TEST REPORT

Report Reference No. .....:	**SZE2607150575ET05**
Compiled by (position+printed name+signature) .:	Project Engineer Jones Pan
Supervised by (position+printed name+signature) .:	Project Reviewer Scott Liang
Approved by (position+printed name+signature) .:	Technical Director Andrea Hu
Date of issue .....:	2026/10/22
Testing Laboratory Name.....:	EUSACERT (Shenzhen) Testing Co., Ltd.
Address .....:	103, 2F, Building A2 and 106, Building A3, No. 2082, Jincheng Road, Haoxiang Community, Shajing Street, Bao'an District, Shenzhen, People's Republic of China
Applicant's name.....:	NiceRF Wireless Technology CO.,LTD
Address .....:	309-314, 3/F, Hongdu Business Building Zone 43, Bao'an District, Shenzhen, Guangdong, 518101 China
Test specification.....**:**	
Standard.....:	**ETSI EN 301 166 V2.1.1 (2016-11)**
TRF Originator.....:	EUSACERT (Shenzhen) Testing Co., Ltd.
Master TRF .....:	Dated 2026-01

EUSACERT (Shenzhen) Testing Co., Ltd. All rights reserved.
This publication may be reproduced in whole or in part for non-commercial purposes as long as the EUSACERT (Shenzhen) Testing Co., Ltd. is acknowledged as copyright owner and source of the material. EUSACERT (Shenzhen) Testing Co., Ltd.takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description .....:	Wireless walkie-talkie module
Trade Mark .....:	G-NiceRF
Product Model .....:	DMR818S-U
Series Model .....:	N/A
Hardware Version.....:	V1.0
Software Version .....:	V1.7
Ratings .....:	DC 4.2V
Result .....:	**PASS**

TEST REPORT

Test Report No. :	SZE2607150575ET05	2026/10/22 Date of issue

Equipment under Test	:	Wireless walkie-talkie module
Model /Type	:	DMR818S-U
Series Model	:	N/A
Applicant	:	NiceRF Wireless Technology CO.,LTD
Address	:	309-314, 3/F, Hongdu Business Building Zone 43, Bao'an District, Shenzhen, Guangdong, 518101 China
Manufacturer	:	NiceRF Wireless Technology CO.,LTD
Address	:	309-314, 3/F, Hongdu Business Building Zone 43, Bao'an District, Shenzhen, Guangdong, 518101 China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Issued History **

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	2026/10/22	Andrea Hu

Contents

1. TEST STANDARDS 5
2. Summary 6
2.1 General Remarks 6
2.2 Product Description 6
2.3 Equipment Under Test 6
2.4 Description of the test mode 7
3. Test environment 8
3.1 Address of the test laboratory 8
3.2 Environmental conditions 8
3.3 Test Description 8
3.4 Sumarry of measurement results 9
3.5 Equipment used during the test 10
4. Requirements for transmitter 11
4.1 Maximum power (PX) (conducted) 11
4.2 Maximum Effective Radiated Power 16
4.3 Adjacent and alternate channels power 17
4.4 Unwanted emissions in the spurious domain 24
4.5 Intermodulation attenuation 47
4.6 Transient power 48
4.7 Frequency Error 51
4.8 Transmitter timeout timer 54
5. Requirements for receiver 55
5.1 Maximum usable sensitivity (analogue, conducted) 55
5.2 Adjacent channel selectivity 57
5.3 Spurious response rejection 59
5.4 Intermodulation response rejection 60
5.5 Blocking or desensitization 64
5.6 Spurious radiations 77
5.7 Co-channel rejection 94
6. Duplex operation 98
6.1 Receiver desensitization (with simultaneous transmission and reception) 98
6.2 Receiver spurious response rejection (with simultaneous transmission and reception) 99
7. Test Setup Photos of the EUT 100
8. External and Internal Photos of the EUT 101

1. TEST STANDARDS

The tests were performed according to following standards:

ETSI EN 301 166 V2.1.1 (2016-11)

Land Mobile Service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU

2. Summary

2.1 General Remarks

Date of receipt of test sample	:	2026/07/15
Testing commenced on	:	2026/07/15
Testing concluded on	:	2026/10/22

2.2 Product Description

Name of EUT	Wireless walkie-talkie module
Model(s) Number	DMR818S-U
List Models	N/A
Difference descrption	N/A
Hardware version	V1.0
Software version	V1.7
Antenna Type	External Antenna

2.3 Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V/ 50 Hz	○	120V/60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 4.2V

2.4 Description of the test mode

Channel list		
Channel Separation for 6.25kHz	Channel	Ferquecny (MHz)
	1	406.1125
	2	418.0625
	3	429.9875
	4	450.0125
	5	460.0000
	6	469.9875

3. Test environment

3.1 Address of the test laboratory

EUSACERT (Shenzhen) Testing Co., Ltd.
103, 2F, Building A2 and 106, Building A3, No. 2082, Jincheng Road, Haoxiang Community, Shajing Street, Bao'an District, Shenzhen, People's Republic of China

3.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature: 15°C~35°C
High Temperature: 55℃
Low Temperature: -20℃
Normal Voltage: DC 4.2V
High Voltage: DC 4.5V
Low Voltage:DC 3.4V
Relative Humidity: 55 %
Air Pressure: 989 hPa

3.3 Test Description

3.3.1 Main Terms

Verdict	Verdict of each test cases.
Test Case	Test cases identification number and description in ETSI specification.

3.3.2 Terms used in Condition column

NTC Normal voltage, Normal Temperature
HTHV High voltage, High Temperature
LTHV High voltage, Low Temperature
HTLV Low voltage, High Temperature
LTLV Low voltage, Low Temperature

3.3.3 Terms used in Verdict column

Pass	This test cases has been tested, and EUT is conformant to the applied standards in the given frequency band.
Fail	This test cases has been tested, but EUT is not conformant to the applied standards in the given frequency band.
N/A	This test case is either not required/not applicable in the specified band or is not applicable according to the specific PICS/PIXIT for the EUT.
Inc	Test case result is ambiguous in the given frequency band.
Decl	Declaration is received from the client to demonstrate the conformity to the relevant specification in the given frequency band.
BR	This test cases is not tested in the given frequency band, but this testcases was tested with pass result for the initial model in the given frequency band.

3.4 Sumarry of measurement results

№	Basic Standard	Test Type	Result
ETSI EN 301 166 REQUIREMENTS FOR TRANSMITTER			
1	EN 301 166 Sub-clause 7.1	Maximum power (PX) (conducted)	PASS
2	EN 301 166 Sub-clause 7.2	Maximum effective radiated power	N/A
3	EN 301 166 Sub-clause 7.3	Adjacent and alternate channels power	PASS
4	EN 301 166 Sub-clause 7.4	Unwanted emissions in the spurious domain	PASS
5	EN 301 166 Sub-clause 7.5	Intermodulation attenuation	N/A
6	EN 301 166 Sub-clause 7.6	Transient power	PASS
7	EN 301 166 Sub-clause 7.7	Frequency error	PASS
8	EN 301 166 Sub-clause 7.8	Transmitter timeout timer	N/A
ETSI EN 301 166 REQUIREMENTS FOR RECEIVER			
9	EN 301 166 Sub-clause 8.1	Maximum usable sensitivity (analogue, conducted)	N/A
10	EN 301 166 Sub-clause 8.2	Maximum usable sensitivity (analogue, field strength)	N/A
11	EN 301 166 Sub-clause 8.3	Maximum usable sensitivity (digital, conducted)	PASS
12	EN 301 166 Sub-clause 8.4	Maximum usable sensitivity (digital, field strength)	N/A
13	EN 301 166 Sub-clause 8.5	Adjacent channel selectivity	PASS
14	EN 301 166 Sub-clause 8.6	Spurious response rejection	PASS
15	EN 301 166 Sub-clause 8.7	Intermodulation response rejection	PASS
16	EN 301 166 Sub-clause 8.8	Blocking or desensitization	PASS
17	EN 301 166 Sub-clause 8.9	Spurious radiations	PASS
18	EN 301 166 Sub-clause 8.10	Co-channel rejection	PASS
ETSI EN 301 166 REQUIREMENTS FOR DUPLEX OPERATION			
19	EN 301 166 Sub-clause 9.1	Receiver desensitization (with simultaneous transmission and reception)	PASS
20	EN 301 166 Sub-clause 9.2	Receiver spurious response rejection (with simultaneous transmission and reception)	PASS

NOTE: 1. N/A- Not Applicable. 2. The latest versions of basic standards are applied.

3.5 Equipment used during the test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	Spectrum analyzer	Agilent	N9020A	EUSA-028	2026/07/13	2027/07/12
2	Signal generator	Agilent	E4421B	EUSA-018	2026/07/13	2027/07/12
3	Signal generator	Agilent	N5181A	EUSA-019	2026/07/13	2027/07/12
4	Temperature and humidity meter	Boyang	HTC-1	EUSA-043	2026/07/13	2027/07/12
5	Wireless Communication Test Set	R&S	CMW500	EUSA-029	2026/07/13	2027/07/12
6	Audio Analyzer	Hp	8921A	EUSA-099	2026/07/13	2027/07/12
7	RF test software	Tonscend	V3.6.21	EUSA-060	/	/
8	Broadband antenna	Schwarzbeck	VULB 9163	EUSA-012	2025/07/14	2027/07/13
9	Horn antenna	Schwarzbeck	9120D	EUSA-013	2025/07/14	2027/07/13
10	EMI Test Receiver	R&S	ESR-7	EUSA-009	2026/07/13	2027/07/12
11	Amplifier	Schwarzbeck	BBV9743	EUSA-010	2026/07/13	2027/07/12
12	Amplifier	COM-POWER	PAM-118A	EUSA-011	2026/07/13	2027/07/12
13	High pass filter unit	Tonscend	JS0806-F	EUSA-034	2026/07/13	2027/07/12
14	Wireless Communication Test Set	R&S	CMW500	EUSA-029	2026/07/13	2027/07/12
15	Temperature control box	Weiss Technik	VT4002 EMC	EUSA-104	2026/07/13	2027/07/12
16	RSE Test Software	Tonscend	JS35-RSE 5.0.0	EUSA-061	/	/

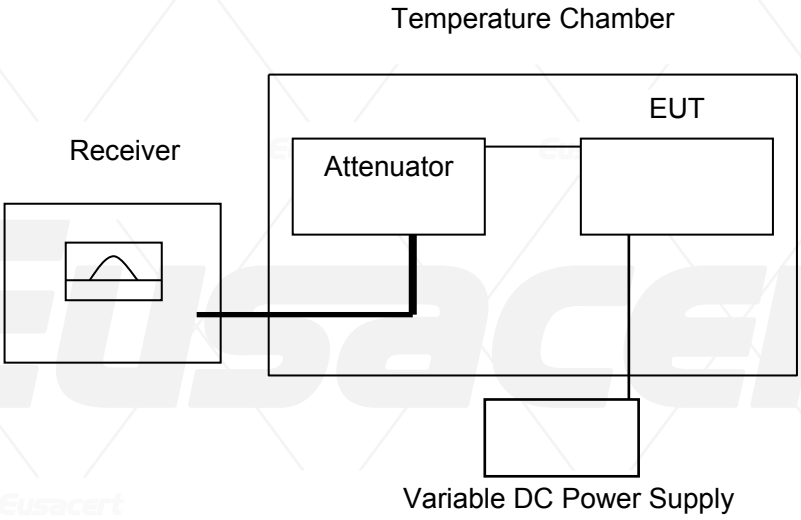
4. Requirements for transmitter

4.1 Maximum power (PX) (conducted)

LIMIT

ETSI EN 301 166 V2.1.1 (2016-11)Sub-clause 7.1.3
The measured PX under normal test conditions shall be within ±1,5 dB of the rated maximum power of the transmitter.
The measured PX under extreme test conditions shall be within +2 dB and -3 dB of the rated maximum power of the transmitter.
It is assumed that the appropriate National Administration will state the maximum permitted transmitter output power.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 and 5.4 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 7.1.2 for the measurement method.

