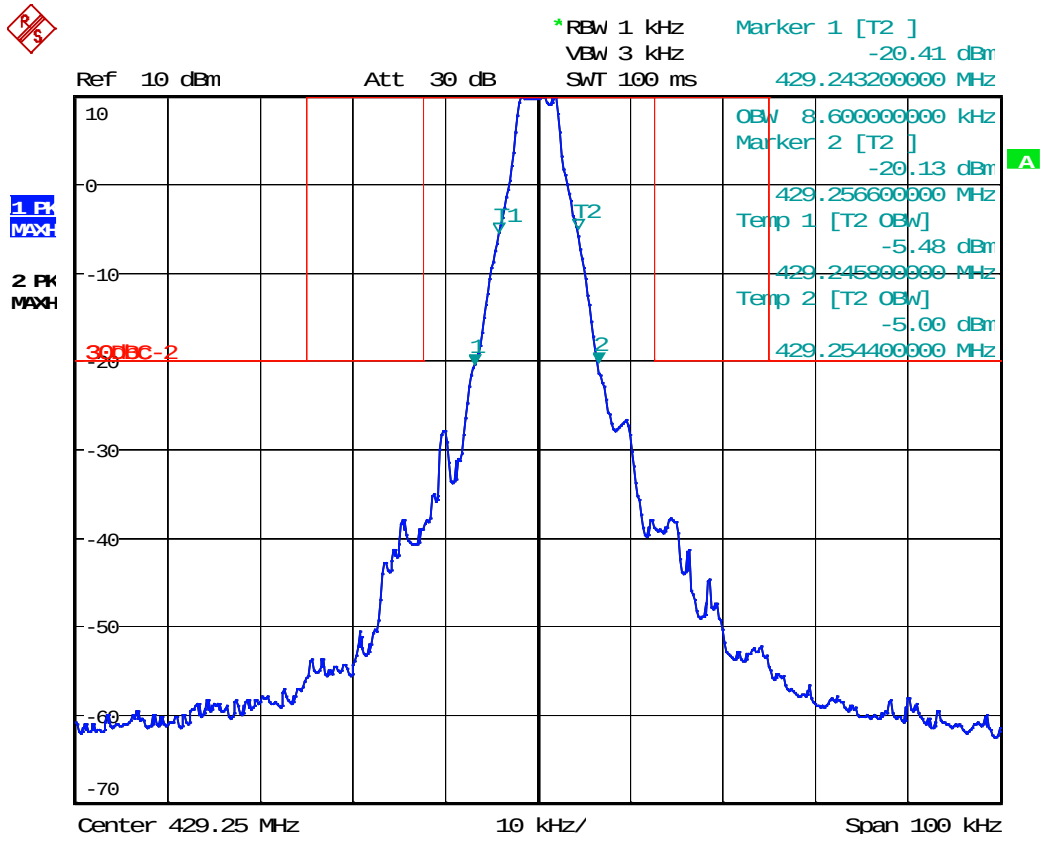
6.3.2 Measurement Results – 6.25 kHz channel bandwidth



Comment:	Modulated with 4800 bps, 511 bit pseudo-random pattern (representing worst case)
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

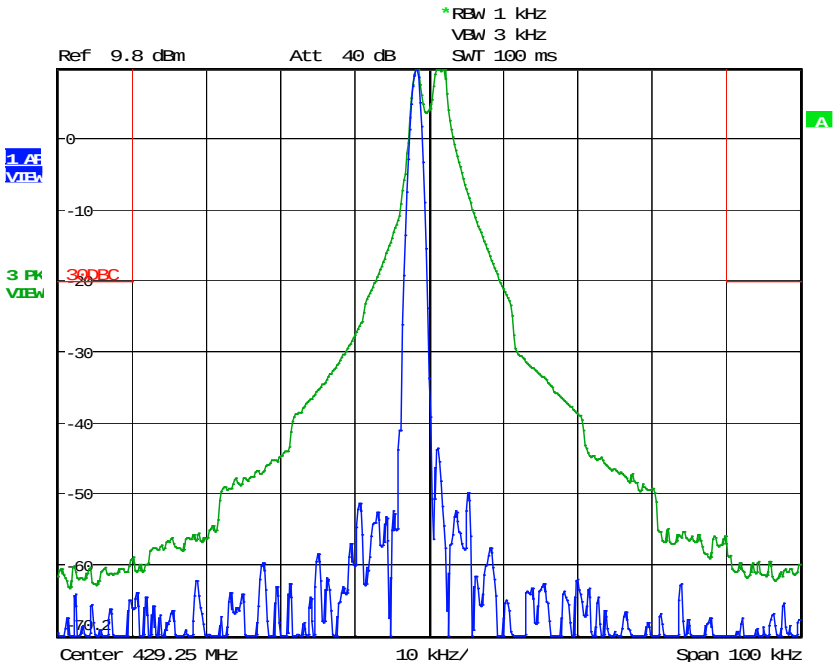
6.3.3 Measurement Results – 12.5 kHz channel bandwidth



Comment:	Modulated with 9600 bps, 511 bit pseudo-random pattern (representing worst case)
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

6.3.4 Measurement Results - 25 kHz channel bandwidth



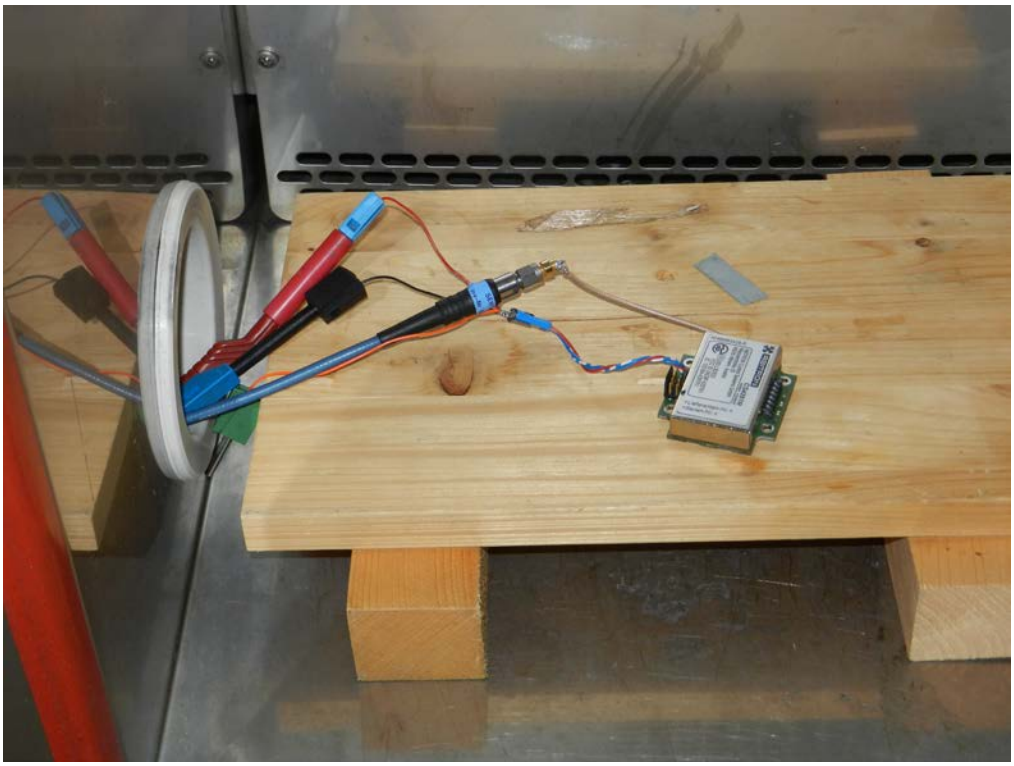
Comment:	Blue trace: unmodulated signal, Green trace: modulated with 19.200 bps, 511 bit pseudo-random pattern (representing worst case)
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

6.3.5 Test Instruments used

	Type	Designation	Inv.-no.	Serial No. or ID	Manufacturer
☒	Spectrum analyzer	FSP30	1666	100036	Rohde & Schwarz
☐	EMI test receiver	ESPI7	1711	836914/0002	Rohde & Schwarz
☐	EMI test receiver	ESMI	1569	839379/013 839587/006	Rohde & Schwarz
☐	Power meter	NRVS	1264	836856/015	Rohde & Schwarz
☐	Peak power sensor	NRV-Z31	1701	8579604.03	Rohde & Schwarz
☐	Power sensor	NRV-Z52	1499	837901/030	Rohde & Schwarz
☐	Power sensor	NRV-Z4	1034	863828/015	Rohde & Schwarz
☒	RF cable	ST 18/SMAm/SMAm/48	1949	84003373	Huber + Suhner
☐	DC-block	7006	1636	A2798	Weinschel
☐	Attenuator	4776-10	1638	9412	Narda
☐	Attenuator	4776-20	1639	9503	Narda

6.3.6 Test Setup Photographs



6.4 Occupied Bandwidth

Rules and specifications:	CFR 47 part 90, section 90.217(a), (b), (c)
Description:	Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following: (a) For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (b) For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shallbe adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (c) For equipment designed to operate with a 6.25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 12.5 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

6.4.1 Measurement Procedure

Guide:	CFR 47 Part 2, section 2.1049, CFR 47 Part 2, section 2.202(a)
Measurement setup:	☒ Conducted: See below ☐ Radiated:

Occupied bandwidth. The frequency bandwidth such that, below ist lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.
In some cases, for example multichannel frequency-division systems, the percentage of 0.5 percent may lead to certain difficulties in the practical application of the definitions of occupied and necessary bandwidth; in such cases a different percentage may prove useful.

If antenna is detachable bandwidth measurements shall be performed at the antenna connector (conducted measurement) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.

If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.

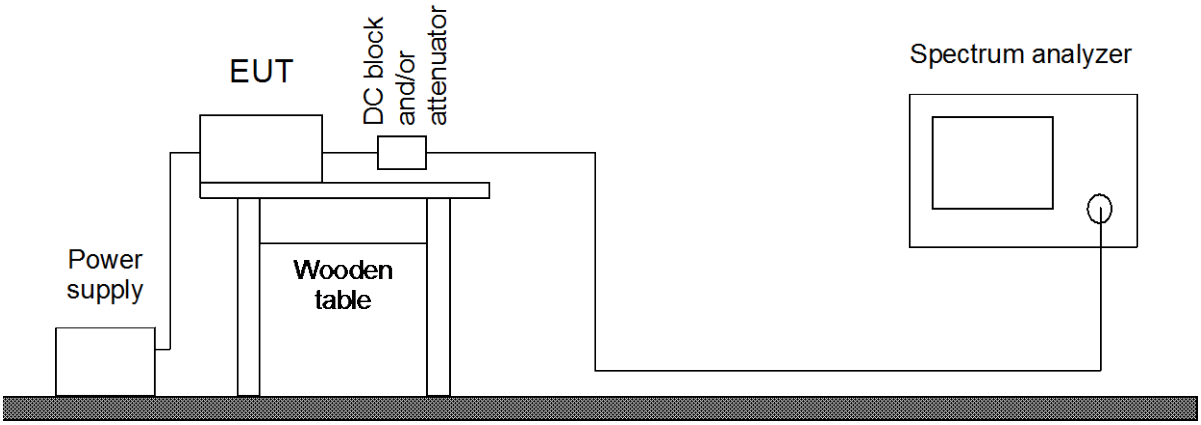
The occupied bandwidth according to ANSI C63.4, annex H.6; is measured as the frequency range defined by the points that are 26 dB down relative to the maximum level of the modulated carrier.

The resolution bandwidth of the spectrum analyzer shall be set to a value greater than 5.0% of the allowed bandwidth. If no bandwidth specifications are given, the following guidelines are used:

Fundamental frequency	Minimum resolution bandwidth
9 kHz to 30 MHz	1 kHz
30 MHz to 1000 MHz	10 kHz
1000 MHz to 40 GHz	100 kHz

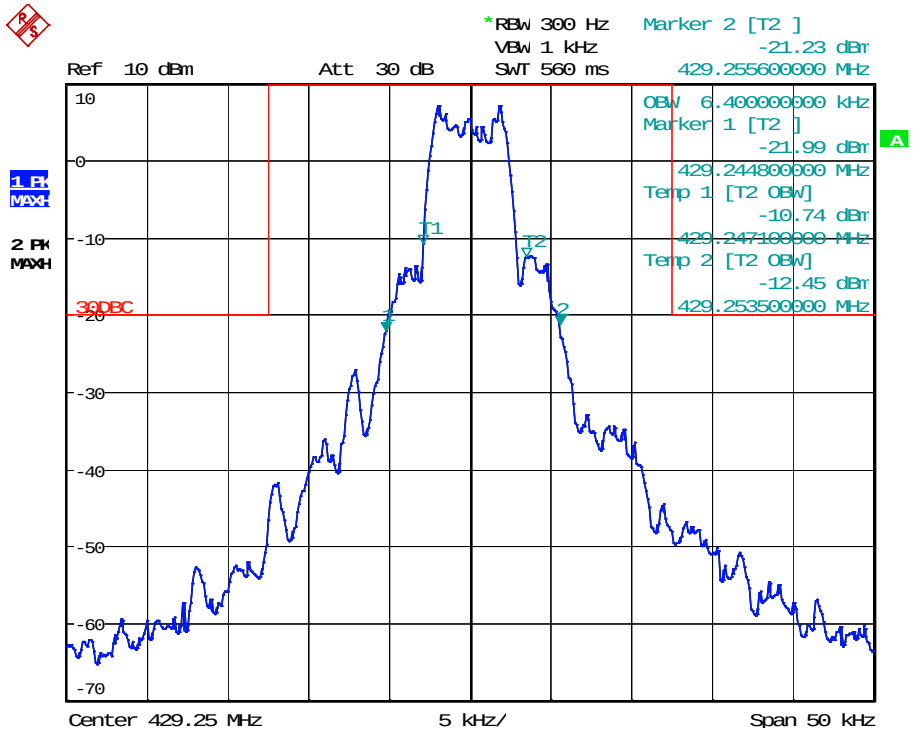
The video bandwidth shall be at least three times greater than the resolution bandwidth.

The occupied bandwidth according to ANSI C63.4, annex H.6; is measured as the frequency range defined by the points that are 26 dB down relative to the maximum level of the modulated carrier.