TEST RESULTS

High Power

406.1125MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.20	0.20
T_{min} (-10)	DC 4.5	29.64	-0.36
	DC 3.4	29.51	-0.49
T_{max} (+40)	DC 4.5	30.75	0.75
	DC 3.4	30.93	0.93
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

418.0625MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.02	0.02
T_{min} (-10)	DC 4.5	29.50	-0.50
	DC 3.4	29.75	-0.25
T_{max} (+40)	DC 4.5	30.75	0.75
	DC 3.4	30.68	0.68
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

429.9875MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.27	0.27
T_{min} (-10)	DC 4.5	29.70	-0.30
	DC 3.4	29.49	-0.51
T_{max} (+40)	DC 4.5	30.44	0.44
	DC 3.4	30.80	0.80
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

450.0125MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.10	0.10
T_{min} (-10)	DC 4.5	29.49	-0.51
	DC 3.4	29.51	-0.49
T_{max} (+40)	DC 4.5	30.62	0.62
	DC 3.4	30.91	0.91
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

460.0000MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.25	0.25
T_{min} (-10)	DC 4.5	29.62	-0.38
	DC 3.4	29.58	-0.42
T_{max} (+40)	DC 4.5	30.67	0.67
	DC 3.4	30.54	0.54
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

469.9875MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	30.09	0.09
T_{min} (-10)	DC 4.5	29.60	-0.40
	DC 3.4	29.46	-0.54
T_{max} (+40)	DC 4.5	30.61	0.61
	DC 3.4	30.84	0.84
Nominal Power= 30dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

Low Power

406.1125MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.26	0.26
T_{min} (-10)	DC 4.5	26.65	-0.35
	DC 3.4	26.57	-0.43
T_{max} (+40)	DC 4.5	27.77	0.77
	DC 3.4	27.95	0.95
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

418.0625MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.08	0.08
T_{min} (-10)	DC 4.5	26.60	-0.40
	DC 3.4	26.75	-0.25
T_{max} (+40)	DC 4.5	27.81	0.81
	DC 3.4	27.76	0.76
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

429.9875MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.28	0.28
T_{min} (-10)	DC 4.5	26.74	-0.26
	DC 3.4	26.54	-0.46
T_{max} (+40)	DC 4.5	27.51	0.51
	DC 3.4	27.83	0.83
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

450.0125MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.19	0.19
T_{min} (-10)	DC 4.5	26.58	-0.42
	DC 3.4	26.53	-0.47
T_{max} (+40)	DC 4.5	27.63	0.63
	DC 3.4	27.92	0.92
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

460.0000MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.29	0.29
T_{min} (-10)	DC 4.5	26.67	-0.33
	DC 3.4	26.66	-0.34
T_{max} (+40)	DC 4.5	27.75	0.75
	DC 3.4	27.62	0.62
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

469.9875MHz of 6.25 kHz Channel Separation

Test Condition		Conducted Power (dBm)	Power Error (dB)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	27.10	0.10
T_{min} (-10)	DC 4.5	26.64	-0.36
	DC 3.4	26.52	-0.48
T_{max} (+40)	DC 4.5	27.70	0.70
	DC 3.4	27.94	0.94
Nominal Power= 27dBm; Limit n=±1.5 dB and Limit e=+2.0 dB & -3.0 dB			
Result		Pass	

4.2 Maximum Effective Radiated Power

LIMIT

EN 301 166 V2.2.1 (2016-12) Sub-clause 7.2.3
The maximum effective radiated power under normal test conditions shall be within df from the rated effective radiated power.
The allowance for the characteristics of the equipment (±1,5 dB) shall be combined with the actual measurement

TEST PROCEDURE

Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 7.2.2 for the measurement method.

TEST CONFIGURATION

N/A

TEST RESULTS

N/A
Not applicable to device with 50 Ω antenna connector RF Port

4.3 Adjacent and alternate channels power

LIMIT

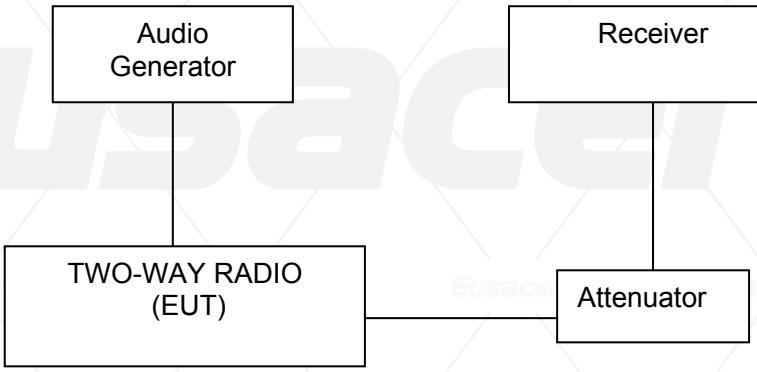
ETSI EN 301 166 V2.1.1 Sub-clause 7.3.3

The rms power in each adjacent channel shall not exceed a value of 60 dB below the rms power in the wanted channel (PR), measured under normal test conditions, see clause 5.3. The rms power in each adjacent channel shall not exceed a value of 55 dB below the rms power in the wanted channel (PR), measured under extreme test conditions, clause 5.4, without the need to be below 0,2 µW (-37 dBm), under both normal and extreme conditions.

The rms power in each alternate channel, centred two CSP from the nominal channel centre, shall not exceed a value of 70 dB below the rms power (PR) measured under normal test conditions, clause 5.3. The power in each alternate channel, centred two CSP from the nominal channel centre, shall not exceed a value of 65 dB below the rms power (PR), measured under extreme test conditions, see clause 5.4, without the need to be below 0,2 µW (-37 dBm), under both normal and extreme conditions.

Limits under extreme conditions (see clause 5.4) are not applicable if the equipment is capable of being tested for frequency error and such tests are carried out under clause 7.7.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 and 5.4 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 7.3.3 for the measurement method.

TEST RESULTS

Test Result of Adjacent Channel Power:

406.1125MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-61.1	-60
		Upper adjacent	-61.5	-60
		Low alternate	-62.1	-60
		Upper alternate	-62.1	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-57.9	-55
		Upper adjacent	-57.5	-55
		Low alternate	-57.2	-55
		Upper alternate	-58.1	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-57.0	-55
		Upper adjacent	-57.0	-55
		Low alternate	-57.6	-55
		Upper alternate	-58.4	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-58.8	-55
		Upper adjacent	-58.1	-55
		Low alternate	-56.7	-55
		Upper alternate	-58.9	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-57.9	-55
		Upper adjacent	-56.9	-55
		Low alternate	-57.7	-55
		Upper alternate	-57.6	-55

418.0625MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-61.1	-60
		Upper adjacent	-62.0	-60
		Low alternate	-61.8	-60
		Upper alternate	-62.5	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-58.0	-55
		Upper adjacent	-57.8	-55
		Low alternate	-57.3	-55
		Upper alternate	-57.9	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-56.9	-55
		Upper adjacent	-58.0	-55
		Low alternate	-57.5	-55
		Upper alternate	-59.0	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-59.3	-55
		Upper adjacent	-59.0	-55
		Low alternate	-57.7	-55
		Upper alternate	-59.3	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-57.4	-55
		Upper adjacent	-56.1	-55
		Low alternate	-56.9	-55
		Upper alternate	-56.8	-55

429.9875MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-61.8	-60
		Upper adjacent	-62.3	-60
		Low alternate	-61.3	-60
		Upper alternate	-61.7	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-57.6	-55
		Upper adjacent	-57.3	-55
		Low alternate	-57.3	-55
		Upper alternate	-58.8	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-56.1	-55
		Upper adjacent	-57.8	-55
		Low alternate	-57.6	-55
		Upper alternate	-58.2	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-59.6	-55
		Upper adjacent	-58.8	-55
		Low alternate	-58.3	-55
		Upper alternate	-58.9	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-58.3	-55
		Upper adjacent	-57.0	-55
		Low alternate	-56.7	-55
		Upper alternate	-56.9	-55

450.0125MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-62.6	-60
		Upper adjacent	-61.4	-60
		Low alternate	-62.2	-60
		Upper alternate	-61.2	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-57.0	-55
		Upper adjacent	-57.4	-55
		Low alternate	-56.4	-55
		Upper alternate	-59.6	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-55.3	-55
		Upper adjacent	-57.4	-55
		Low alternate	-58.4	-55
		Upper alternate	-58.4	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-58.8	-55
		Upper adjacent	-58.2	-55
		Low alternate	-58.8	-55
		Upper alternate	-58.7	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-57.7	-55
		Upper adjacent	-57.2	-55
		Low alternate	-55.9	-55
		Upper alternate	-57.8	-55

460.0000MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-62.8	-60
		Upper adjacent	-61.7	-60
		Low alternate	-62.4	-60
		Upper alternate	-61.5	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-56.1	-55
		Upper adjacent	-57.0	-55
		Low alternate	-56.3	-55
		Upper alternate	-58.7	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-56.4	-55
		Upper adjacent	-58.2	-55
		Low alternate	-58.5	-55
		Upper alternate	-58.2	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-58.8	-55
		Upper adjacent	-58.3	-55
		Low alternate	-58.1	-55
		Upper alternate	-58.2	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-58.5	-55
		Upper adjacent	-57.3	-55
		Low alternate	-56.9	-55
		Upper alternate	-57.5	-55

469. 9875MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-63.1	-60
		Upper adjacent	-61.4	-60
		Low alternate	-62.4	-60
		Upper alternate	-62.2	-60
T_{min} (-10)	DC 4.5V	Low adjacent	-55.7	-55
		Upper adjacent	-57.6	-55
		Low alternate	-55.4	-55
		Upper alternate	-59.2	-55
T_{min} (-10)	DC 3.4V	Low adjacent	-55.9	-55
		Upper adjacent	-58.0	-55
		Low alternate	-58.9	-55
		Upper alternate	-59.1	-55
T_{max} (+40)	DC 4.5V	Low adjacent	-59.2	-55
		Upper adjacent	-58.6	-55
		Low alternate	-58.8	-55
		Upper alternate	-59.2	-55
T_{max} (+40)	DC 3.4V	Low adjacent	-58.8	-55
		Upper adjacent	-57.8	-55
		Low alternate	-56.0	-55
		Upper alternate	-56.6	-55

4.4 Unwanted emissions in the spurious domain

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 7.4.3
The power of any spurious emission, occurring more than 2,5 × CSP from the centre of the channel on which the transmitter is intended to operate, shall not exceed the values given in tables 2 and 3.

Table 2: Conducted emissions

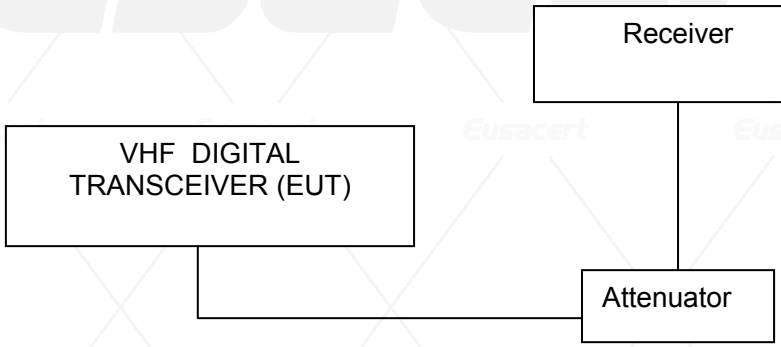
Frequency range	9 kHz to 1 GHz	Above 1 GHz to 4 GHz, or above 1 GHz to 12,75 GHz (see clause 7.4.2.1)
Tx operating	0,25 µW (-36,0 dBm)	1,0 µW (-30,0 dBm)
Tx Standby	2,0 nW (-57,0 dBm)	20,0 nW (-47,0 dBm)

Table 3: Radiated emissions

Frequency range	30 MHz to 1 GHz	Above 1 GHz to 4 GHz, or above 1 GHz to 12,75 GHz (see clause 7.4.2.2)
Tx operating	0,25 µW (-36,0 dBm)	1,0 µW (-30,0 dBm)
Tx Standby	2,0 nW (-57,0 dBm)	20,0 nW (-47,0 dBm)

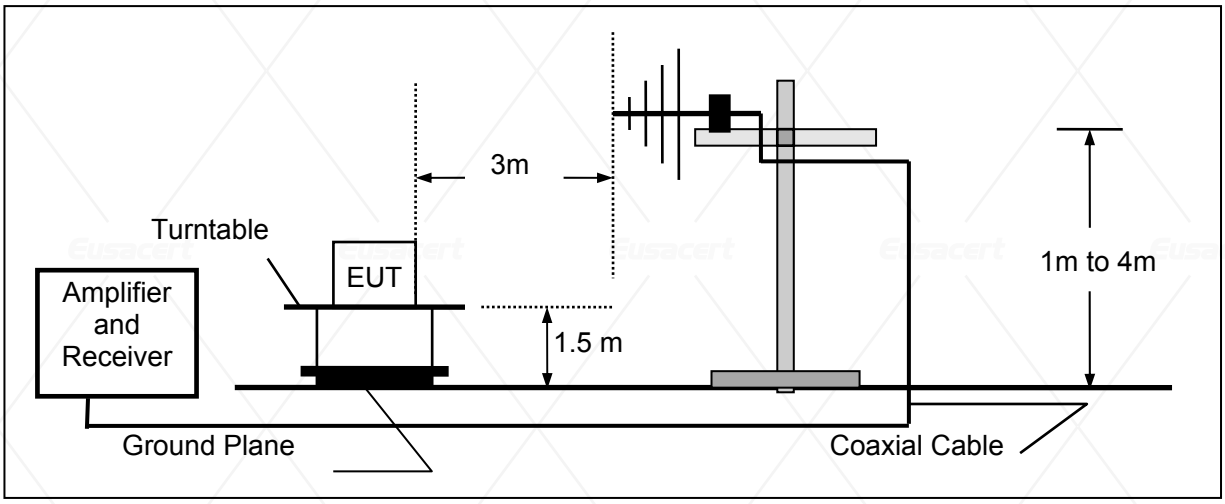
TEST CONFIGURATION

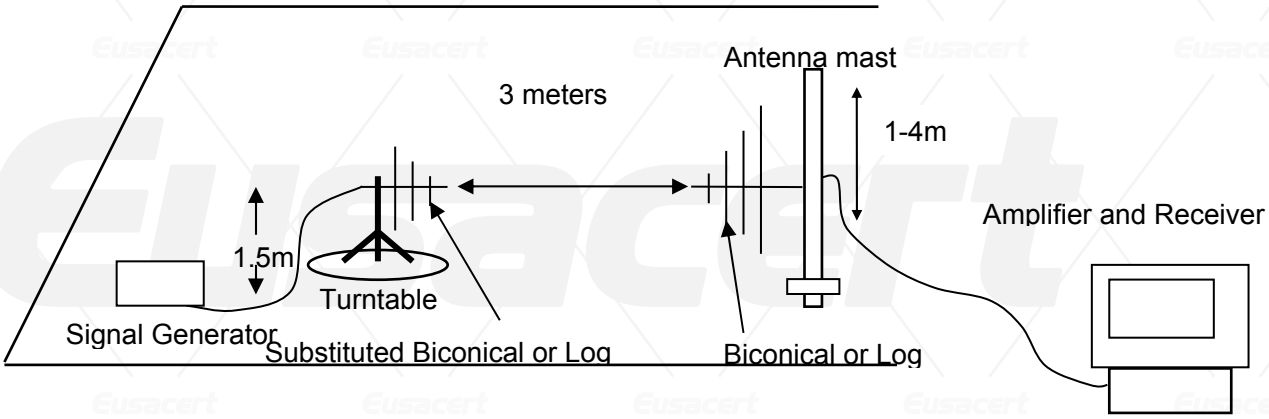
Conducted Measurement (9 kHz to 12.75GHz)



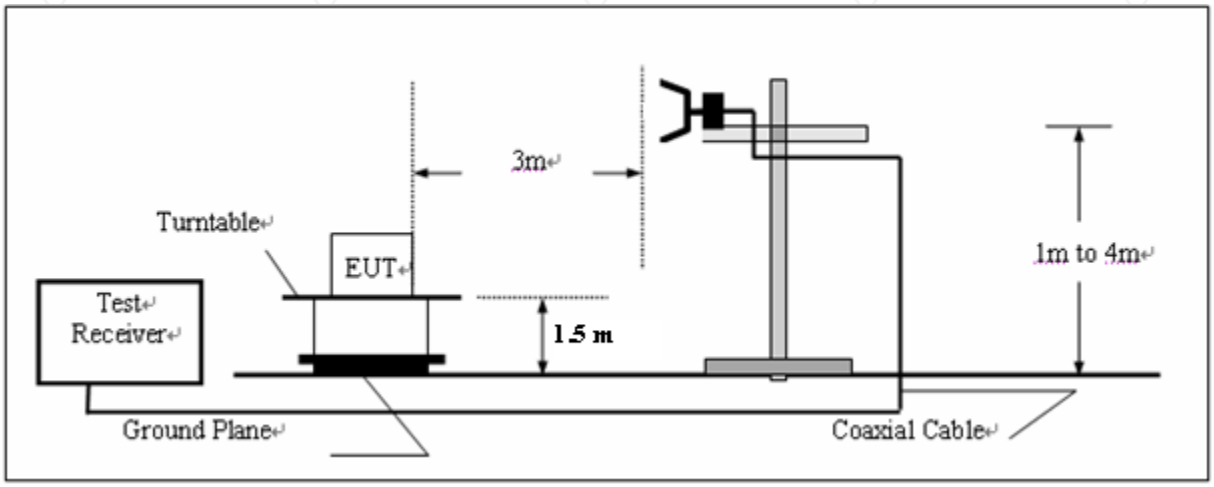
Effective Radiated Power measurement (30MHz to 12.75 GHz)

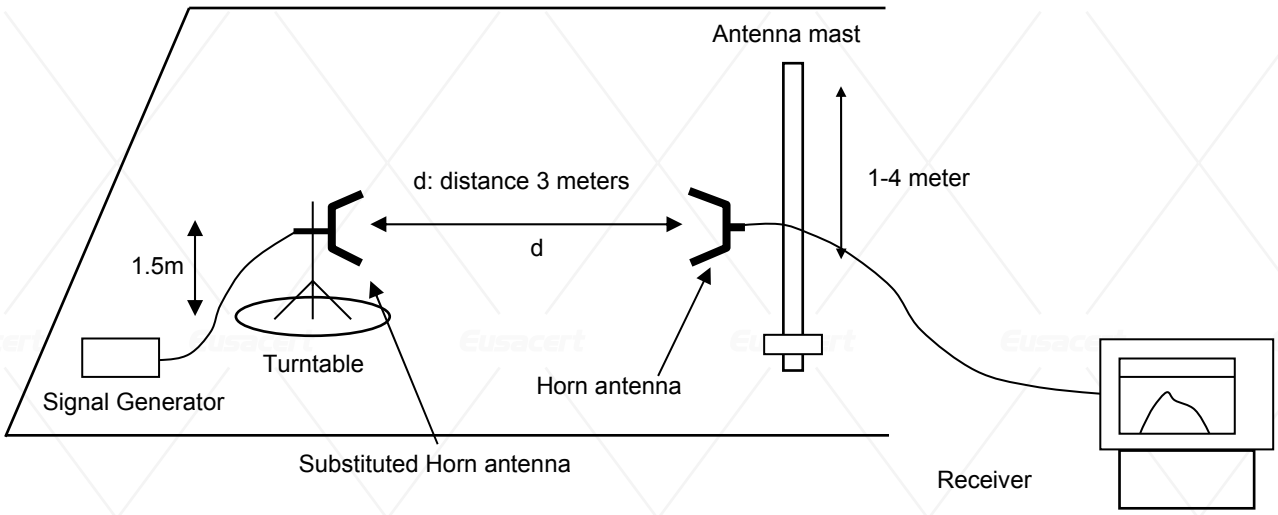
Below 1GHz





Above 1GHz





TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 7.4.2 and 7.4.3 for the measurement method.

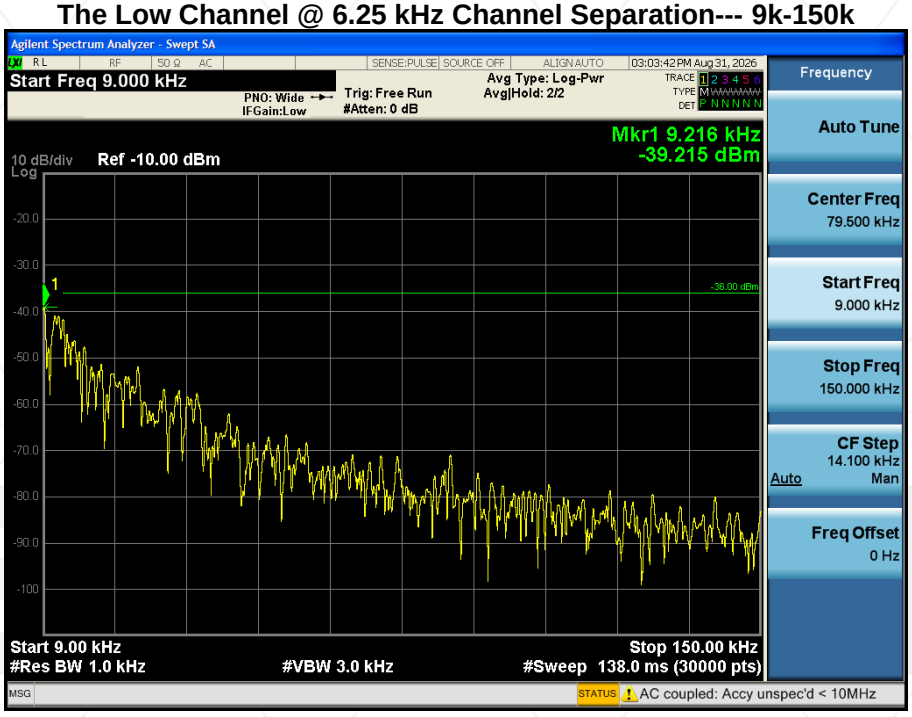
TEST RESULTS

Conducted Measurement (9 kHz to 12.75GHz) --- PASS

UNWANTED EMISSIONS AT BOTTOM CHANNEL

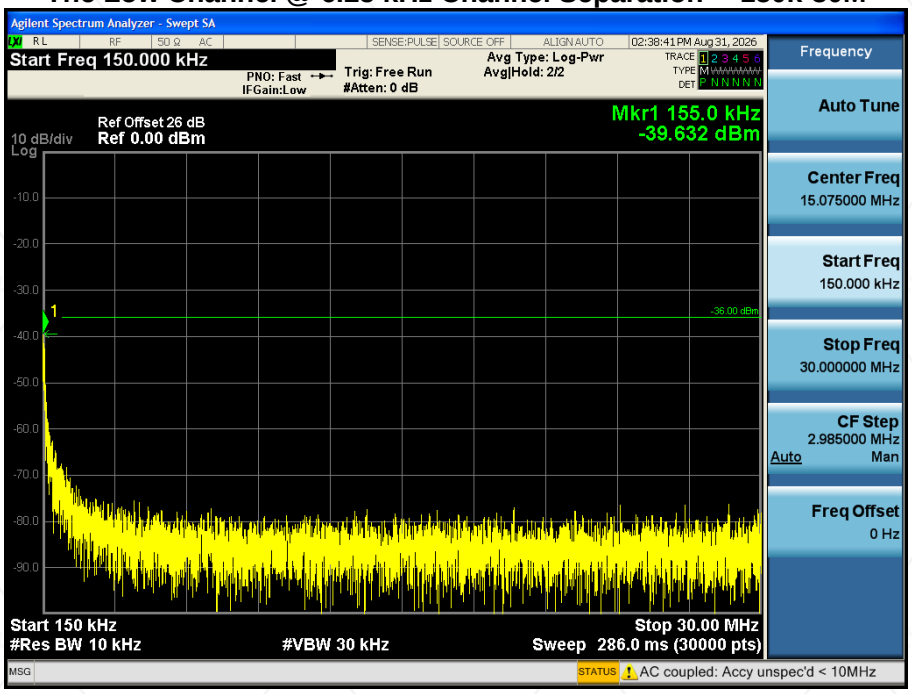
Conducted measurement (9 kHz to 4 GHz) ---PASS (TX operating)