6.4.2 Measurement Results

6.25 kHz Channel Bandwidth : Occupied Bandwidth (99 %):

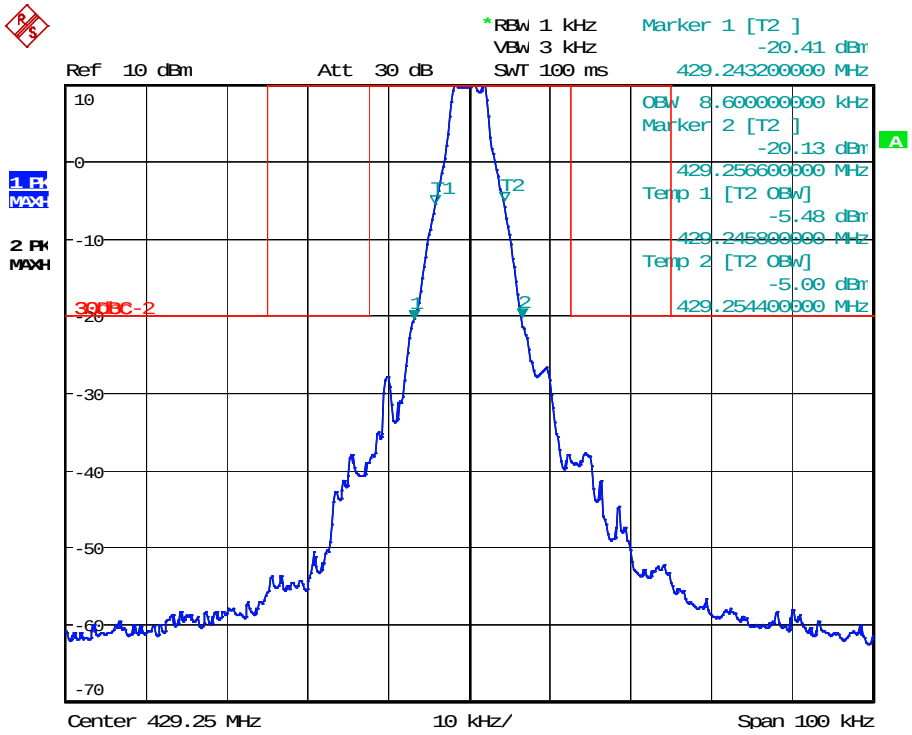


Occupied Bandwidth (99 %):	**6.40 kHz**

Comment:	Modulated with 4800 bps, 511 bit pseudo-random pattern, representing worst case
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

12.5 kHz Channel Bandwidth : Occupied Bandwidth (99 %):



Occupied Bandwidth (99 %):	**8.60 kHz**

Comment:	Modulated with 9600 bps, 511 bit pseudo-random pattern, representing worst case
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

TÜV SÜD Product Service GmbH
Äußere Frühlingstraße 45
94315 Straubing
Germany

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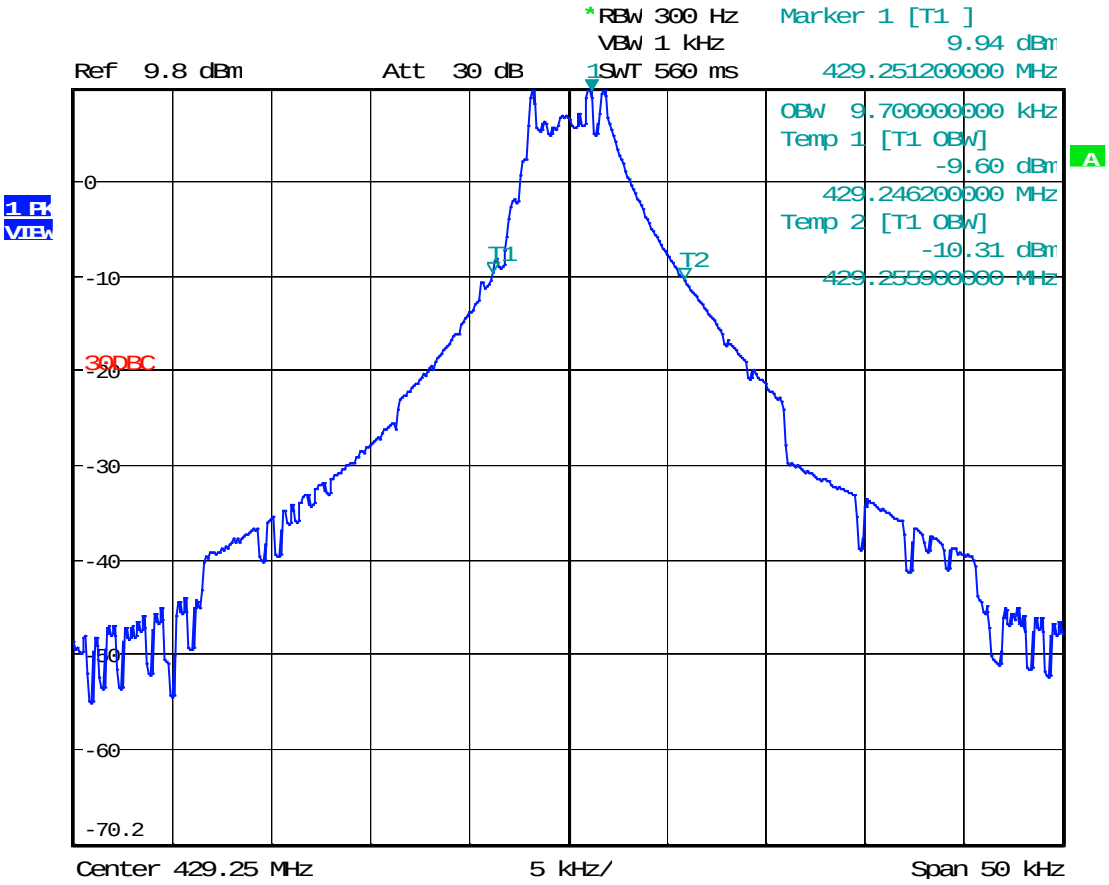
Fax: +49 9421 5522-99
Web: www.tuev-sued.de

Product Service

25 kHz Channel Bandwidth : Occupied Bandwidth (99 %):



Occupied Bandwidth (99 %):	**9.70 kHz**

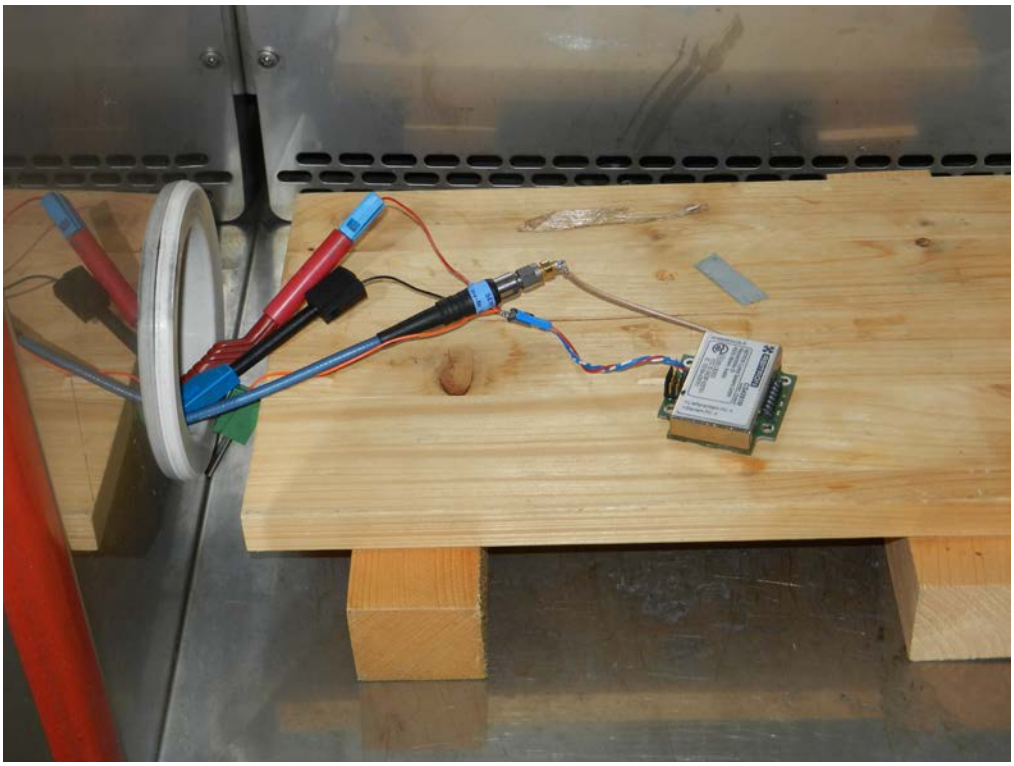
Comment:	trace modulated with 19200 bps, 511 bit pseudo-random pattern, representing worst case
Date of test:	2015-07-17
Test site:	Radio Lab / Fully anechoic room, cabin no. 2

Test Result:	Test passed

6.4.3 Test Instruments used

	Type	*Designation*	*Inv.-no.*	*Serial No. or ID*	*Manufacturer*
☒	Spectrum analyzer	FSP30	1666	100036	Rohde & Schwarz
☐	EMI test receiver	ESPI7	1711	836914/0002	Rohde & Schwarz
☐	EMI test receiver	ESMI	1569	839379/013 839587/006	Rohde & Schwarz
☐	Power meter	NRVS	1264	836856/015	Rohde & Schwarz
☐	Peak power sensor	NRV-Z31	1701	8579604.03	Rohde & Schwarz
☐	Power sensor	NRV-Z52	1499	837901/030	Rohde & Schwarz
☐	Power sensor	NRV-Z4	1034	863828/015	Rohde & Schwarz
☒	RF cable	ST 18/SMAm/SMAm/48	1949	84003373	Huber + Suhner
☐	DC-block	7006	1636	A2798	Weinschel
☐	Attenuator	4776-10	1638	9412	Narda
☐	Attenuator	4776-20	1639	9503	Narda

6.4.4 Test Setup Photographs



6.5 Conducted Emission Measurement 0.009 MHz to 5 GHz

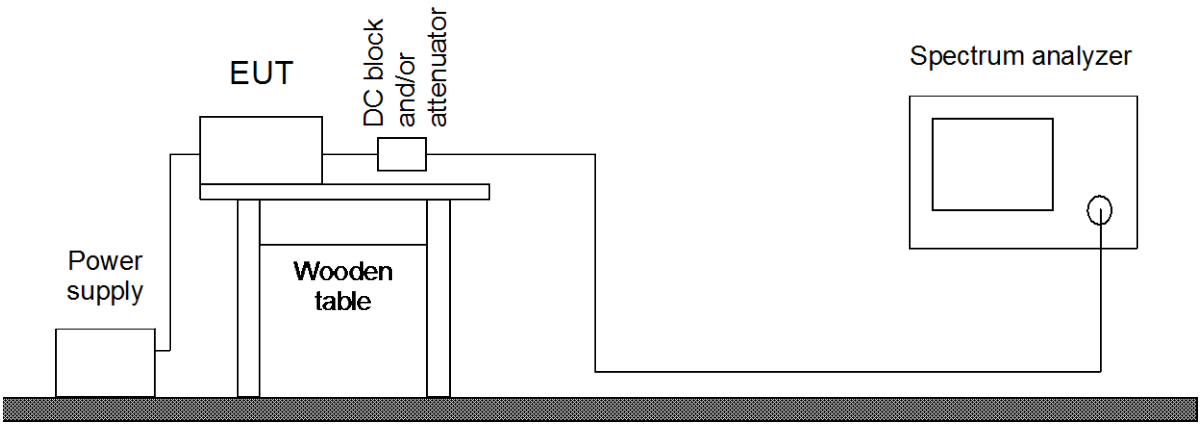
Rules and specifications:	CFR 47, Part 90, section 90.217 (a), (b), (c)
	Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following: (a) For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (b) For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shallbe adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (c) For equipment designed to operate with a 6.25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 12.5 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

6.5.1 Measurement Procedure

Measurement setup:	☒	Conducted:	See below
	☐	Radiated:	
Guide:	CFR 47, Part 2, Section 2.1051 (a)		

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in § 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

The analyzer settings are specified by the test description of the appropriate test record(s).