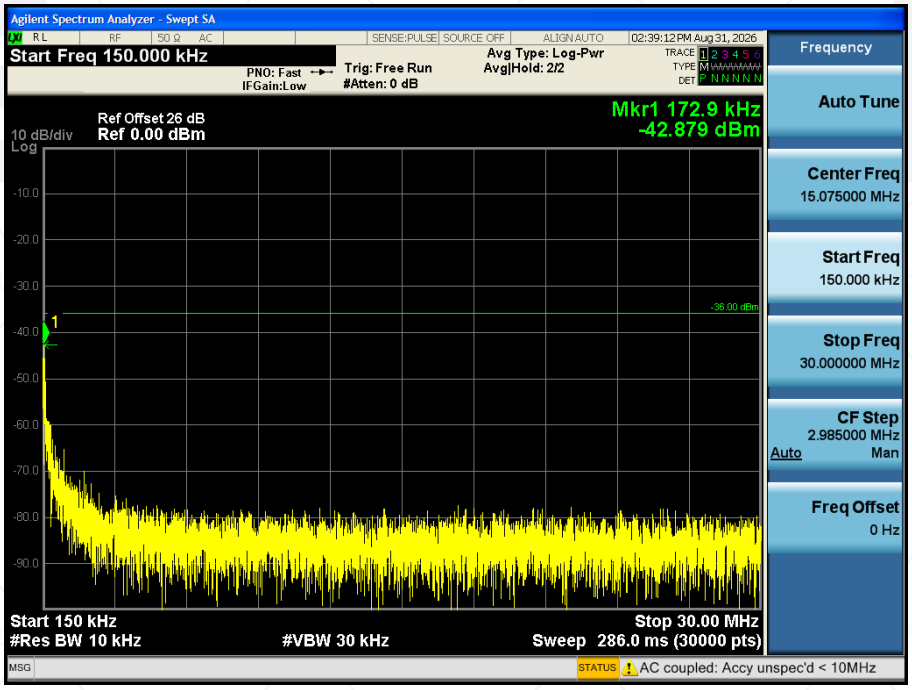
The Low Channel @ 6.25 kHz Channel Separation--- 9k-150k



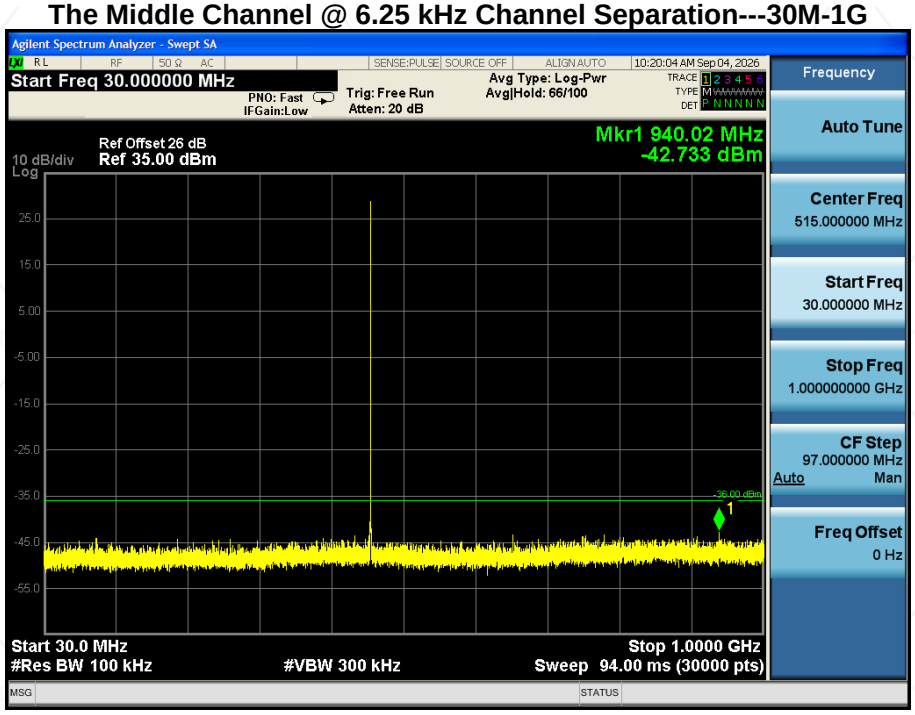


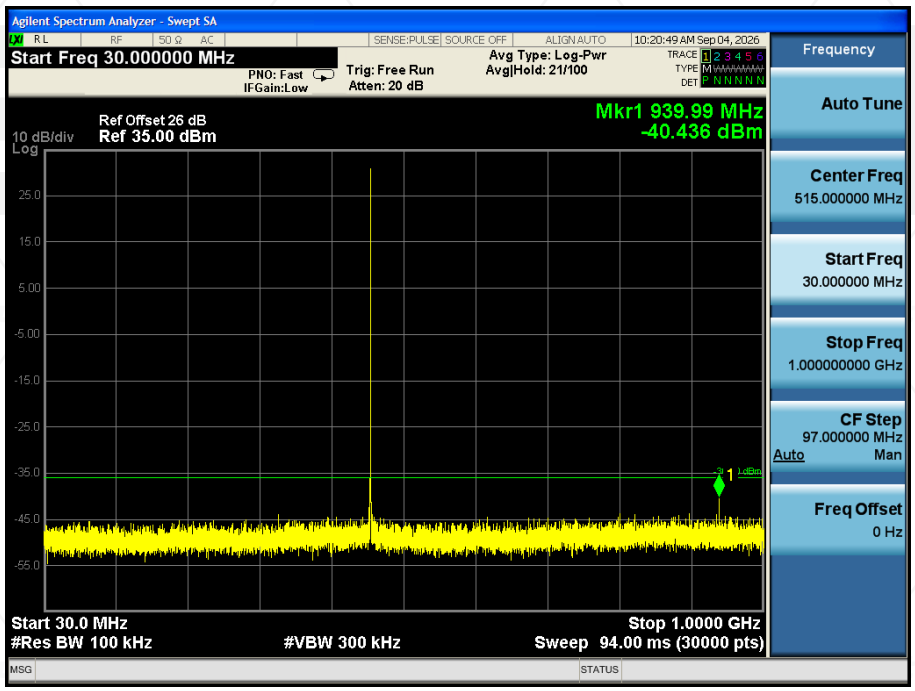
The Low Channel @ 6.25 kHz Channel Separation--- 150k-30M



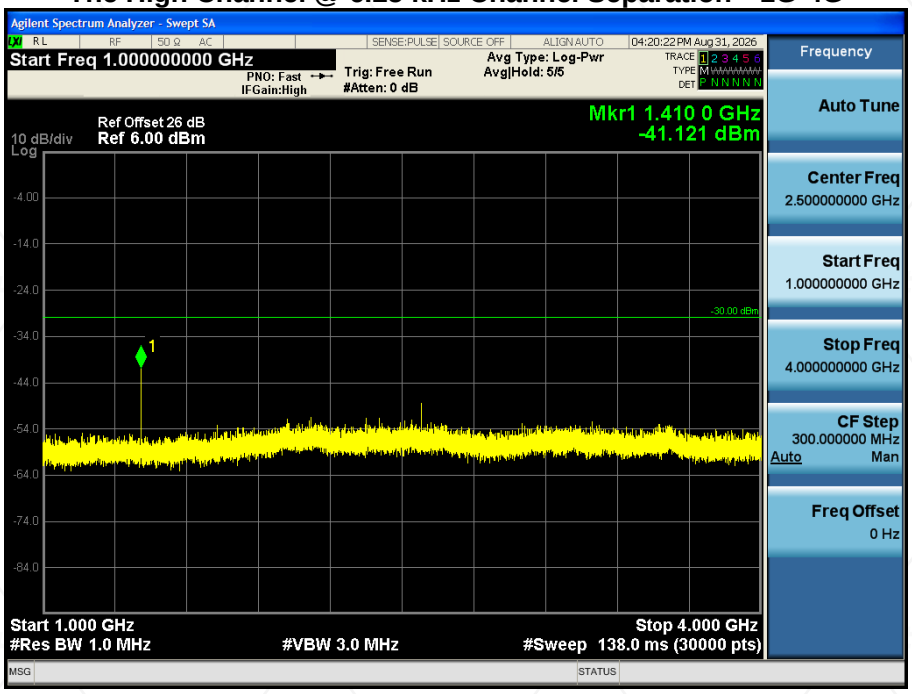


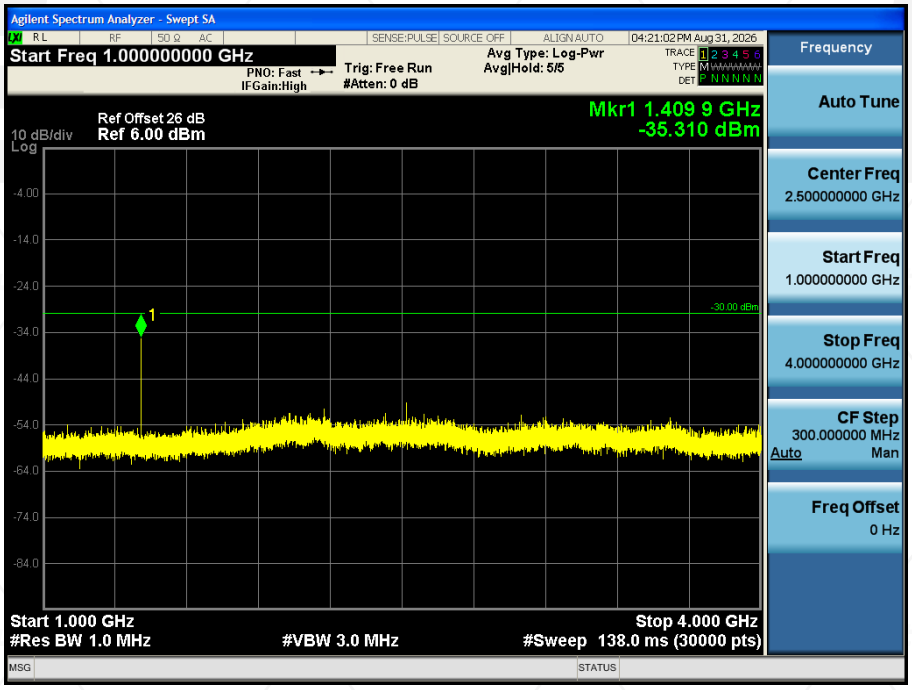
The Middle Channel @ 6.25 kHz Channel Separation---30M-1G





The High Channel @ 6.25 kHz Channel Separation---1G-4G

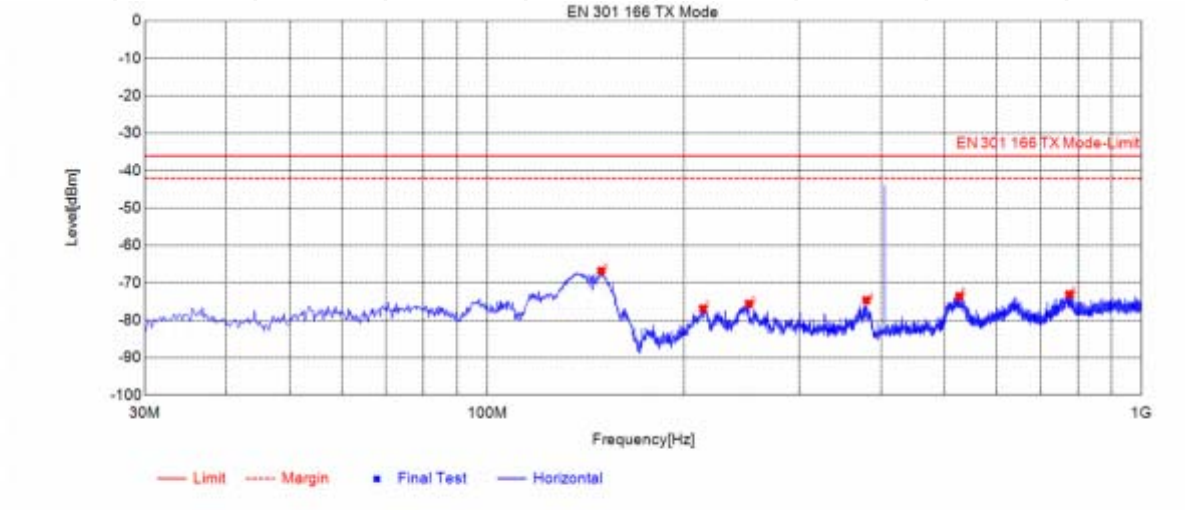




Effective Radiated Power measurement (30 MHz to 12.75GHz) --- PASS

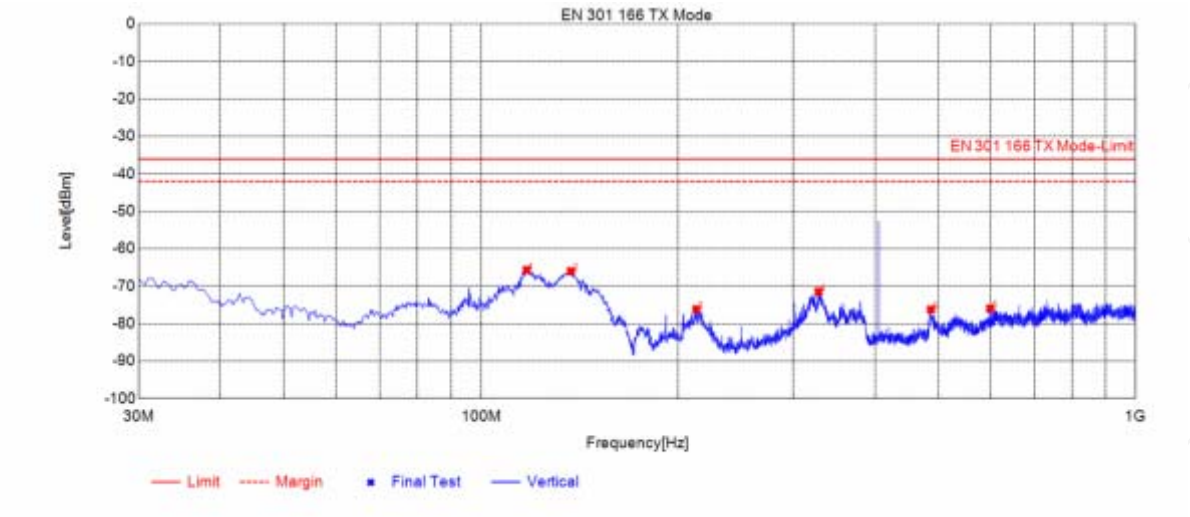
All Channels for for 6.25 kHz Channel Separation/UHF

Low Channel



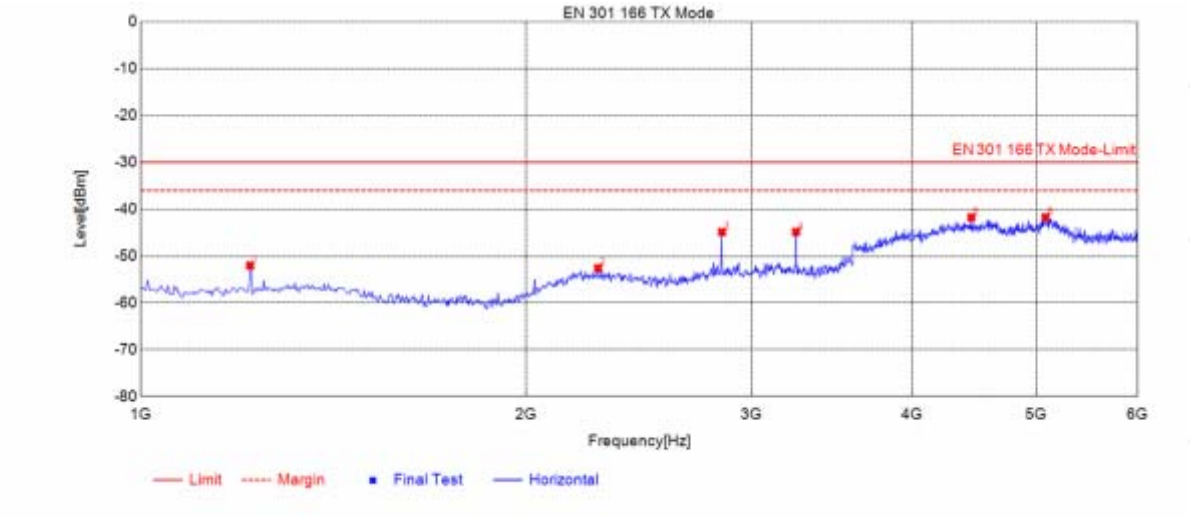
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	149.527	-69.18	-66.79	-36.00	30.79	2.39	Horizontal
2	213.948	-80.18	-76.85	-36.00	40.85	3.33	Horizontal
3	251.398	-81.56	-75.61	-36.00	39.61	5.95	Horizontal
4	380.046	-76.56	-74.64	-36.00	38.64	1.92	Horizontal
5	526.933	-77.88	-73.57	-36.00	37.57	4.31	Horizontal
6	775.885	-81.23	-73.08	-36.00	37.08	8.15	Horizontal



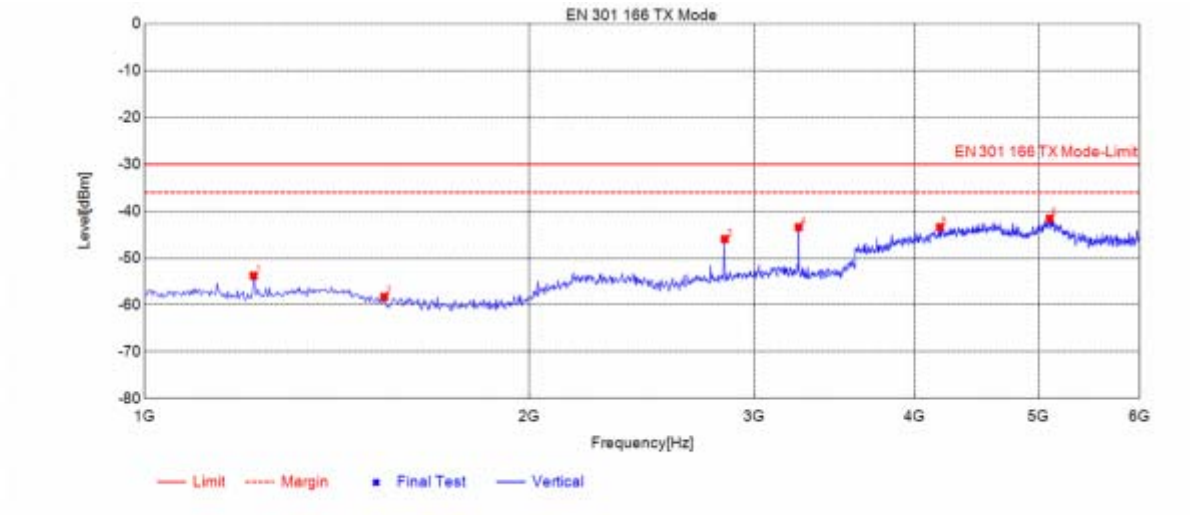
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	117.511	-73.52	-65.67	-36.00	29.67	7.85	Vertical
2	137.303	-65.44	-65.98	-36.00	29.98	-0.54	Vertical
3	213.366	-75.59	-76.19	-36.00	40.19	-0.60	Vertical
4	328.043	-73.05	-71.46	-36.00	35.46	1.59	Vertical
5	486.961	-79.82	-76.28	-36.00	40.28	3.54	Vertical
6	599.892	-81.43	-75.99	-36.00	39.99	5.44	Vertical



Suspected List

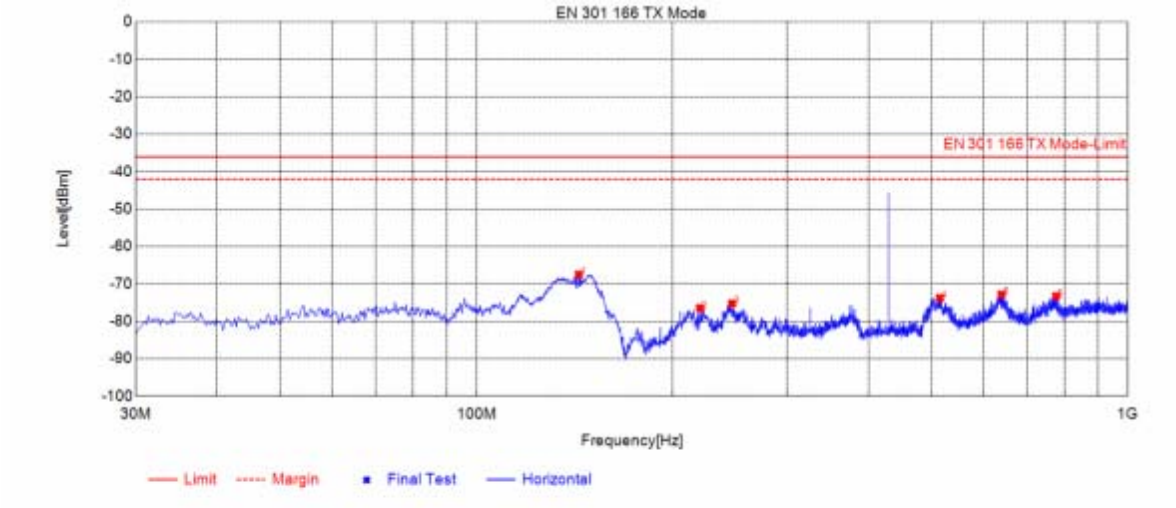
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1217.60	-48.08	-52.01	-30.00	22.01	-3.93	Horizontal
2	2275.63	-52.43	-52.57	-30.00	22.57	-0.14	Horizontal
3	2843.42	-45.24	-44.87	-30.00	14.87	0.37	Horizontal
4	3248.62	-45.69	-44.84	-30.00	14.84	0.85	Horizontal
5	4451.72	-47.84	-41.73	-30.00	11.73	6.11	Horizontal
6	5087.04	-51.58	-41.71	-30.00	11.71	9.87	Horizontal