EUT
DC block
and/or
attenuator
Spectrum analyzer
Power
supply
Wooden
table

6.5.2 Measurement Results

Mode	Frequency (MHz)	Reading (dBm)	Correction (dBm)	Result (dBm)	Limit (dBm)	Margin	Remark
TX	429.25	9.8	0	9.8	10.0	0.2	Fundamental
	0.009 - 5000	(1)			-30 dBc	(1)	(2)

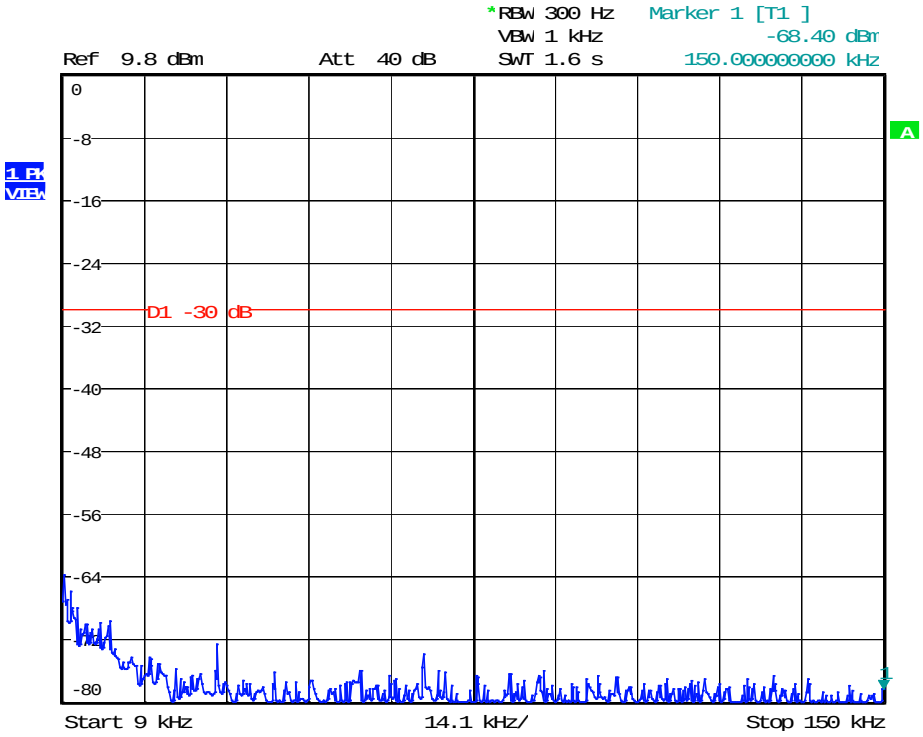
(1) No emissions above noise floor detected
(2) See test charts overleaf

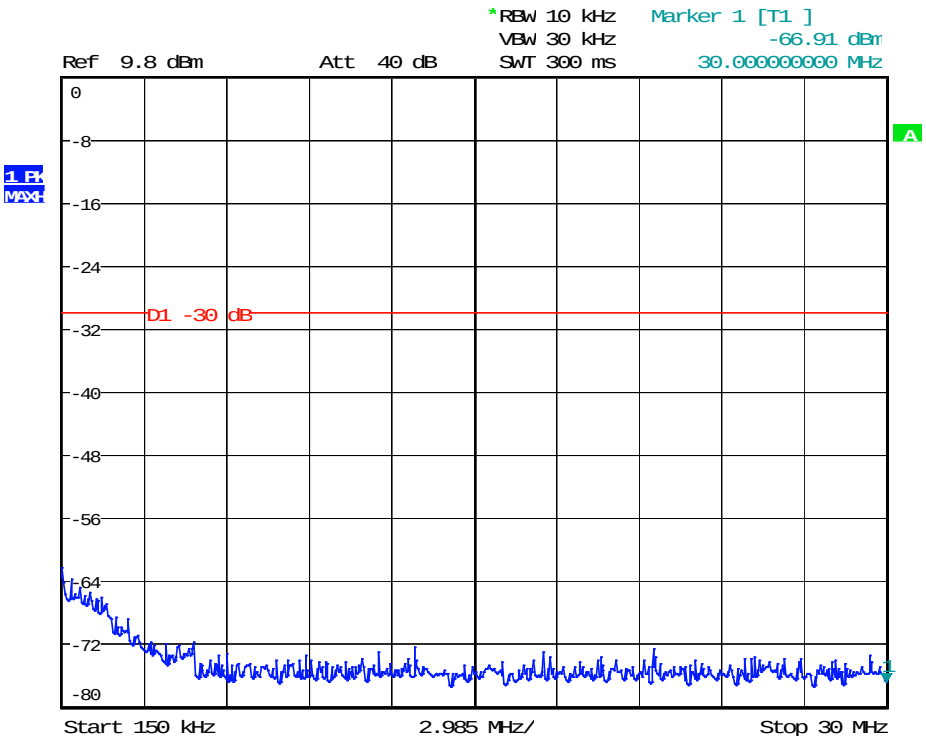
Comment:	Unmodulated carrier (CW)
Date of test:	2015-07-17
Test site:	Radio Lab / / Fully anechoic room, cabin no. 2

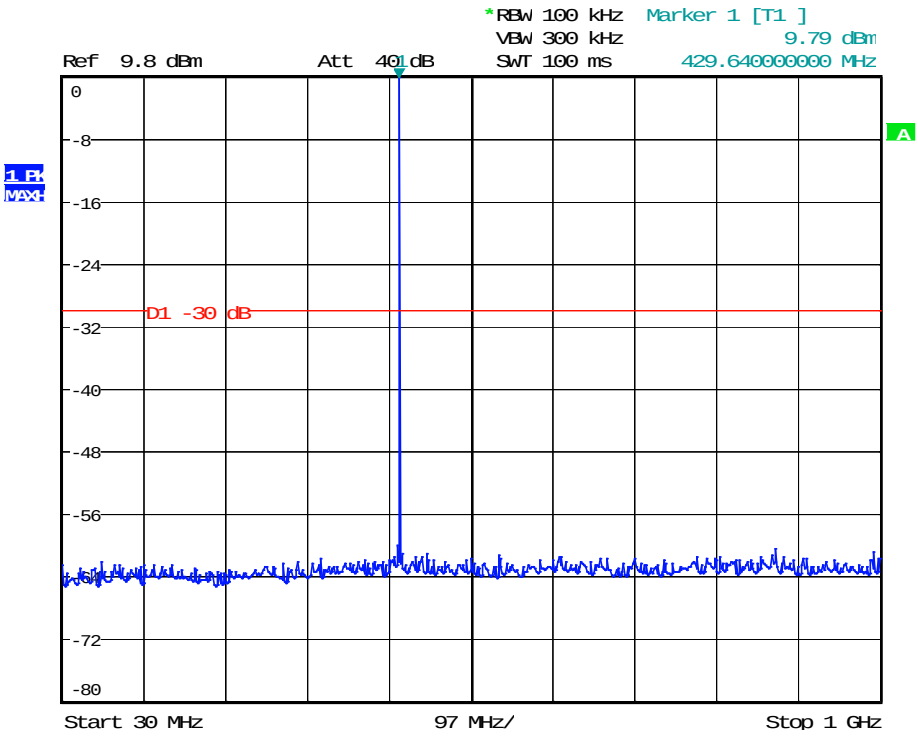
Test Result:	Test passed

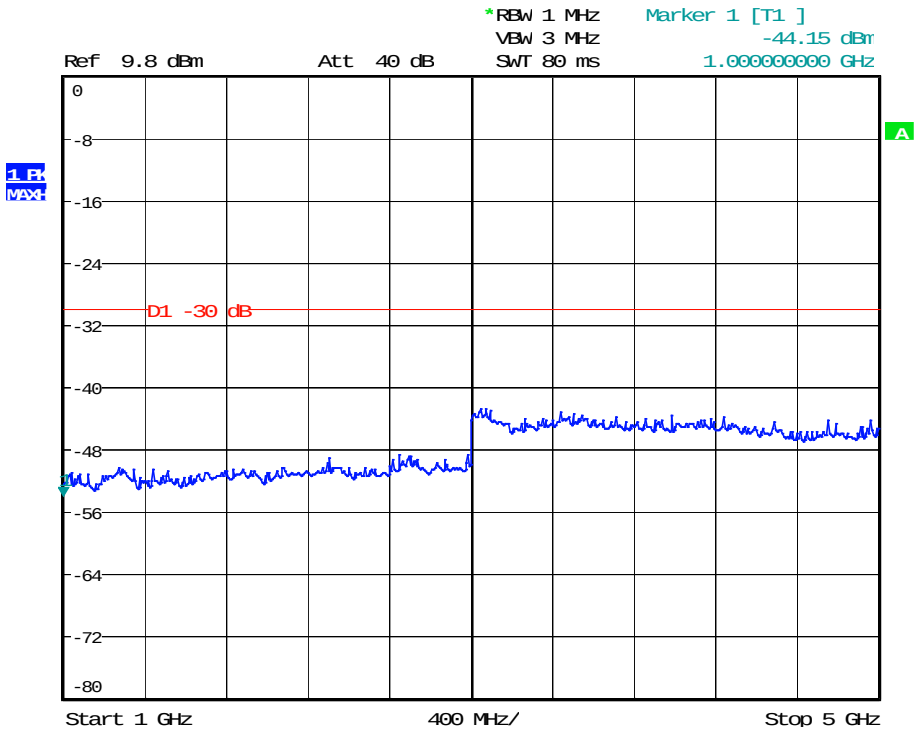
TÜV SÜD Product Service GmbH
Äußere Frühlingstraße 45
94315 Straubing
Germany

Phone: +49 9421 5522-0
Fax: +49 9421 5522-99
Web: www.tuev-sued.de






*RBW 100 kHz
VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
9.79 dBm
429.640000000 MHz
Ref 9.8 dBm
Att 40 dB
D1 -30 dB
Start 30 MHz
97 MHz/
Stop 1 GHz


*RBW 1 MHz
VBW 3 MHz
SWT 80 ms
Marker 1 [T1]
-44.15 dBm
1.000000000 GHz
Ref 9.8 dBm
Att 40 dB
D1 -30 dB
Start 1 GHz
400 MHz/
Stop 5 GHz

6.6 Unwanted Radiation 30 MHz to 5 GHz

Rules and specifications:	CFR 47, Part 90, section 90.217 (a), (b), (c)
Limit:	Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following: (a) For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (b) For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shallbe adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (c) For equipment designed to operate with a 6.25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 12.5 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

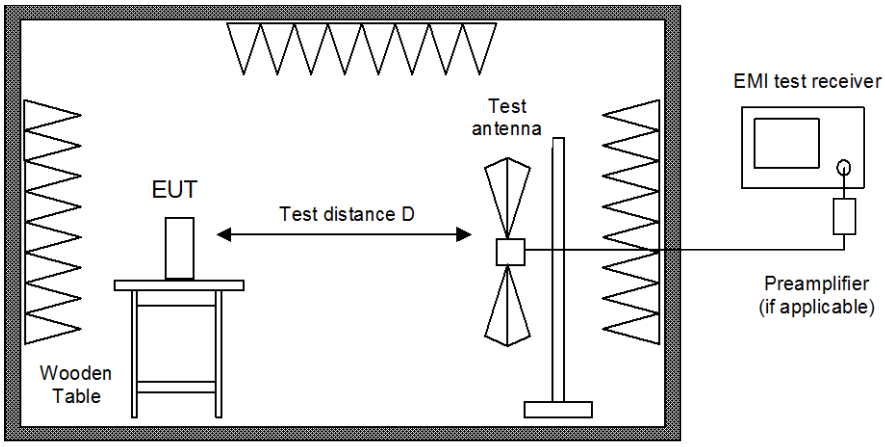
6.6.1 Measurement Procedure

Guide:	CFR 47 Part 2, section 2.1053, ANSI C63.4:2009, Section 13.4

Radiated emission in the frequency range 30 MHz to 1 GHz is measured within a semi-anechoic room with groundplane complying with the NSA requirements of ANSI C63.4 for alternative test sites. A linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna") is used. The measurement bandwidth of the test receiver is set to 120 kHz with quasi-peak detector selected.

Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in fully anechoic room.

If no prescan in a fully anechoic room is used first a peak scan is performed in four positions to get the whole spectrum of emission caused by EUT with the measuring antenna raised and lowered from 1 to 4 m to find table position, antenna height and antenna polarization for the maximum emission levels.
Data reduction is applied to these results to select those levels having less margin than 10 dB to or exceeding the limit using subranges and limited number of maximums. Further maximization is following.
With detector of the test receiver set to quasi-peak final measurements are performed immediately after frequency zoom (for drifting disturbances) and maximum adjustment.
Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.



Alternate test site (semi anechoic room)

6.6.2 Measurement Results

Mode	Frequency (MHz)	Reading (dBm)	Correction (dBm)	Result (dBm)	Limit (dBm)	Margin	Remark
TX	429.25	--23.50	31.20	7.70	10.0	3.30	Fundamental
	0.009 – 5000	(1)			-30 dBc	(1)	(2)

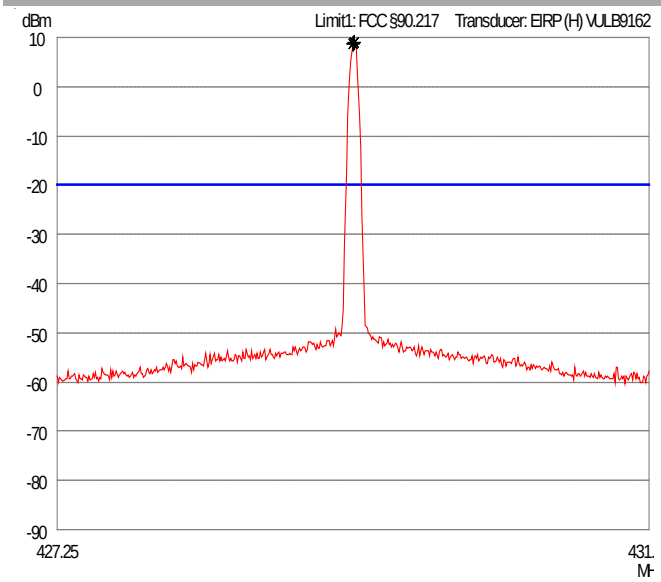
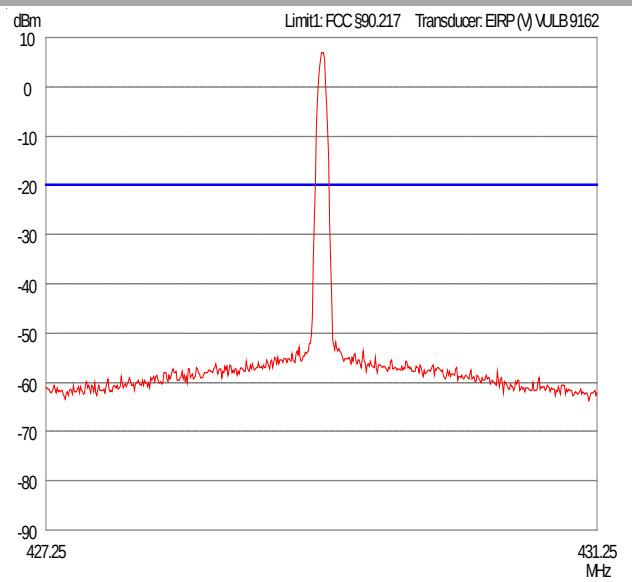
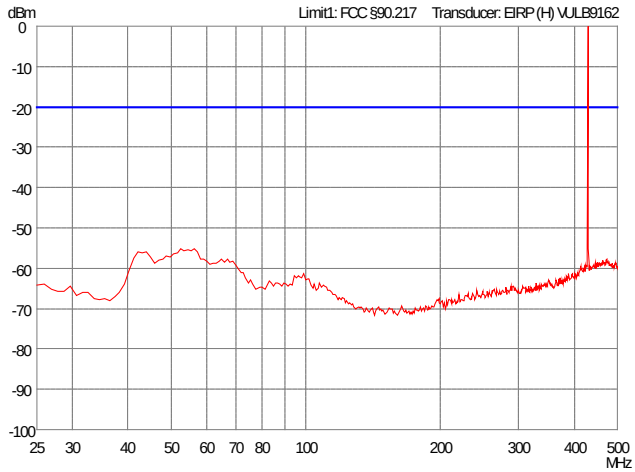
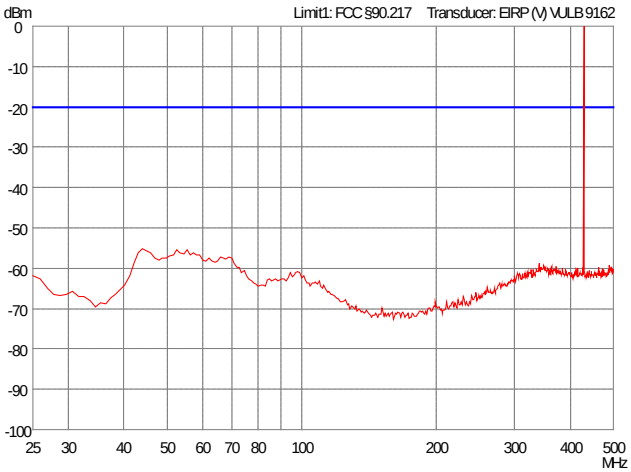
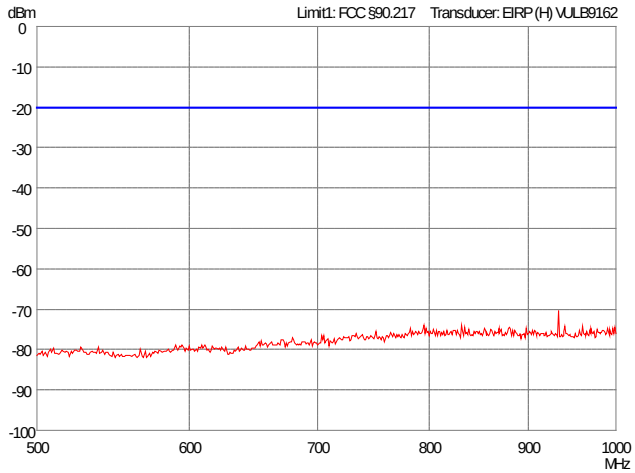
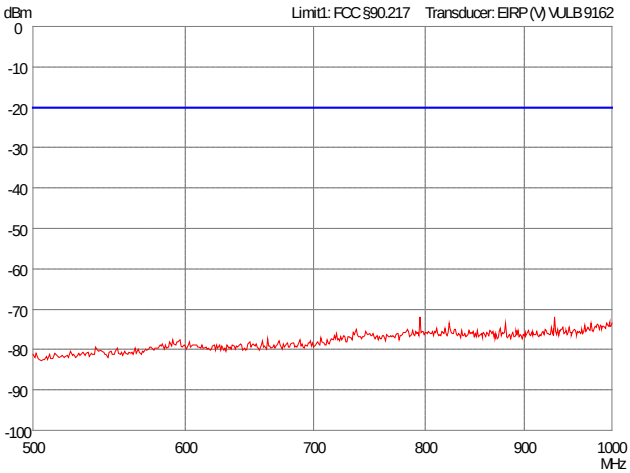
(1) No emissions above noise floor detected
(2) See test charts overleaf

Comment:	All radiated power emission values are calculated to e.r.p. values.
Date of test:	2015-07-17
Test site:	Semi anechoic room, cabin no. 8 (floor absorbers)
Test distance:	3 meters

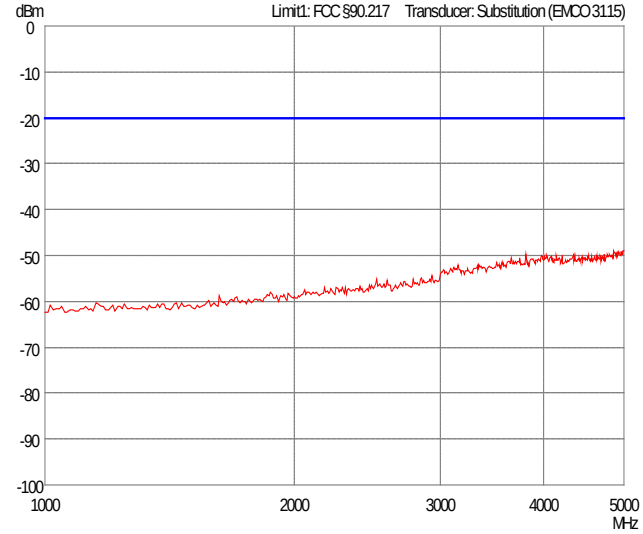
Sample calculation	Final Value (dBm e.r.p.) = Analyzer reading (dBm) + Correction (dB)

Test Result:	Test passed

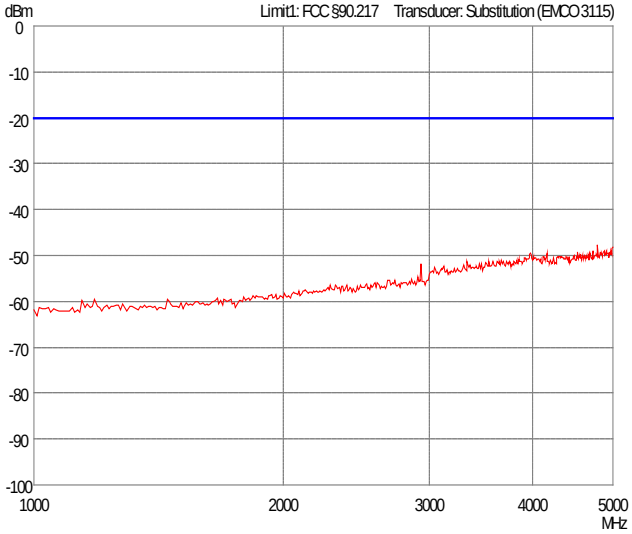
Plots of measurements:

Horizontal Polarisation	Vertical Polarisation
	
Note: Fundamental frequency	Note: Fundamental frequency
	
	

Horizontal Polarisation



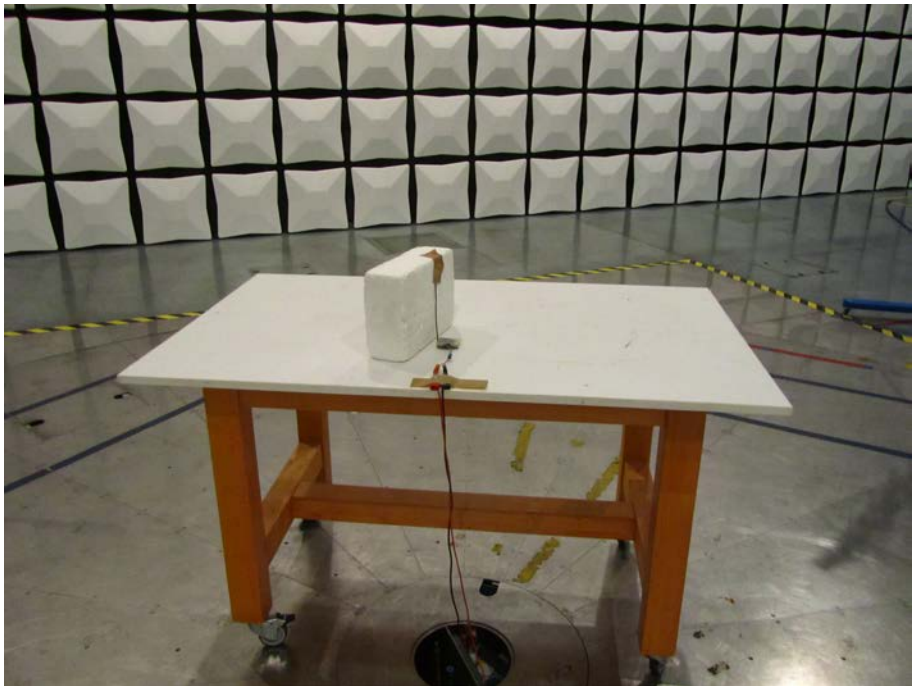
Vertical Polarisation



6.6.3 Test Instruments used

	Type		Designation	Inv.-no.	Serial No. or ID	Manufacturer
☐	Spectrum analyzer		FSP30	1666	100036	Rohde & Schwarz
☐	EMI test receiver	Cabin no. 3	ESPI7	2010	101018	Rohde & Schwarz
☒	EMI test receiver		ESU8	2044	100232	Rohde & Schwarz
☐	Preamplifier	Cabin no. 2	CPA9231A	1716	3557	Schaffner
☐	Preamplifier		R14601	1142	13120026	Advantest
☐	Preamplifier (1 - 8 GHz)		AFS3-00100800-32-LN	1684	847743	Miteq
☐	Preamplifier (0.5 - 8 GHz)		AMF-4D-005080-25-13P	1685	860149	Miteq
☐	Preamplifier (8 - 18 GHz)		ACO/180-3530	1484	32641	CTT
☐	External Mixer		WM782A	1576	845881/005	Tektronix
☐	Harmonic Mixer Accessories		FS-Z30	1577	624413/003	Rohde & Schwarz
☐	Trilog antenna	Cabin no. 2	VULB 9163	1802	9163-214	Schwarzbeck
☐	Trilog antenna	Cabin no. 3	VULB 9163	1722	9163-188	Schwarzbeck
☒	Trilog antenna	Cabin no. 8	VULB 9163	2058	9163-408	Schwarzbeck
☐	Trilog antenna	Cabin no. 2	VULB 9162	2256	9162-048	Schwarzbeck
☒	Horn antenna		3115	1516	9508-4553	EMCO
☐	Horn antenna		3160-03	1010	9112-1003	EMCO
☐	Horn antenna		3160-04	1011	9112-1001	EMCO
☐	Horn antenna		3160-05	1012	9112-1001	EMCO
☐	Horn antenna		3160-06	1013	9112-1001	EMCO
☐	Horn antenna		3160-07	1014	9112-1008	EMCO
☐	Horn antenna		3160-08	1015	9112-1002	EMCO
☐	Horn antenna		3160-09	1265	9403-1025	EMCO
☐	Horn antenna		3160-10	1575	399185	EMCO
☐	Microwave cable	Cabin no. 2	UFA210A-FG	1681	23516	Rosenberger Micro-Coax
☐	Microwave cable	Cabin no. 2	KKSF1040016	2020	289854/4	Huber + Suhner
☐	Microwave cable	Cabin no. 2	FA210AF020000000	2060	64566-2	Rosenberger Micro-Coax
☐	Microwave cable	Cabin no. 8	EF393	2053	---	Albatross Projects
☒	Microwave cable	Cabin no. 8	FB293C1050005050	2054	63834-1	Rosenberger Micro-Coax
☒	Microwave cable	Cabin no. 8	FB293C1080005050	2055	63833-1	Rosenberger Micro-Coax
☒	Microwave cable	Cabin no. 8	LCF12-50	2057	P1.3.9	RFS
☒	Microwave cable	Cabin no. 8	LCF12-50	2057	P1.4.12	RFS
☒	Microwave cable	Cabin no. 8	LCF12-50	2057	P1.6.19	RFS
☐	Microwave cable	Cabin no. 8	FA210AF040005050G	2127	72061-01	Rosenberger Micro-Coax
☐	Microwave cable	Cabin no. 8	FA210AF04000505G	2056	64567-01	Rosenberger Micro-Coax
☐	Microwave cable	Cabin no. 8	FA210AF04000505	2068	64610-1	Rosenberger Micro-Coax
☐	Fully anechoic room		No. 2	1452	---	Albatross
☒	Semi anechoic room		No. 8	2057	---	Albatross

6.6.4 Test setup for radiated emission measurement (alternate test site



6.7 Carrier Frequency Stability

Rules and specifications:	CFR 47 Part 90, sections 90.217 (a), (b), (c)
Guide:	ANSI C63.4 :2009, Section 13.6
Limit:	Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 milliwatts are exempt from the technical requirements set out in this subpart, but must instead comply with the following: (a) For equipment designed to operate with a 25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 40 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (b) For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shallbe adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier. (c) For equipment designed to operate with a 6.25 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 12.5 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.
Temperature range: Voltage range:	-30°C to +50°C (at normal supply voltage) 85% to 115% of the rated supply voltage (at a temperature of +20°C)

Comment:	Unmodulated carrier (CW)
Date of test:	2015-04-20

6.7.1 Measurement Procedure

Rules and specifications:	CFR 47 Part 2, section 2.1055
Guide:	ANSI C63.4 :2009, Section 13.6

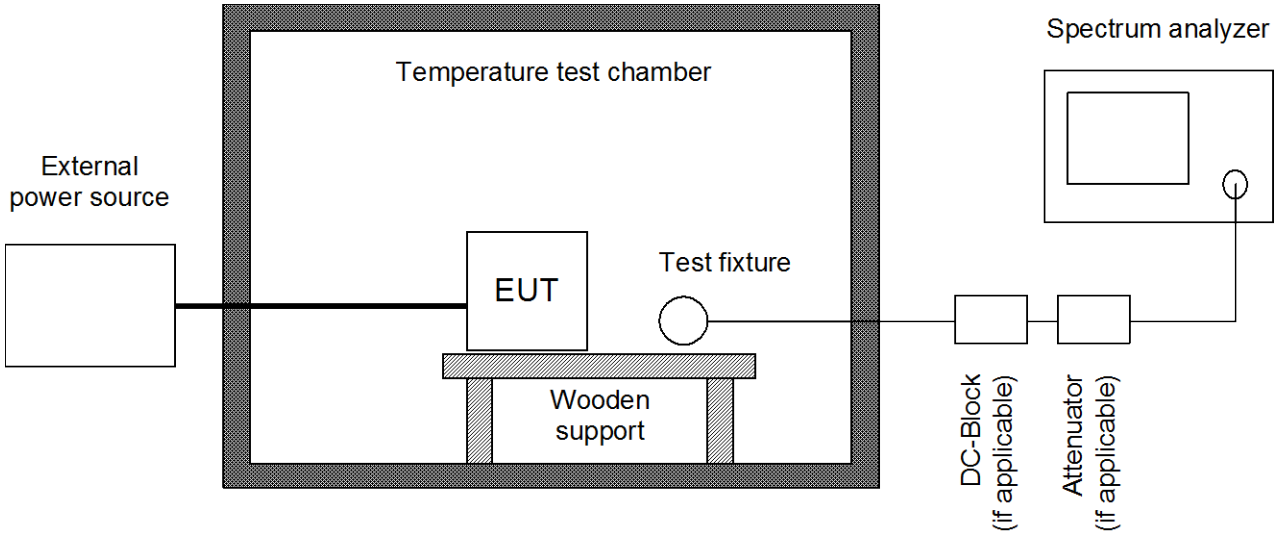
The frequency tolerance of the carrier signal is measured over a temperature variation of -30 °C to +50 °C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 °C.