Suspected List

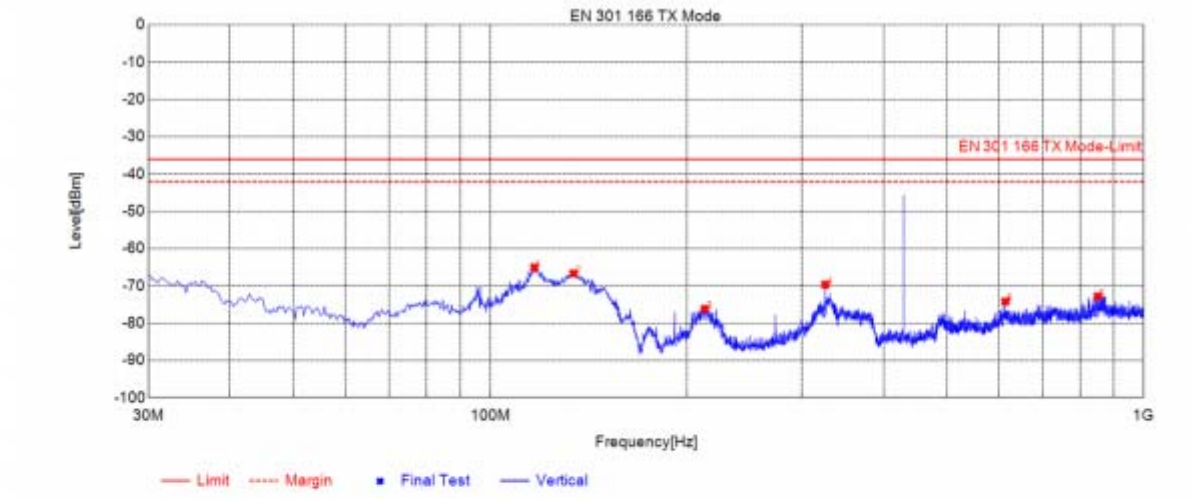
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1217.60	-49.13	-53.75	-30.00	23.75	-4.62	Vertical
2	1540.27	-53.25	-58.28	-30.00	28.28	-5.03	Vertical
3	2843.42	-45.67	-45.93	-30.00	15.93	-0.26	Vertical
4	3248.62	-44.18	-43.39	-30.00	13.39	0.79	Vertical
5	4189.09	-47.64	-43.38	-30.00	13.38	4.26	Vertical
6	5104.55	-51.35	-41.55	-30.00	11.55	9.80	Vertical

Middle Channel



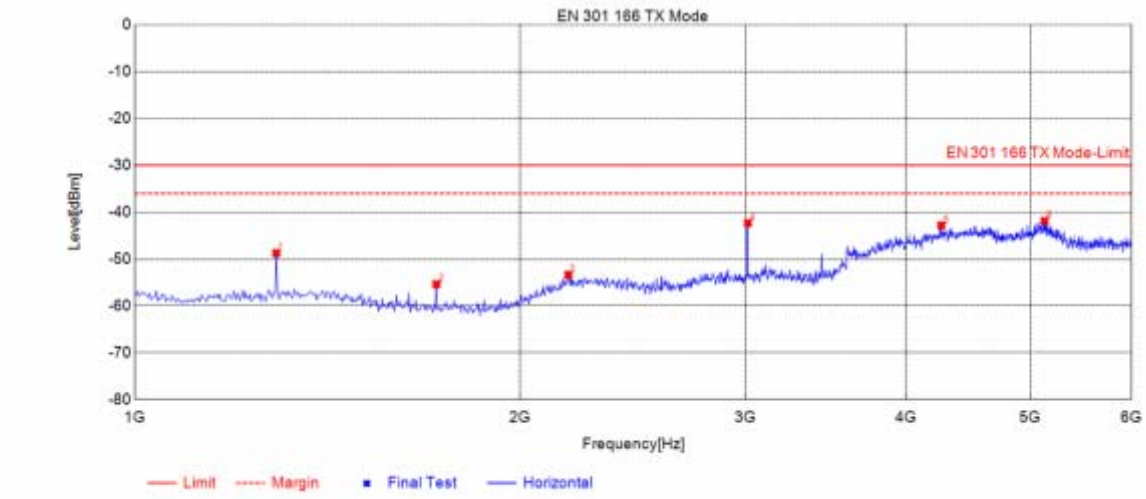
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	143.706	-68.51	-67.51	-36.00	31.51	1.00	Horizontal
2	220.546	-79.57	-76.46	-36.00	40.46	3.11	Horizontal
3	246.935	-80.94	-75.27	-36.00	39.27	5.67	Horizontal
4	514.903	-77.54	-73.80	-36.00	37.80	3.74	Horizontal
5	640.252	-80.53	-72.86	-36.00	36.86	7.67	Horizontal
6	776.467	-81.43	-73.28	-36.00	37.28	8.15	Horizontal



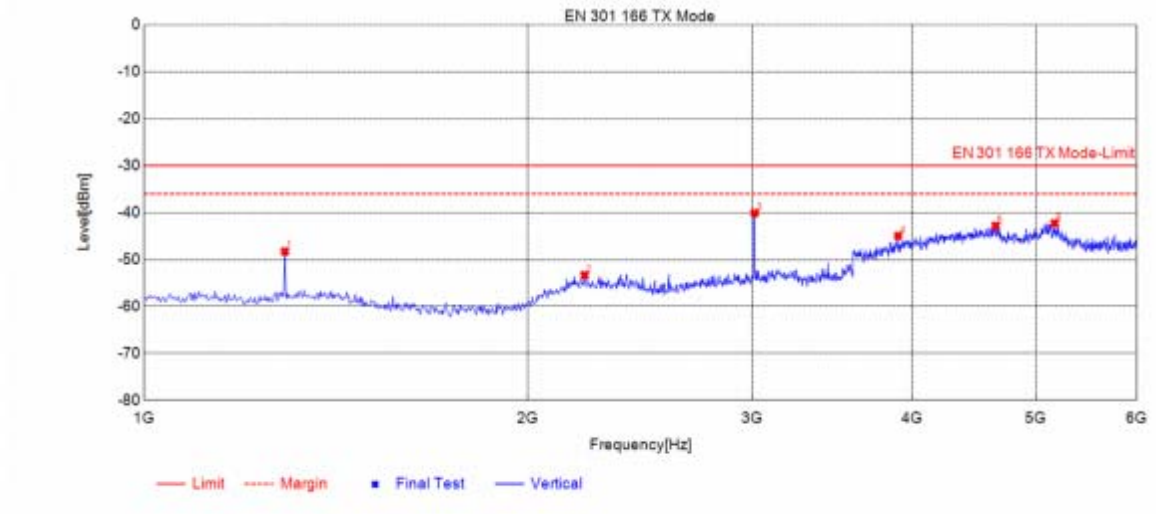
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	116.929	-73.28	-65.07	-36.00	29.07	8.21	Vertical
2	134.198	-66.27	-66.69	-36.00	30.69	-0.42	Vertical
3	213.172	-75.63	-76.20	-36.00	40.20	-0.57	Vertical
4	325.909	-71.11	-69.68	-36.00	33.68	1.43	Vertical
5	614.833	-80.08	-74.21	-36.00	38.21	5.87	Vertical
6	850.590	-80.78	-72.83	-36.00	36.83	7.95	Vertical



Suspected List

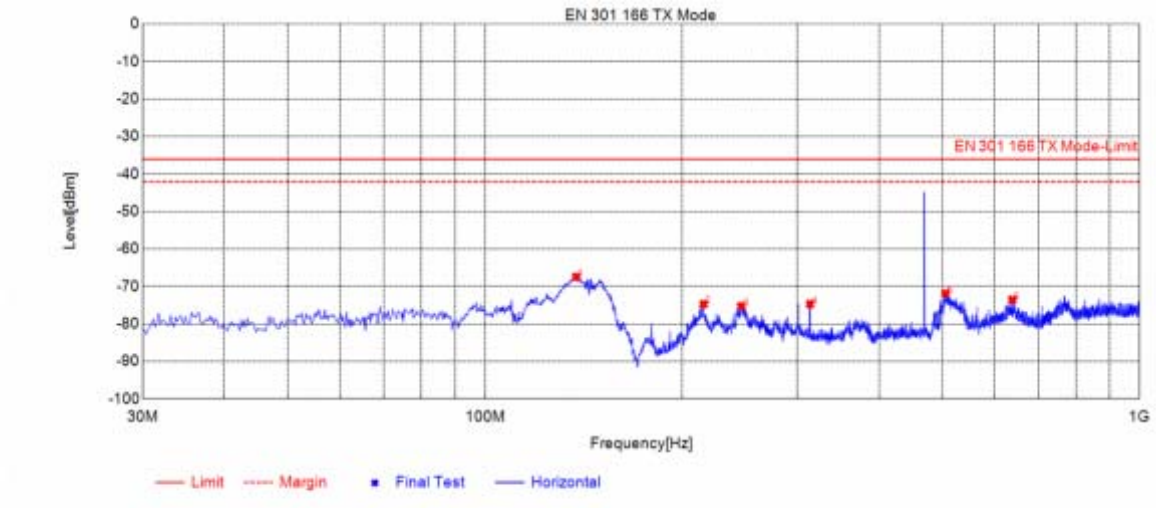
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1290.14	-45.33	-48.74	-30.00	18.74	-3.41	Horizontal
2	1720.36	-50.36	-55.37	-30.00	25.37	-5.01	Horizontal
3	2180.59	-53.04	-53.35	-30.00	23.35	-0.31	Horizontal
4	3011.00	-43.03	-42.31	-30.00	12.31	0.72	Horizontal
5	4264.13	-47.87	-42.80	-30.00	12.80	5.07	Horizontal
6	5132.06	-51.61	-41.87	-30.00	11.87	9.74	Horizontal



Suspected List

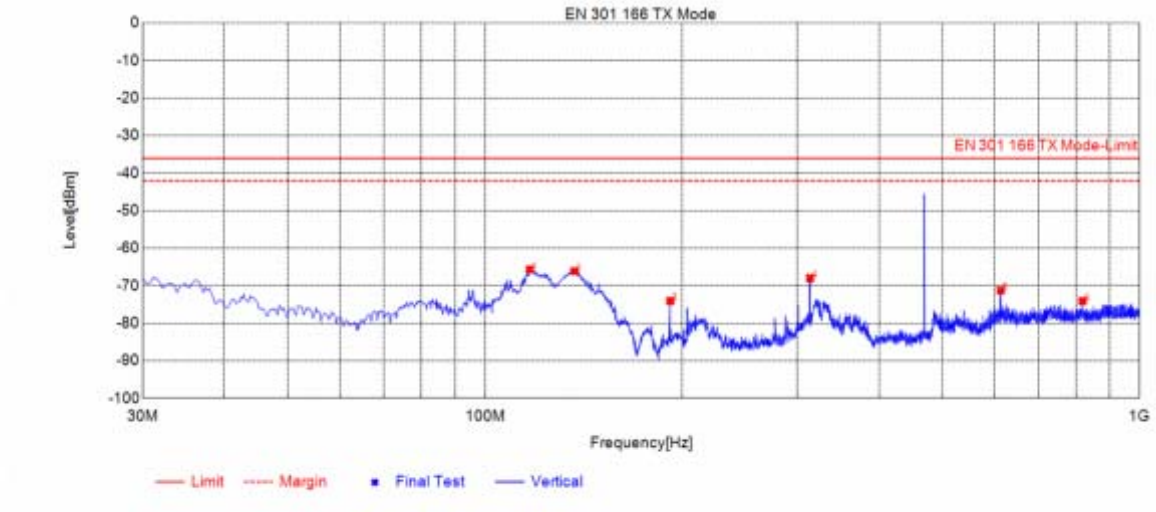
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1290.14	-44.41	-48.27	-30.00	18.27	-3.86	Vertical
2	2215.60	-53.25	-53.31	-30.00	23.31	-0.06	Vertical
3	3011.00	-40.87	-40.08	-30.00	10.08	0.79	Vertical
4	3901.45	-48.54	-44.95	-30.00	14.95	3.59	Vertical
5	4651.82	-49.60	-42.80	-30.00	12.80	6.80	Vertical
6	5174.58	-51.62	-42.26	-30.00	12.26	9.36	Vertical