If the EUT provides an antenna connector the spectrum analyzer is connected to this port. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). In cases where the EUT does not provide an antenna connector a test fixture is used.

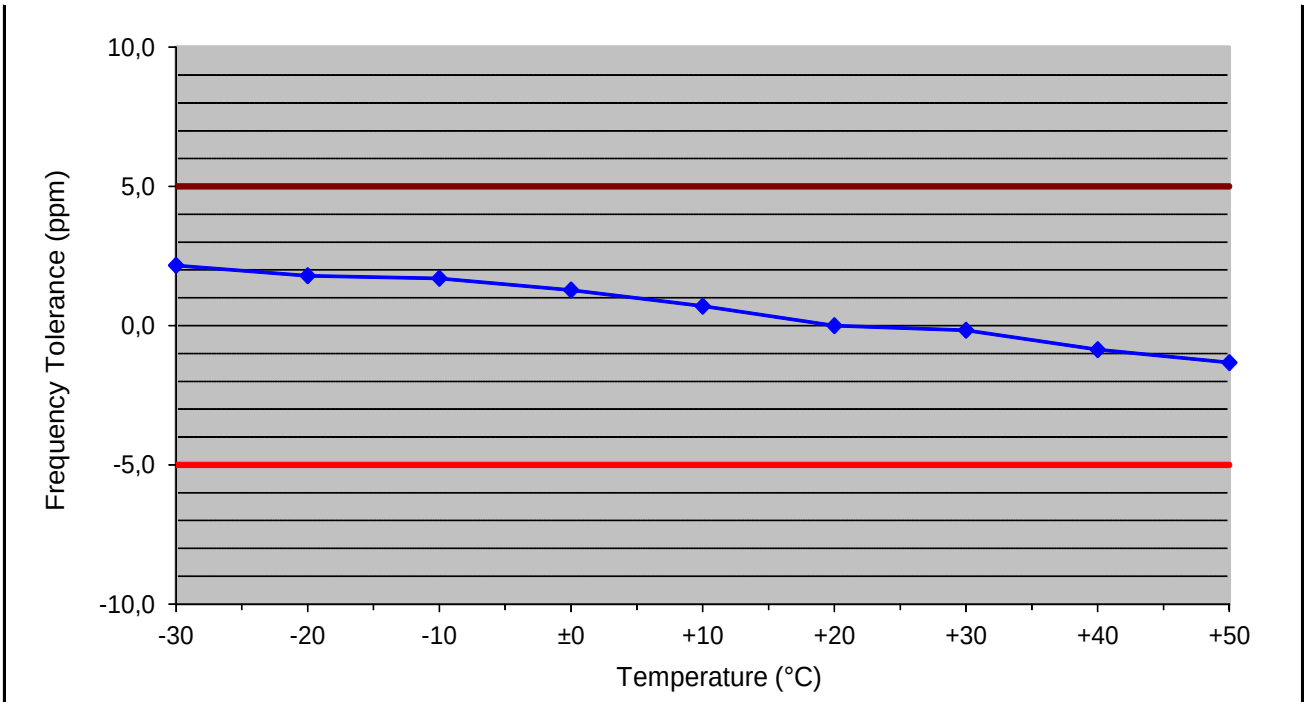
For battery operated equipment, the test is performed using a new battery. Alternatively, an external supply voltage can be used and is at least set to:

- the maximum battery voltage as delivered by a new battery or 115% of the battery nominal voltage
- the battery nominal voltage
- 85% of the battery nominal voltage
- the battery operating end point voltage which shall be specified by the equipment manufacturer

The EUT is operating providing an unmodulated carrier. The peak detector of the spectrum analyzer is selected and resolution as well as video bandwidth are set to values appropriate to the shape of the spectrum of the EUT. The frequency counter mode of the spectrum analyzer is used to maximize the accuracy of the measured frequency tolerance.
If an unmodulated carrier is not available a significant and stable point on the spectrum is selected and the span is reduced to a value that delivers an accuracy which shall be better than 1% of the maximum frequency tolerance allowed for the carrier signal. This method may be performed as long as the margin to the frequency tolerance allowed is larger than the uncertainty of the measured frequency tolerance.



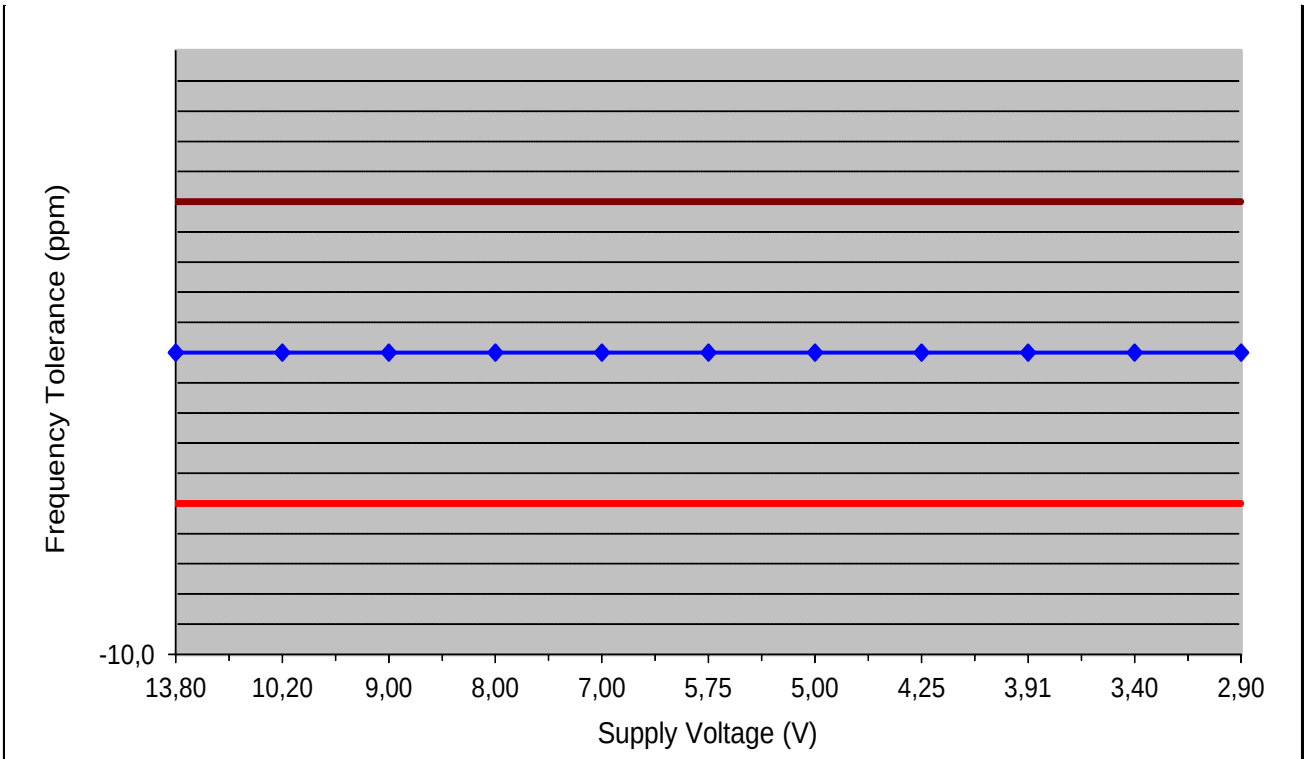
6.7.2 Measurement Results - Carrier Frequency Stability vs. Temperature



Supply voltage: 5 V Nominal frequency: 429,248320 MHz

Temperature (°C)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
-30	429,249250	930	2,2	+5,0	-5,0	**2,8**
-20	429,249090	770	1,8	+5,0	-5,0	3,2
-10	429,249050	730	1,7	+5,0	-5,0	3,3
±0	429,248870	550	1,3	+5,0	-5,0	3,7
+10	429,248620	300	0,7	+5,0	-5,0	4,3
+20	429,248320	0	0,0	+5,0	-5,0	5,0
+30	429,248250	-70	-0,2	+5,0	-5,0	4,8
+40	429,247950	-370	-0,9	+5,0	-5,0	4,1
+50	429,247750	-570	-1,3	+5,0	-5,0	3,7

6.7.3 Measurement Results - Carrier Frequency Stability vs. Supply Voltage



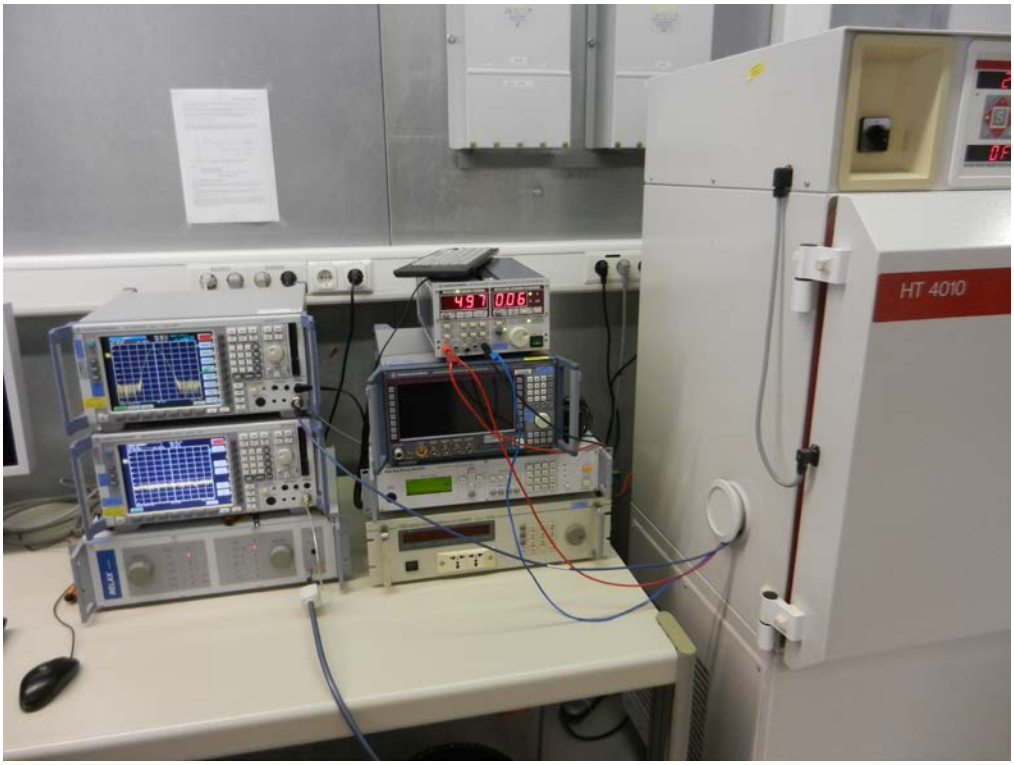
Temperature: +20 °C
Nominal frequency: 429,248320 MHz

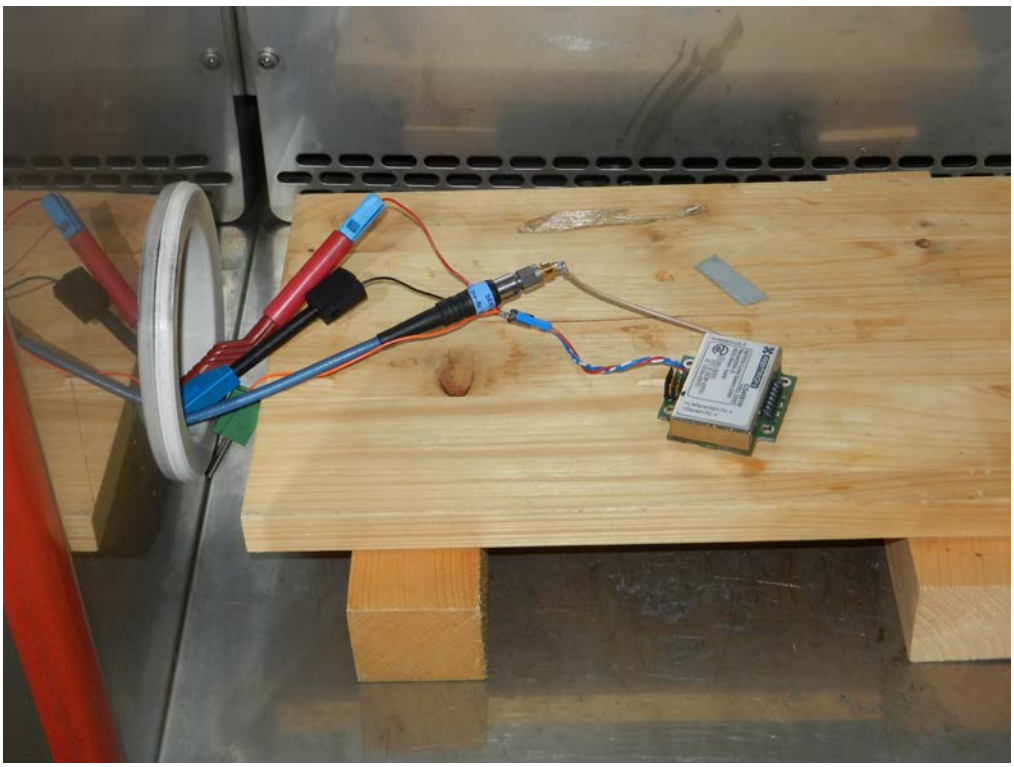
Supply Voltage (V)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
13,80	429,248320	0	0,0	+5,0	-5,0	**5,0**
10,20	429,248320	0	0,0	+5,0	-5,0	**5,0**
9,00	429,248320	0	0,0	+5,0	-5,0	**5,0**
8,00	429,248320	0	0,0	+5,0	-5,0	**5,0**
7,00	429,248320	0	0,0	+5,0	-5,0	**5,0**
5,75	429,248320	0	0,0	+5,0	-5,0	**5,0**
5,00	429,248320	0	0,0	+5,0	-5,0	**5,0**
4,25	429,248320	0	0,0	+5,0	-5,0	**5,0**
3,91	429,248320	0	0,0	+5,0	-5,0	**5,0**
3,40	429,248320	0	0,0	+5,0	-5,0	**5,0**
2,90	429,248320	0	0,0	+5,0	-5,0	**5,0**

6.7.4 Test Instruments used

	Type	*Designation*	*Inv.-no.*	*Serial No. or ID*	*Manufacturer*
☐	Spectrum analyzer	FSP30	1666	100036	Rohde & Schwarz
☒	EMI test receiver	ESPI7	1711	836914/0002	Rohde & Schwarz
☐	EMI test receiver	ESMI	1569	839379/013 839587/006	Rohde & Schwarz
☐	DC-block	7006	1636	A2798	Weinschel
☐	Attenuator	4776-10	1638	9412	Narda
☐	Attenuator	4776-20	1639	9503	Narda
☒	RF cable	ST 18/SMAm/SMAm/48	1949	84003373	Huber + Suhner
☐	Test probe	TP 01	1628	001	TÜV SÜD PS
☒	Multimeter	21 III	1653	76530546	Fluke
☐	Multimeter	21 III	1654	76381229	Fluke
☐	Multimeter	Fluke 77 III	1975	92370108	Fluke
☐	Multimeter	Fluke 77 IV	1976	93090238	Fluke
☐	Multimeter	Fluke 177	2025	96720024	Fluke
☐	Multimeter	Fluke 177	2026	96720025	Fluke
☒	DC power supply	NGSM 32/10	1267	203	Rohde & Schwarz
☒	Temperature test chamber	HT 4010	1271	07065550	Heraeus

6.7.5 Test Setup Photographs





6.8 RF exposure requirement

Rules and specifications:	CFR 47 Part 1, section 1.1307(b)(1) CFR 47 Part 2, section 2.1091
Guide:	OET Bulletin 65, Edition 97-01
Limits:	Limits for general population / uncontrolled exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time (minutes)
0.3 - 1.34	614	1.63	(100)*	30
1.34 - 30	824 / f	2.19 / f	(180 / f²)*	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	---	---	f/1500	30
1500 - 100000	---	---	1.0	30

f = frequency in MHz
* Plane-wave equivalent power density

RF exposure			Declared by applicant	Measured
Prediction [6]:	S	$= P G / 4 \pi R^2$		
Where:	S	= Power density		
	P	= Power input of antenna		
	G	= Power gain of the antenna relativ to an isotropic radiator		
	R	= Distance to the center of radiation of the antenna		
Maximum output power:	P	= 10.0 dBm =10.0 mW	☒	☒
Antenna gain:	G	= 1.64		
Prediction distance:	R	= 20 cm		
Power density at 20 cm:	**S**	**= 3.28 µW/cm²**		
Limit	**S_{lim}**	**= 286.1 µW/cm²**		

Test Result:	Test passed

[6] MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Ed. 97-01

7 Test Equipment List with Calibration Data

Type	*Inv.-No.*	*Type Designation*	*Serial Number*	*Manufacturer*	*Calibration Organization*	*Last Calibration*	*Next Calibration*
EMI test receiver	2044	ESU8	100232	Rohde & Schwarz	Rohde & Schwarz	01/2014	07/2015
Spectrum analyser	1666	FSP30	100063	Rohde & Schwarz	Rohde & Schwarz	05/2014	11/2015
Preamplifier	1484	ACO/180-3530	32641	CTT	TÜV SÜD PS-EMC-STR	06/2013	06/2015
Preamplifier	1651	CPA9231A	3393	Schaffner Electrotest	TÜV SÜD PS-EMC-STR	09/2014	09/2016
Preamplifier	1684	AFS3-00100800-32-LN	847743	MITEQ	TÜV SÜD PS-EMC-STR	04/2015	10/2016
Preamplifier	1685	AMF-4D-005080-25-13P	860149	MITEQ	TÜV SÜD PS-EMC-STR	08/2013	11/2015
Double ridged waveguide horn antenna	1516	3115	9508-4553	EMCO Elektronik	Seibersdorf Laboratories	11/2014	11/2016
TRILOG Broadband Antenna	2058	VULB 9163	9163-408	Schwarzbeck	Schwarzbeck	03/2015	03/2016
Temperature test chamber	1271	HT 4010	07065550	Heraeus	TÜV SÜD PS-EMC-STR	06/2015	06/2017
DC power supply	1267	NGSM 32/10	203	Rohde & Schwarz		see note 4	
Semi-anechoic chamber including RF cable set	2057	10 m Semi.anechoic chamber	N/A	Albtross Projects	Seibersdorf Laboratories	09/2014	09/2017

Note 1: No calibration required.
Note 2: Not calibrated separately but with the whole test system when recording calibration data.
Note 3: No calibration required. Devices are checked before use.
Note 4: No calibration required. Devices are checked by calibrated equipment during test.

8 Test Site Calibration

Test site:	Fully anechoic room, cabin No. 2
Date of test:	2014-03-20
Operator:	M. Steindl
Transmitter antenna:	25 MHz – 1.5 GHz: Trilog antenna Schwarzbeck VULB 9162, inv. No. 1802 1.5 GHz – 6 GHz: Horn antenna EMCO 3115, inv. No. 1516
Signal source:	R&S SMB100A, inv. No. 2027
Receiving antenna:	Trilog antenna Schwarzbeck VULB 9162, inv. No. 2256
Test receiver:	R&S FSP 30, inv. No. 1666
Comment:	

8.1 Horizontal polarisation

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading "dBm" [dB]
25	9.68	-16.34	-6.66	-36.47	29.81
28	9.63	-13.38	-3.75	-30.71	26.96
30	9.56	-12.30	-2.74	-30.04	27.30
32	9.56	-11.84	-2.28	-29.01	26.73
34	9.58	-11.74	-2.16	-27.92	25.76
36	9.55	-11.72	-2.17	-27.67	25.50
38	9.58	-11.69	-2.11	-28.69	26.58
40	9.55	-11.63	-2.08	-33.86	31.78
42	9.56	-11.50	-1.94	-38.56	36.62
44	9.57	-11.30	-1.73	-37.83	36.10
46	9.52	-11.01	-1.49	-36.20	34.71
48	9.52	-10.65	-1.13	-35.98	34.84
50	9.52	-10.17	-0.65	-36.51	35.86
52	9.48	-9.52	-0.04	-36.87	36.83
54	9.51	-8.77	0.74	-36.75	37.49
56	9.53	-9.28	0.25	-37.15	37.40
58	9.56	-8.89	0.67	-35.55	36.22
60	9.52	-7.66	1.86	-32.96	34.83
62	9.53	-6.55	2.98	-31.35	34.32
64	9.52	-5.38	4.14	-30.72	34.86
66	9.46	-4.22	5.24	-29.98	35.22
68	9.45	-3.01	6.44	-28.28	34.72
70	9.44	-1.82	7.62	-25.81	33.42
72	9.43	-0.80	8.63	-23.02	31.66
74	9.39	-0.16	9.23	-20.97	30.20
76	9.41	0.27	9.68	-19.57	29.25
78	9.42	0.32	9.74	-18.65	28.38
80	9.42	0.08	9.50	-18.59	28.08
82	9.40	-0.45	8.95	-19.36	28.31
84	9.38	-0.82	8.56	-20.45	29.01
86	9.30	-1.20	8.10	-21.26	29.36
88	9.28	-1.50	7.78	-21.59	29.37
90	9.27	-1.74	7.53	-21.32	28.85
92	9.28	-1.91	7.37	-21.53	28.90
94	9.30	-2.10	7.20	-22.52	29.71
96	9.32	-2.16	7.16	-23.43	30.58
98	9.33	-2.22	7.11	-23.73	30.84
100	9.34	-2.20	7.14	-23.35	30.49
105	9.26	-1.84	7.42	-20.61	28.02
110	9.20	-1.19	8.01	-20.80	28.81
115	9.20	-0.13	9.07	-17.46	26.53
120	9.26	1.15	10.41	-14.82	25.23
125	9.23	2.27	11.50	-13.07	24.57
130	9.19	3.05	12.24	-10.66	22.90
135	9.20	3.45	12.65	-9.77	22.42
140	9.27	4.45	13.72	-8.67	22.39
145	9.25	4.98	14.23	-7.92	22.16
150	9.17	5.37	14.54	-7.46	22.00
155	9.18	5.53	14.71	-7.78	22.49
160	9.22	5.49	14.71	-6.98	21.68

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
165	9.20	5.69	14.89	-7.54	22.43
170	9.11	5.90	15.01	-7.13	22.14
175	9.02	5.89	14.91	-7.12	22.03
180	9.08	5.86	14.94	-7.59	22.53
185	9.15	5.65	14.80	-8.49	23.28
190	9.12	4.99	14.11	-8.78	22.90
195	9.05	5.06	14.11	-10.00	24.11
200	9.00	5.67	14.67	-10.48	25.15
205	9.03	5.98	15.01	-8.93	23.94
210	8.99	6.16	15.15	-9.33	24.49
215	8.98	6.18	15.16	-9.59	24.75
220	8.99	6.11	15.10	-10.11	25.21
225	8.94	5.90	14.84	-10.34	25.18
230	8.91	5.84	14.75	-11.42	26.17
235	8.89	5.86	14.75	-10.84	25.59
240	8.93	5.84	14.77	-11.21	25.98
245	8.91	5.90	14.81	-11.61	26.42
250	8.90	6.07	14.97	-10.91	25.88
255	8.89	6.22	15.11	-11.44	26.55
260	8.93	6.48	15.41	-11.35	26.76
265	8.89	6.67	15.56	-11.27	26.84
270	8.84	6.72	15.56	-11.09	26.65
275	8.84	6.73	15.57	-11.57	27.14
280	8.89	6.65	15.54	-11.73	27.26
285	8.86	6.57	15.43	-11.37	26.80
290	8.78	6.66	15.44	-12.28	27.71
295	8.81	6.81	15.62	-11.97	27.59
300	8.84	7.00	15.84	-11.44	27.29
305	8.89	7.04	15.93	-11.83	27.76
310	8.83	7.09	15.92	-11.52	27.44
315	8.79	7.06	15.85	-11.50	27.35
320	8.79	7.00	15.79	-11.70	27.49
325	8.83	6.97	15.80	-11.92	27.71
330	8.78	6.99	15.77	-12.00	27.77
335	8.75	6.92	15.67	-12.38	28.05
340	8.80	6.84	15.64	-13.11	28.74
345	8.77	6.72	15.49	-13.04	28.54
350	8.71	6.72	15.43	-13.64	29.06
355	8.66	6.89	15.55	-13.69	29.23
360	8.70	7.08	15.78	-12.10	27.88
365	8.70	6.95	15.65	-12.81	28.46
370	8.69	7.18	15.87	-13.25	29.12
375	8.68	7.31	15.99	-13.03	29.02
380	8.62	7.37	15.99	-13.40	29.39
385	8.58	7.38	15.96	-13.78	29.74
390	8.54	7.39	15.93	-14.10	30.04
395	8.60	7.37	15.97	-14.22	30.20
400	8.63	7.35	15.98	-14.73	30.71
405	8.59	7.32	15.91	-14.92	30.84
410	8.59	7.37	15.96	-15.41	31.37
415	8.64	7.41	16.05	-15.99	32.04
420	8.65	7.40	16.05	-15.91	31.97
425	8.59	7.44	16.03	-16.41	32.44

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading "dBm" [dB]
430	8.58	7.42	16.00	-16.90	32.90
435	8.61	7.48	16.09	-16.48	32.57
440	8.59	7.61	16.20	-16.75	32.95
445	8.53	7.76	16.29	-16.89	33.18
450	8.53	7.93	16.46	-16.60	33.07
455	8.63	8.06	16.69	-16.93	33.62
460	8.61	8.07	16.68	-17.16	33.84
465	8.55	8.00	16.55	-17.52	34.07
470	8.53	8.00	16.53	-17.44	33.96
475	8.52	7.96	16.48	-17.54	34.02
480	8.44	7.91	16.35	-17.49	33.85
485	8.43	7.91	16.34	-17.18	33.52
490	8.50	7.90	16.40	-17.09	33.49
495	8.57	7.95	16.52	-16.98	33.50
500	8.57	7.97	16.54	-16.98	33.52
505	8.46	7.99	16.45	-16.65	33.10
510	8.45	7.98	16.43	-17.43	33.86
515	8.51	7.94	16.45	-17.16	33.60
520	8.50	7.90	16.40	-16.98	33.38
525	8.38	7.86	16.24	-17.64	33.88
530	8.39	7.88	16.27	-17.32	33.59
535	8.45	8.00	16.45	-17.07	33.52
540	8.43	8.14	16.57	-17.29	33.86
545	8.33	8.21	16.54	-17.04	33.57
550	8.33	8.23	16.56	-16.77	33.32
555	8.38	8.25	16.63	-16.94	33.57
560	8.34	8.25	16.59	-16.67	33.26
565	8.29	8.22	16.51	-16.94	33.45
570	8.35	8.14	16.49	-17.02	33.51
575	8.42	7.96	16.38	-17.50	33.87
580	8.36	7.80	16.16	-17.98	34.14
585	8.27	7.69	15.96	-17.86	33.82
590	8.31	7.76	16.07	-18.54	34.61
595	8.37	7.82	16.19	-18.67	34.86
600	8.34	7.82	16.16	-18.27	34.42
605	8.23	7.74	15.97	-18.84	34.81
610	8.24	7.64	15.88	-18.92	34.80
615	8.31	7.65	15.96	-18.16	34.12
620	8.27	7.78	16.05	-18.53	34.59
625	8.21	7.91	16.12	-18.46	34.58
630	8.26	7.92	16.18	-17.79	33.97
635	8.30	7.95	16.25	-18.40	34.65
640	8.18	8.04	16.22	-18.66	34.88
645	8.16	8.10	16.26	-18.37	34.63
650	8.25	8.09	16.34	-19.00	35.34
655	8.25	8.16	16.41	-19.23	35.64
660	8.12	8.28	16.40	-19.11	35.51
665	8.14	8.32	16.46	-19.61	36.06
670	8.19	8.35	16.54	-19.60	36.14
675	8.26	8.33	16.59	-19.47	36.06
680	8.19	8.33	16.52	-19.74	36.26
685	8.18	8.37	16.55	-19.72	36.27
690	8.19	8.48	16.67	-19.55	36.22