High Channel



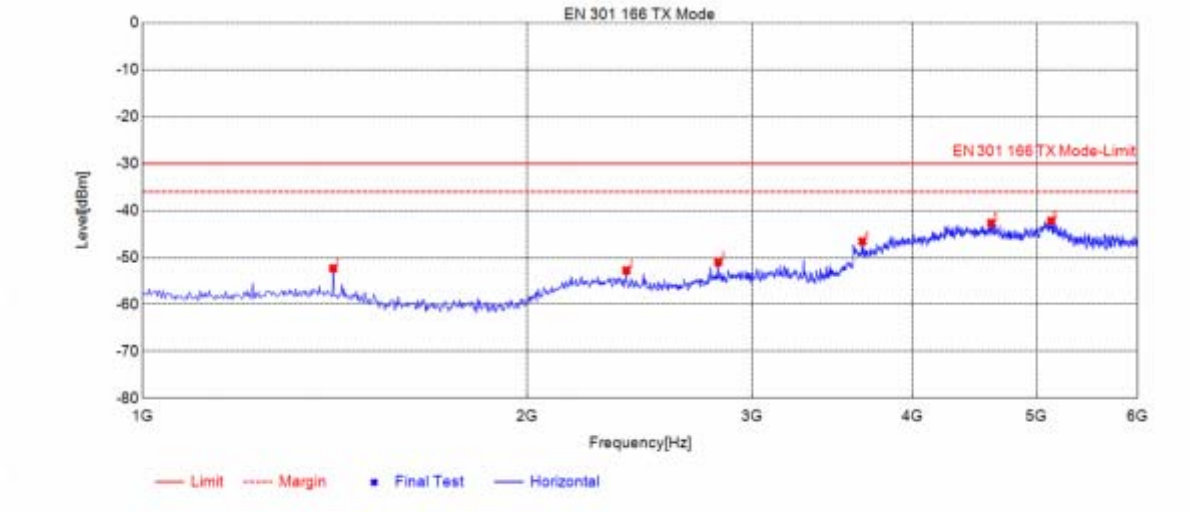
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	137.885	-67.00	-67.42	-36.00	31.42	-0.42	Horizontal
2	215.889	-77.96	-74.70	-36.00	38.70	3.26	Horizontal
3	246.353	-80.82	-75.25	-36.00	39.25	5.57	Horizontal
4	313.878	-76.23	-74.66	-36.00	38.66	1.57	Horizontal
5	505.589	-75.45	-71.87	-36.00	35.87	3.58	Horizontal
6	639.475	-81.24	-73.55	-36.00	37.55	7.69	Horizontal



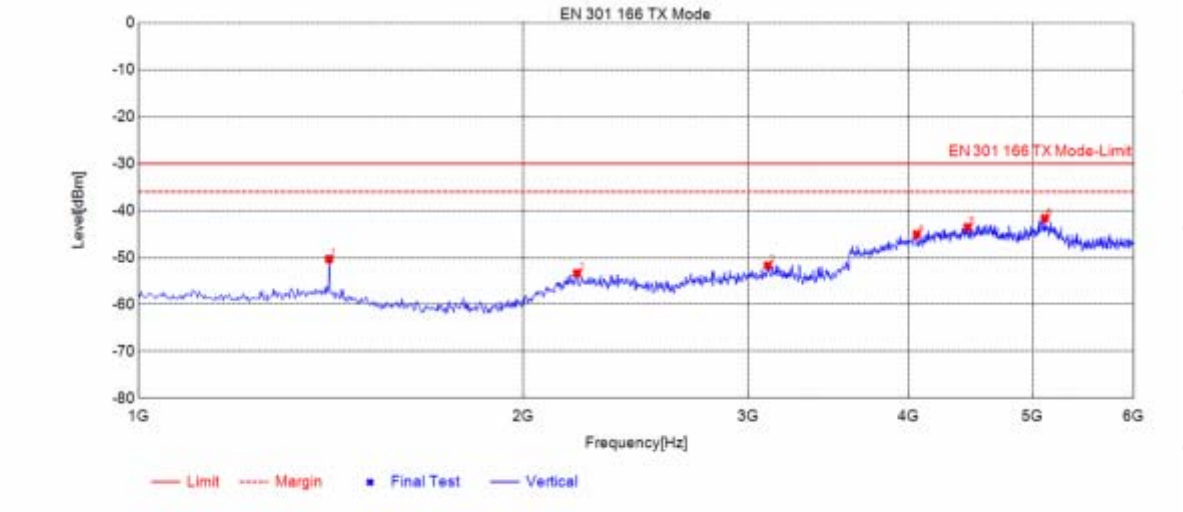
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	117.123	-73.77	-65.68	-36.00	29.68	8.09	Vertical
2	137.109	-65.58	-66.11	-36.00	30.11	-0.53	Vertical
3	192.022	-72.29	-74.05	-36.00	38.05	-1.76	Vertical
4	313.878	-68.57	-67.98	-36.00	31.98	0.59	Vertical
5	614.056	-77.11	-71.25	-36.00	35.25	5.86	Vertical
6	818.573	-82.02	-74.10	-36.00	38.10	7.92	Vertical



Suspected List

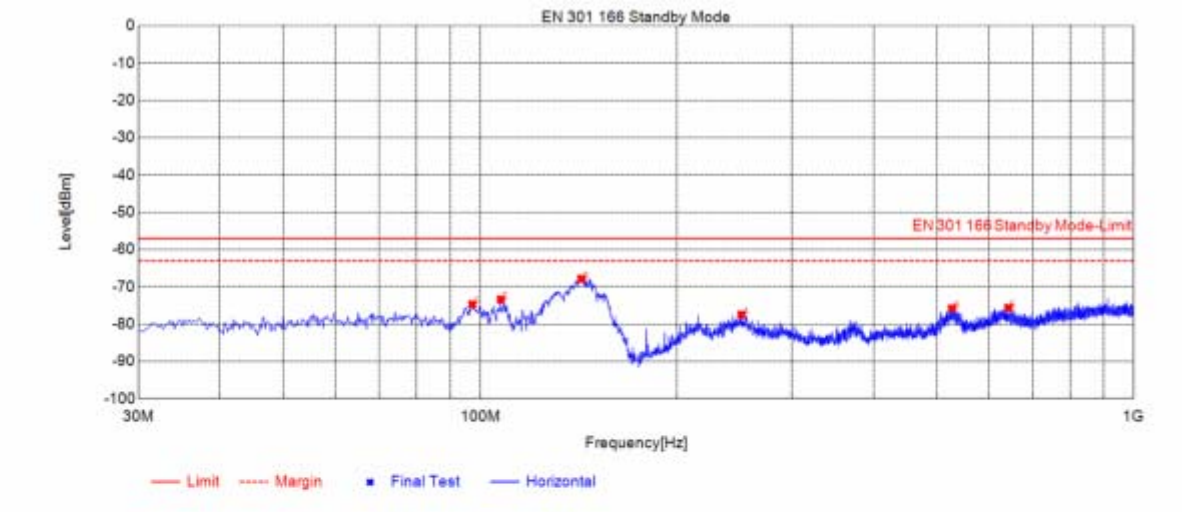
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1410.20	-49.00	-52.30	-30.00	22.30	-3.30	Horizontal
2	2390.69	-52.22	-52.75	-30.00	22.75	-0.53	Horizontal
3	2820.91	-51.38	-51.02	-30.00	21.02	0.36	Horizontal
4	3656.32	-49.67	-46.56	-30.00	16.56	3.11	Horizontal
5	4611.80	-49.06	-42.62	-30.00	12.62	6.44	Horizontal
6	5137.06	-51.86	-42.16	-30.00	12.16	9.70	Horizontal



Suspected List

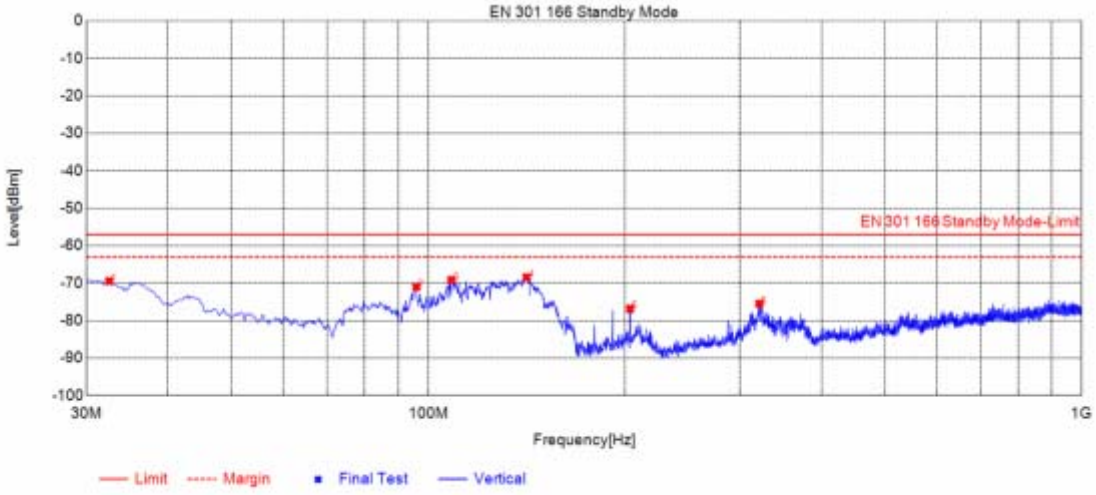
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1410.20	-46.96	-50.29	-30.00	20.29	-3.33	Vertical
2	2203.10	-53.38	-53.35	-30.00	23.35	0.03	Vertical
3	3106.05	-52.86	-51.69	-30.00	21.69	1.17	Vertical
4	4061.53	-48.54	-45.04	-30.00	15.04	3.50	Vertical
5	4451.72	-49.28	-43.50	-30.00	13.50	5.78	Vertical
6	5114.55	-51.37	-41.63	-30.00	11.63	9.74	Vertical