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
695	8.24	8.58	16.82	-19.36	36.18
700	8.19	8.58	16.77	-19.70	36.46
705	8.24	8.53	16.77	-19.66	36.43
710	8.32	8.49	16.81	-19.47	36.28
715	8.29	8.45	16.74	-19.58	36.31
720	8.21	8.36	16.57	-20.12	36.69
725	8.18	8.23	16.41	-20.33	36.75
730	8.26	8.09	16.35	-20.46	36.81
735	8.21	8.01	16.22	-21.13	37.35
740	8.14	7.92	16.06	-21.18	37.23
745	8.16	7.88	16.04	-21.35	37.40
750	8.14	7.94	16.08	-21.77	37.85
755	8.14	7.97	16.11	-21.37	37.47
760	8.09	8.02	16.11	-21.61	37.72
765	8.15	8.07	16.22	-21.89	38.11
770	8.16	8.16	16.32	-21.45	37.77
775	8.04	8.20	16.24	-21.44	37.69
780	7.97	8.31	16.28	-22.18	38.46
785	7.96	8.41	16.37	-21.81	38.18
790	7.96	8.52	16.48	-21.50	37.98
795	7.92	8.56	16.48	-21.85	38.33
800	7.98	8.57	16.55	-21.78	38.33
805	8.04	8.53	16.57	-21.89	38.46
810	8.00	8.56	16.56	-22.01	38.58
815	7.94	8.66	16.60	-21.88	38.48
820	7.99	8.75	16.74	-21.86	38.59
825	8.02	8.65	16.67	-22.08	38.75
830	7.96	8.56	16.52	-22.00	38.52
835	7.92	8.50	16.42	-21.99	38.41
840	7.88	8.49	16.37	-22.15	38.52
845	7.91	8.51	16.42	-22.25	38.67
850	7.83	8.46	16.29	-22.22	38.51
855	7.79	8.41	16.20	-22.32	38.52
860	7.81	8.38	16.19	-22.55	38.73
865	7.81	8.37	16.18	-22.66	38.84
870	7.79	8.38	16.17	-22.40	38.57
875	7.79	8.40	16.19	-22.37	38.56
880	7.86	8.36	16.22	-22.84	39.06
885	7.90	8.29	16.19	-22.39	38.58
890	7.88	8.26	16.14	-22.28	38.42
895	7.87	8.27	16.14	-22.38	38.52
900	7.89	8.32	16.21	-22.13	38.34
905	7.90	8.35	16.25	-22.17	38.43
910	7.83	8.33	16.16	-22.34	38.50
915	7.86	8.33	16.19	-22.01	38.20
920	7.88	8.33	16.21	-22.16	38.37
925	7.81	8.38	16.19	-22.41	38.60
930	7.80	8.43	16.23	-22.03	38.26
935	7.82	8.50	16.32	-21.98	38.29
940	7.88	8.59	16.47	-22.35	38.82
945	7.81	8.66	16.47	-22.22	38.69
950	7.76	8.70	16.46	-21.86	38.32
955	7.77	8.71	16.48	-22.27	38.75

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
960	7.77	8.73	16.50	-22.23	38.73
965	7.73	8.74	16.47	-22.32	38.79
970	7.72	8.77	16.49	-22.29	38.78
975	7.81	8.76	16.57	-22.33	38.90
980	7.83	8.75	16.58	-22.35	38.92
985	7.76	8.73	16.49	-22.51	38.99
990	7.71	8.74	16.45	-22.43	38.88
995	7.80	8.74	16.54	-22.47	39.00
1000	7.84	8.74	16.58	-22.68	39.26
1050	7.59	8.07	15.66	-25.09	40.75
1100	7.76	8.04	15.80	-25.60	41.40
1150	7.68	8.60	16.28	-25.38	41.67
1200	7.54	8.69	16.23	-26.33	42.56
1250	7.61	8.55	16.16	-26.03	42.20
1300	7.53	8.21	15.74	-25.95	41.70
1350	7.63	8.88	16.51	-25.49	42.00
1400	7.48	9.12	16.60	-27.87	44.47
1450	7.49	8.85	16.34	-28.55	44.89
1500	8.14	1.87	10.01	-25.29	35.31
1550	8.14	1.87	10.01	-25.95	35.96
1600	8.09	2.18	10.27	-27.02	37.29
1650	8.15	2.18	10.33	-26.15	36.47
1700	8.16	2.53	10.69	-25.04	35.73
1750	8.04	2.53	10.57	-25.97	36.54
1800	7.97	2.78	10.75	-26.93	37.68
1850	7.96	2.78	10.74	-26.11	36.85
1900	7.96	3.09	11.06	-25.18	36.24
1950	7.92	3.09	11.01	-26.19	37.20
2000	7.98	3.44	11.42	-26.99	38.41
2050	8.04	3.44	11.49	-26.27	37.76
2100	8.00	3.82	11.82	-25.41	37.24
2150	7.94	3.82	11.76	-26.44	38.21
2200	7.99	3.82	11.81	-26.93	38.74
2250	8.02	4.15	12.17	-25.99	38.16
2300	7.96	4.15	12.11	-25.42	37.53
2350	7.92	4.35	12.27	-26.41	38.69
2400	7.88	4.48	12.35	-26.81	39.16
2450	7.91	4.48	12.38	-25.89	38.27
2500	7.83	4.63	12.46	-25.45	37.91
2550	7.79	4.63	12.41	-26.50	38.92
2600	7.81	4.76	12.57	-26.74	39.31
2650	7.81	4.76	12.57	-25.82	38.39
2700	7.79	4.84	12.63	-25.51	38.14
2750	7.79	4.84	12.63	-26.08	38.71
2800	7.86	4.96	12.82	-26.23	39.05
2850	7.90	4.96	12.86	-25.19	38.04
2900	7.88	5.07	12.95	-24.84	37.79
2950	7.87	5.07	12.94	-25.27	38.21
3000	7.89	5.01	12.90	-25.28	38.18
3050	7.90	5.01	12.92	-24.63	37.55
3100	7.83	4.99	12.82	-24.48	37.30
3150	7.86	4.99	12.85	-25.13	37.98
3200	7.88	5.07	12.94	-25.35	38.29

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
3250	7.81	5.07	12.88	-24.75	37.62
3300	7.80	5.16	12.96	-24.69	37.65
3350	7.82	5.16	12.98	-25.46	38.44
3400	7.88	5.16	13.04	-25.79	38.83
3450	7.81	5.30	13.11	-25.48	38.58
3500	7.76	5.30	13.06	-25.25	38.31
3550	7.77	5.38	13.16	-25.94	39.10
3600	7.77	5.50	13.27	-26.03	39.30
3650	7.73	5.50	13.23	-25.71	38.94
3700	7.72	5.56	13.27	-25.38	38.65
3750	7.81	5.56	13.36	-25.85	39.22
3800	7.83	5.64	13.47	-25.88	39.35
3850	7.76	5.64	13.40	-25.42	38.83
3900	7.71	5.82	13.53	-25.21	38.74
3950	7.80	5.82	13.62	-25.51	39.13
4000	7.84	5.95	13.79	-25.50	39.29
4050	7.59	6.16	13.76	-25.00	38.76
4100	7.76	6.00	13.76	-25.93	39.70
4150	7.68	6.00	13.68	-26.10	39.78
4200	7.54	6.32	13.87	-28.19	42.06
4250	7.61	6.64	14.25	-28.93	43.18
4300	7.53	6.91	14.44	-27.98	42.42
4350	7.63	7.26	14.89	-26.18	41.07
4400	7.48	7.26	14.74	-26.17	40.91
4450	7.49	7.85	15.34	-27.86	43.20
4500	7.38	8.07	15.45	-29.37	44.82
4550	7.39	8.29	15.68	-28.58	44.26
4600	7.33	8.61	15.94	-28.60	44.54
4650	7.33	8.61	15.94	-30.05	45.99
4700	7.37	8.87	16.24	-29.44	45.69
4750	7.22	8.33	15.55	-28.61	44.15
4800	7.24	8.85	16.08	-28.08	44.17
4850	7.09	8.63	15.73	-29.94	45.66
4900	7.08	8.63	15.71	-30.98	46.69
4950	7.12	8.47	15.59	-30.83	46.42
5000	7.03	8.41	15.44	-31.73	47.17
5050	7.11	8.62	15.72	-32.99	48.72
5100	6.98	8.95	15.93	-31.53	47.46
5150	6.94	9.29	16.22	-30.39	46.62
5200	6.83	9.58	16.40	-30.64	47.05
5250	6.73	9.70	16.43	-30.83	47.27
5300	6.79	9.70	16.50	-31.99	48.49
5350	6.73	9.51	16.25	-33.30	49.55
5400	6.73	9.54	16.28	-33.74	50.02
5450	6.68	9.77	16.45	-33.40	49.86
5500	6.61	9.72	16.33	-33.82	50.15
5550	6.60	9.72	16.32	-33.36	49.68
5600	6.59	9.71	16.30	-32.65	48.95
5650	6.57	9.76	16.33	-32.86	49.19
5700	6.55	9.84	16.38	-34.19	50.57
5750	6.50	10.05	16.55	-34.66	51.20
5800	6.46	10.05	16.51	-34.69	51.19
5850	6.41	10.26	16.67	-34.51	51.18

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
5900	6.45	10.21	16.65	-35.15	51.80
5950	6.45	9.95	16.40	-35.32	51.72
6000	6.38	9.67	16.06	-34.23	50.29

8.2 Vertical polarisation

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading "dBm" [dB]
25	9.68	-16.34	-6.66	-37.84	31.18
28	9.63	-13.38	-3.75	-29.99	26.24
30	9.56	-12.30	-2.74	-29.39	26.65
32	9.56	-11.84	-2.28	-28.40	26.12
34	9.58	-11.74	-2.16	-26.37	24.21
36	9.55	-11.72	-2.17	-26.20	24.03
38	9.58	-11.69	-2.11	-28.11	26.00
40	9.55	-11.63	-2.08	-30.91	28.83
42	9.56	-11.50	-1.94	-36.03	34.09
44	9.57	-11.30	-1.73	-40.47	38.74
46	9.52	-11.01	-1.49	-38.24	36.76
48	9.52	-10.65	-1.13	-36.49	35.36
50	9.52	-10.17	-0.65	-36.53	35.88
52	9.48	-9.52	-0.04	-36.56	36.52
54	9.51	-8.77	0.74	-36.36	37.10
56	9.53	-9.28	0.25	-36.76	37.01
58	9.56	-8.89	0.67	-35.65	36.32
60	9.52	-7.66	1.86	-33.59	35.45
62	9.53	-6.55	2.98	-31.73	34.71
64	9.52	-5.38	4.14	-30.87	35.01
66	9.46	-4.22	5.24	-30.42	35.66
68	9.45	-3.01	6.44	-29.30	35.74
70	9.44	-1.82	7.62	-27.17	34.78
72	9.43	-0.80	8.63	-24.80	33.43
74	9.39	-0.16	9.23	-22.74	31.97
76	9.41	0.27	9.68	-20.97	30.65
78	9.42	0.32	9.74	-19.81	29.54
80	9.42	0.08	9.50	-19.55	29.05
82	9.40	-0.45	8.95	-20.01	28.96
84	9.38	-0.82	8.56	-21.18	29.73
86	9.30	-1.20	8.10	-22.14	30.24
88	9.28	-1.50	7.78	-22.68	30.45
90	9.27	-1.74	7.53	-22.40	29.92
92	9.28	-1.91	7.37	-22.65	30.02
94	9.30	-2.10	7.20	-23.64	30.84
96	9.32	-2.16	7.16	-24.48	31.64
98	9.33	-2.22	7.11	-24.66	31.77
100	9.34	-2.20	7.14	-24.13	31.27
105	9.26	-1.84	7.42	-21.17	28.58
110	9.20	-1.19	8.01	-21.04	29.04
115	9.20	-0.13	9.07	-17.69	26.76
120	9.26	1.15	10.41	-15.03	25.44
125	9.23	2.27	11.50	-13.53	25.03
130	9.19	3.05	12.24	-11.01	23.25
135	9.20	3.45	12.65	-9.68	22.33
140	9.27	4.45	13.72	-8.31	22.03
145	9.25	4.98	14.23	-7.34	21.58
150	9.17	5.37	14.54	-6.72	21.26
155	9.18	5.53	14.71	-7.05	21.77
160	9.22	5.49	14.71	-6.18	20.89

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
165	9.20	5.69	14.89	-6.71	21.60
170	9.11	5.90	15.01	-6.17	21.18
175	9.02	5.89	14.91	-6.15	21.06
180	9.08	5.86	14.94	-6.48	21.42
185	9.15	5.65	14.80	-7.41	22.20
190	9.12	4.99	14.11	-7.60	21.71
195	9.05	5.06	14.11	-8.70	22.82
200	9.00	5.67	14.67	-9.04	23.72
205	9.03	5.98	15.01	-7.39	22.40
210	8.99	6.16	15.15	-7.82	22.97
215	8.98	6.18	15.16	-8.34	23.50
220	8.99	6.11	15.10	-8.80	23.90
225	8.94	5.90	14.84	-9.02	23.87
230	8.91	5.84	14.75	-10.10	24.85
235	8.89	5.86	14.75	-9.64	24.39
240	8.93	5.84	14.77	-10.16	24.94
245	8.91	5.90	14.81	-10.84	25.66
250	8.90	6.07	14.97	-10.53	25.50
255	8.89	6.22	15.11	-11.52	26.62
260	8.93	6.48	15.41	-11.75	27.16
265	8.89	6.67	15.56	-11.68	27.24
270	8.84	6.72	15.56	-11.76	27.32
275	8.84	6.73	15.57	-12.47	28.03
280	8.89	6.65	15.54	-12.94	28.47
285	8.86	6.57	15.43	-12.75	28.18
290	8.78	6.66	15.44	-14.09	29.53
295	8.81	6.81	15.62	-14.30	29.93
300	8.84	7.00	15.84	-14.22	30.06
305	8.89	7.04	15.93	-14.97	30.90
310	8.83	7.09	15.92	-14.89	30.81
315	8.79	7.06	15.85	-15.06	30.91
320	8.79	7.00	15.79	-15.27	31.07
325	8.83	6.97	15.80	-15.61	31.41
330	8.78	6.99	15.77	-15.71	31.49
335	8.75	6.92	15.67	-16.12	31.79
340	8.80	6.84	15.64	-16.83	32.46
345	8.77	6.72	15.49	-16.75	32.25
350	8.71	6.72	15.43	-17.28	32.70
355	8.66	6.89	15.55	-17.01	32.56
360	8.70	7.08	15.78	-15.85	31.63
365	8.70	6.95	15.65	-16.50	32.15
370	8.69	7.18	15.87	-16.57	32.44
375	8.68	7.31	15.99	-15.80	31.79
380	8.62	7.37	15.99	-15.64	31.63
385	8.58	7.38	15.96	-15.48	31.44
390	8.54	7.39	15.93	-15.37	31.31
395	8.60	7.37	15.97	-15.07	31.04
400	8.63	7.35	15.98	-15.16	31.14
405	8.59	7.32	15.91	-14.89	30.81
410	8.59	7.37	15.96	-14.96	30.92
415	8.64	7.41	16.05	-15.17	31.22
420	8.65	7.40	16.05	-14.78	30.83
425	8.59	7.44	16.03	-15.01	31.04

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
430	8.58	7.42	16.00	-15.23	31.23
435	8.61	7.48	16.09	-14.61	30.71
440	8.59	7.61	16.20	-14.73	30.93
445	8.53	7.76	16.29	-14.76	31.05
450	8.53	7.93	16.46	-14.31	30.77
455	8.63	8.06	16.69	-14.44	31.13
460	8.61	8.07	16.68	-14.47	31.15
465	8.55	8.00	16.55	-14.71	31.27
470	8.53	8.00	16.53	-14.69	31.21
475	8.52	7.96	16.48	-14.98	31.46
480	8.44	7.91	16.35	-15.20	31.55
485	8.43	7.91	16.34	-15.18	31.52
490	8.50	7.90	16.40	-15.42	31.82
495	8.57	7.95	16.52	-15.60	32.12
500	8.57	7.97	16.54	-15.81	32.35
505	8.46	7.99	16.45	-15.64	32.09
510	8.45	7.98	16.43	-16.48	32.91
515	8.51	7.94	16.45	-16.28	32.73
520	8.50	7.90	16.40	-16.24	32.64
525	8.38	7.86	16.24	-16.94	33.18
530	8.39	7.88	16.27	-16.76	33.03
535	8.45	8.00	16.45	-16.73	33.19
540	8.43	8.14	16.57	-17.20	33.77
545	8.33	8.21	16.54	-17.16	33.70
550	8.33	8.23	16.56	-17.10	33.65
555	8.38	8.25	16.63	-17.50	34.14
560	8.34	8.25	16.59	-17.41	34.01
565	8.29	8.22	16.51	-17.79	34.30
570	8.35	8.14	16.49	-17.95	34.44
575	8.42	7.96	16.38	-18.59	34.97
580	8.36	7.80	16.16	-19.21	35.37
585	8.27	7.69	15.96	-19.14	35.10
590	8.31	7.76	16.07	-19.80	35.87
595	8.37	7.82	16.19	-19.83	36.02
600	8.34	7.82	16.16	-19.17	35.32
605	8.23	7.74	15.97	-19.53	35.50
610	8.24	7.64	15.88	-19.53	35.41
615	8.31	7.65	15.96	-18.81	34.77
620	8.27	7.78	16.05	-19.16	35.22
625	8.21	7.91	16.12	-19.00	35.12
630	8.26	7.92	16.18	-18.33	34.51
635	8.30	7.95	16.25	-18.89	35.14
640	8.18	8.04	16.22	-18.99	35.22
645	8.16	8.10	16.26	-18.42	34.68
650	8.25	8.09	16.34	-18.80	35.14
655	8.25	8.16	16.41	-18.87	35.28
660	8.12	8.28	16.40	-18.63	35.03
665	8.14	8.32	16.46	-19.02	35.48
670	8.19	8.35	16.54	-18.95	35.49
675	8.26	8.33	16.59	-18.80	35.39
680	8.19	8.33	16.52	-19.09	35.61
685	8.18	8.37	16.55	-19.11	35.66
690	8.19	8.48	16.67	-19.00	35.67

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
695	8.24	8.58	16.82	-18.86	35.68
700	8.19	8.58	16.77	-19.24	36.01
705	8.24	8.53	16.77	-19.31	36.07
710	8.32	8.49	16.81	-19.22	36.03
715	8.29	8.45	16.74	-19.44	36.18
720	8.21	8.36	16.57	-20.04	36.61
725	8.18	8.23	16.41	-20.34	36.76
730	8.26	8.09	16.35	-20.59	36.95
735	8.21	8.01	16.22	-21.36	37.58
740	8.14	7.92	16.06	-21.42	37.48
745	8.16	7.88	16.04	-21.59	37.63
750	8.14	7.94	16.08	-22.02	38.10
755	8.14	7.97	16.11	-21.54	37.64
760	8.09	8.02	16.11	-21.62	37.74
765	8.15	8.07	16.22	-21.81	38.03
770	8.16	8.16	16.32	-21.40	37.72
775	8.04	8.20	16.24	-21.50	37.75
780	7.97	8.31	16.28	-22.26	38.54
785	7.96	8.41	16.37	-21.86	38.22
790	7.96	8.52	16.48	-21.58	38.06
795	7.92	8.56	16.48	-21.98	38.46
800	7.98	8.57	16.55	-21.91	38.46
805	8.04	8.53	16.57	-21.87	38.44
810	8.00	8.56	16.56	-21.88	38.45
815	7.94	8.66	16.60	-21.77	38.37
820	7.99	8.75	16.74	-21.86	38.60
825	8.02	8.65	16.67	-22.13	38.80
830	7.96	8.56	16.52	-21.93	38.45
835	7.92	8.50	16.42	-21.79	38.21
840	7.88	8.49	16.37	-21.94	38.31
845	7.91	8.51	16.42	-22.07	38.49
850	7.83	8.46	16.29	-21.94	38.23
855	7.79	8.41	16.20	-21.78	37.98
860	7.81	8.38	16.19	-21.83	38.01
865	7.81	8.37	16.18	-21.92	38.11
870	7.79	8.38	16.17	-21.69	37.86
875	7.79	8.40	16.19	-21.74	37.93
880	7.86	8.36	16.22	-22.25	38.48
885	7.90	8.29	16.19	-21.95	38.13
890	7.88	8.26	16.14	-21.97	38.12
895	7.87	8.27	16.14	-22.23	38.37
900	7.89	8.32	16.21	-22.18	38.39
905	7.90	8.35	16.25	-22.35	38.60
910	7.83	8.33	16.16	-22.47	38.63
915	7.86	8.33	16.19	-22.12	38.31
920	7.88	8.33	16.21	-22.37	38.58
925	7.81	8.38	16.19	-22.85	39.04
930	7.80	8.43	16.23	-22.51	38.74
935	7.82	8.50	16.32	-22.34	38.65
940	7.88	8.59	16.47	-22.68	39.15
945	7.81	8.66	16.47	-22.80	39.27
950	7.76	8.70	16.46	-22.67	39.13
955	7.77	8.71	16.48	-23.07	39.55

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
960	7.77	8.73	16.50	-22.90	39.40
965	7.73	8.74	16.47	-23.09	39.57
970	7.72	8.77	16.49	-23.28	39.77
975	7.81	8.76	16.57	-23.45	40.02
980	7.83	8.75	16.58	-23.50	40.07
985	7.76	8.73	16.49	-23.73	40.21
990	7.71	8.74	16.45	-23.78	40.23
995	7.80	8.74	16.54	-23.84	40.38
1000	7.84	8.74	16.58	-23.94	40.52
1050	7.59	8.07	15.66	-25.27	40.93
1100	7.76	8.04	15.80	-25.11	40.91
1150	7.68	8.60	16.28	-24.70	40.99
1200	7.54	8.69	16.23	-25.64	41.88
1250	7.61	8.55	16.16	-26.98	43.15
1300	7.53	8.21	15.74	-27.85	43.60
1350	7.63	8.88	16.51	-26.41	42.92
1400	7.48	9.12	16.60	-26.85	43.45
1450	7.49	8.85	16.34	-27.48	43.83
1500	7.38	8.07	15.45	-27.95	43.40
1550	7.39	8.29	15.68	-29.66	45.34
1600	7.33	8.61	15.94	-28.80	44.74
1650	7.33	8.61	15.94	-27.96	43.90
1700	7.37	8.87	16.24	-28.31	44.56
1750	7.22	8.33	15.55	-28.94	44.49
1800	7.24	8.85	16.08	-29.66	45.75
1850	7.09	8.63	15.73	-31.73	47.46
1900	7.08	8.63	15.71	-31.38	47.10
1950	7.12	8.47	15.59	-29.98	45.57
2000	7.03	8.41	15.44	-29.26	44.70
2050	7.11	8.62	15.72	-30.84	46.57
2100	6.98	8.95	15.93	-32.49	48.42
2150	6.94	9.29	16.22	-33.07	49.30
2200	6.83	9.58	16.40	-32.18	48.58
2250	6.73	9.70	16.43	-30.88	47.31
2300	6.79	9.70	16.50	-31.02	47.51
2350	6.73	9.51	16.25	-32.26	48.51
2400	6.73	9.54	16.28	-34.05	50.33
2450	6.68	9.77	16.45	-32.49	48.94
2500	6.61	9.72	16.33	-32.11	48.44
2550	6.60	9.72	16.32	-32.92	49.24
2600	6.59	9.71	16.30	-35.05	51.35
2650	6.57	9.76	16.33	-34.98	51.31
2700	6.55	9.84	16.38	-33.82	50.21
2750	6.50	10.05	16.55	-33.18	49.72
2800	6.46	10.05	16.51	-33.45	49.96
2850	6.41	10.26	16.67	-33.85	50.53
2900	6.45	10.21	16.65	-35.40	52.06
2950	6.45	9.95	16.40	-36.13	52.54
3000	6.38	9.67	16.06	-35.93	51.99
3050	6.05	9.67	15.72	-36.35	52.08
3100	6.28	9.45	15.73	-36.31	52.03
3150	6.41	9.57	15.98	-37.36	53.34
3200	6.37	9.62	15.99	-37.28	53.28

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
3250	6.03	9.67	15.70	-36.99	52.68
3300	6.08	9.67	15.75	-36.72	52.47
3350	5.87	9.73	15.60	-38.01	53.61
3400	6.02	9.78	15.80	-38.09	53.89
3450	5.96	9.89	15.84	-39.49	55.34
3500	6.01	9.90	15.91	-39.49	55.41
3550	5.93	9.90	15.83	-37.93	53.77
3600	6.31	10.03	16.34	-37.55	53.89
3650	6.30	9.98	16.27	-38.70	54.98
3700	6.32	9.80	16.13	-40.09	56.22
3750	5.92	9.64	15.56	-39.60	55.16
3800	5.52	9.64	15.16	-40.00	55.16
3850	5.98	9.39	15.37	-40.39	55.76
3900	6.05	9.38	15.43	-40.52	55.95
3950	5.98	9.47	15.45	-40.45	55.91
4000	6.17	9.68	15.86	-40.67	56.53
4050	6.33	9.84	16.17	-39.45	55.61
4100	5.82	10.16	15.98	-40.05	56.03
4150	4.95	10.32	15.28	-41.01	56.28
4200	4.81	10.42	15.23	-42.40	57.64
4250	4.62	10.61	15.23	-42.64	57.86
4300	5.76	10.71	16.47	-40.84	57.31
4350	5.87	10.71	16.58	-40.46	57.04
4400	5.55	10.83	16.38	-41.64	58.02
4450	5.51	10.91	16.42	-41.64	58.05
4500	5.45	10.92	16.37	-41.59	57.96
4550	5.54	10.90	16.44	-42.02	58.46
4600	5.33	10.90	16.23	-43.19	59.42
4650	5.14	10.99	16.13	-42.94	59.07
4700	5.18	10.84	16.02	-43.98	60.00
4750	4.99	10.79	15.79	-43.30	59.09
4800	5.01	10.77	15.78	-43.86	59.65
4850	5.08	10.77	15.85	-43.74	59.59
4900	5.21	10.84	16.06	-44.05	60.10
4950	5.27	10.86	16.13	-44.39	60.52
5000	5.27	10.83	16.10	-44.07	60.17
5050	5.09	10.83	15.92	-45.54	61.46
5100	5.02	10.83	15.85	-45.56	61.42
5150	5.05	10.79	15.84	-45.85	61.69
5200	4.84	10.71	15.55	-45.16	60.71
5250	4.75	10.71	15.46	-45.29	60.75
5300	4.63	10.78	15.40	-45.67	61.07
5350	4.58	10.78	15.36	-46.00	61.36
5400	4.80	10.75	15.54	-46.17	61.72
5450	4.91	10.75	15.66	-45.64	61.30
5500	4.69	10.78	15.46	-46.71	62.18
5550	4.77	10.78	15.55	-46.14	61.69
5600	4.67	10.78	15.45	-47.26	62.70
5650	4.52	10.93	15.45	-46.18	61.63
5700	4.62	11.21	15.83	-45.82	61.65
5750	4.46	11.21	15.67	-46.70	62.37
5800	4.46	11.38	15.84	-46.27	62.11
5850	4.62	11.38	16.00	-45.48	61.48

Frequency [MHz]	Transmit signal P_{tx} [dBm]	TX antenna gain (isotropic) [dBi]	True transmit signal P_{true} [dBm]	Analyzer reading P_{site} [dBm]	Correction for reading “dBm” [dB]
5900	4.49	11.44	15.92	-47.02	62.94
5950	4.45	11.44	15.89	-47.21	63.10
6000	4.43	11.34	15.77	-47.91	63.69

9 Revision History

Revision History			
Edition	*Date*	*Issued by*	*Modifications*
1	2015-06-25	J. Roidt	First Edition
2	2015-07-08	J. Roidt	Report updated
3	2015-07-17	J. Roidt	Update acc. To TCB requests