Standby Mode



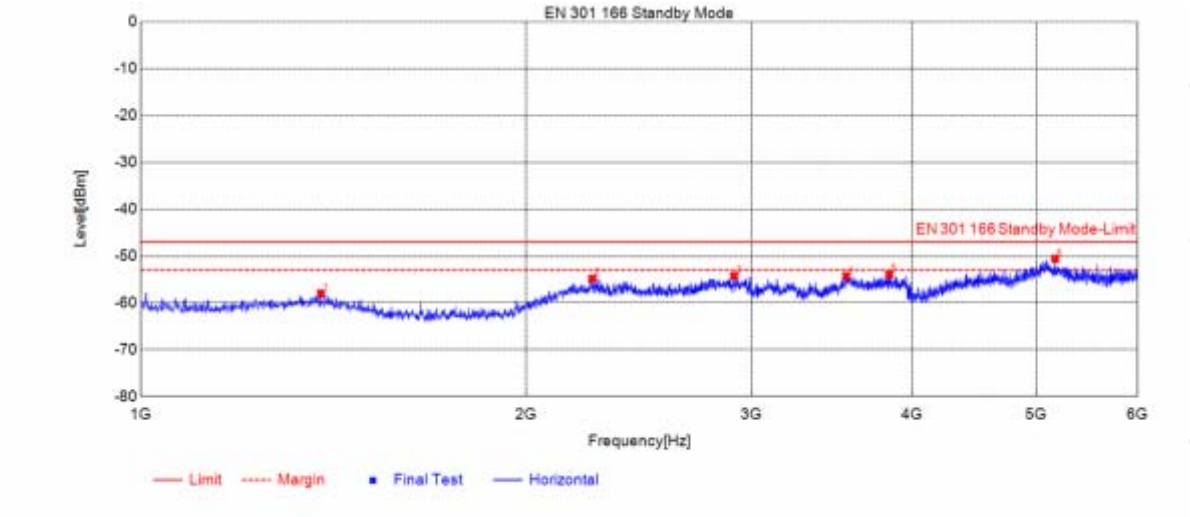
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	97.3315	-75.12	-74.72	-57.00	17.72	0.40	Horizontal
2	107.615	-76.14	-73.37	-57.00	16.37	2.77	Horizontal
3	142.930	-68.64	-67.83	-57.00	10.83	0.81	Horizontal
4	251.204	-83.46	-77.47	-57.00	20.47	5.99	Horizontal
5	527.515	-80.16	-75.82	-57.00	18.82	4.34	Horizontal
6	643.356	-83.24	-75.62	-57.00	18.62	7.62	Horizontal



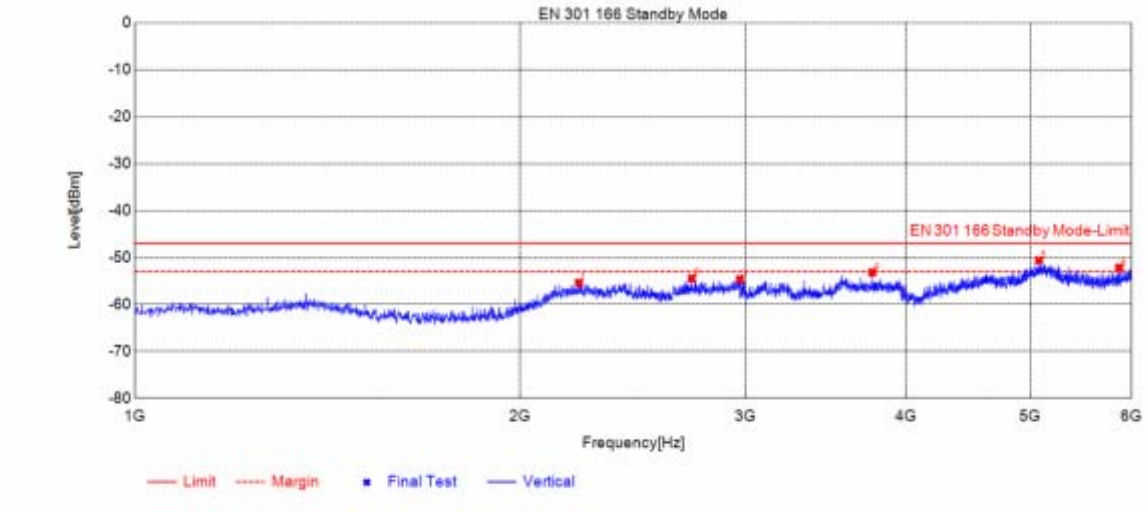
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	32.5225	-71.62	-69.44	-57.00	12.44	2.18	Vertical
2	95.9732	-75.48	-71.01	-57.00	14.01	4.47	Vertical
3	108.585	-80.91	-69.12	-57.00	12.12	11.79	Vertical
4	141.572	-67.73	-68.44	-57.00	11.44	-0.71	Vertical
5	203.858	-76.22	-76.82	-57.00	19.82	-0.60	Vertical
6	321.446	-76.59	-75.47	-57.00	18.47	1.12	Vertical



Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1383.07	-54.79	-57.99	-47.00	10.99	-3.20	Horizontal
2	2252.25	-54.72	-54.82	-47.00	7.82	-0.10	Horizontal
3	2906.38	-54.65	-54.26	-47.00	7.26	0.39	Horizontal
4	3555.51	-57.01	-54.29	-47.00	7.29	2.72	Horizontal
5	3841.56	-57.86	-53.98	-47.00	6.98	3.88	Horizontal
6	5174.83	-59.94	-50.59	-47.00	3.59	9.35	Horizontal



Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2222.24	-55.29	-55.40	-47.00	8.40	-0.11	Vertical
2	2722.34	-53.76	-54.46	-47.00	7.46	-0.70	Vertical
3	2968.39	-55.13	-54.63	-47.00	7.63	0.50	Vertical
4	3765.55	-56.39	-53.19	-47.00	6.19	3.20	Vertical
5	5081.81	-60.25	-50.61	-47.00	3.61	9.64	Vertical
6	5869.97	-59.13	-52.15	-47.00	5.15	6.98	Vertical

4.5 Intermodulation attenuation

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 7.5.3

This requirement applies only to transmitters to be used in base stations (fixed).

Two classes of transmitter intermodulation attenuation are defined, the equipment shall fulfil one of the following requirements:

- the intermodulation attenuation ratio shall be at least 40,0 dB for any intermodulation component;
- for base station equipment to be used in special service conditions (e.g. at sites where more than one transmitter will be in service) or when the regulatory authority makes it a condition of the licence, the intermodulation attenuation ratio shall be at least 70,0 dB for any intermodulation component. In the case where the performance is achieved by additional internal or external isolating devices (such as circulators) these shall be used for the measurements.

TEST CONFIGURATION

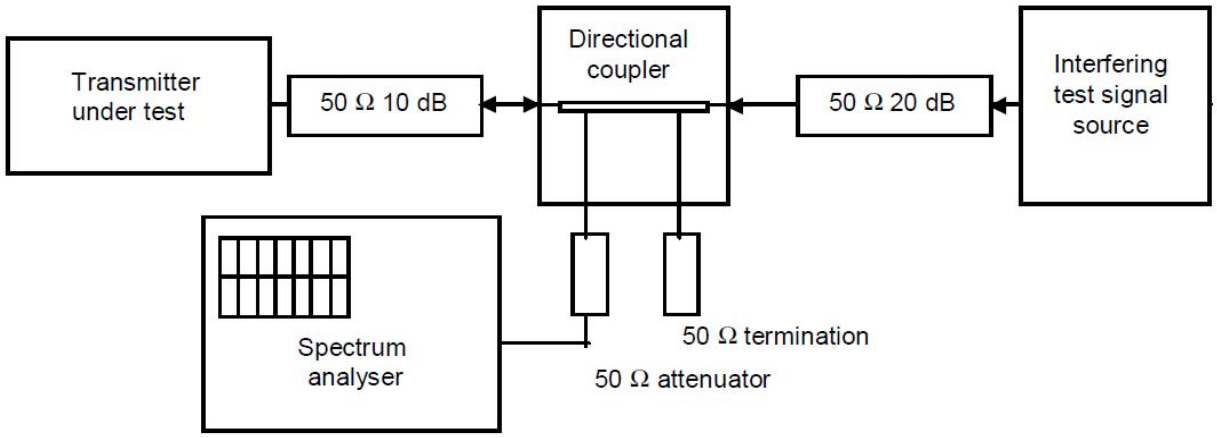


Figure 3: Measurement arrangement

TEST PROCEDUR

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 7.5.2 for the measurement method.

TEST RESULTS

Fixed base stations only.

4.6 Transient power

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 7.6.3

The transient power in the adjacent channel shall not exceed a value of 50 dB below PX of the transmitter without the need to be below 2 µW (-27,0 dBm).

For measurements at 100 kHz and 1 MHz the transient power shall not exceed 60 dB below PX of the transmitter without the need to be below 2 µW (-27,0 dBm).

TEST CONFIGURATION

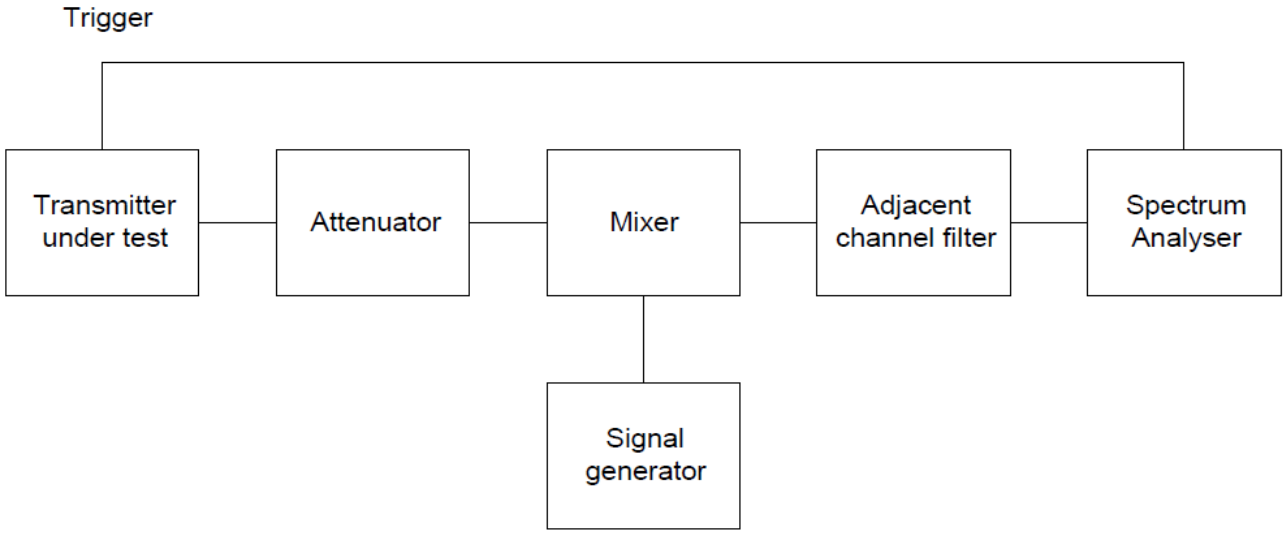


Figure 4: Transient power measuring device measurement arrangement

TEST PROCEDUR

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 7.6.2 for the measurement method.

TEST RESULTS

406.1125MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-60.29	-50
		Upper adjacent	-60.22	-50

418.0625MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-60.15	-50
		Upper adjacent	-60.24	-50

429.9875MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-60.21	-50
		Upper adjacent	-60.45	-50

450.0125MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-61.35	-50
		Upper adjacent	-60.29	-50

460.0000MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-60.24	-50
		Upper adjacent	-60.18	-50

469.9875MHz of 6.25 kHz Channel Separation

Test Condition		Test Channel	Reading (dBc)	limit (dBc)
Temperature (℃)	Voltage (V)			
T_{nor} (+25)	V nor(4.2)	Low adjacent	-60.22	-50
		Upper adjacent	-60.15	-50

4.7 Frequency Error

LIMIT

EN 301 166 V2.2.1 (2016-12) Sub-clause 7.7.3

The frequency error shall not exceed the values given in table 5, under normal and extreme test conditions, or in any intermediate set of conditions. However, for practical reasons the measurement shall be performed only at nominal and extreme test conditions.

Table 5: Frequency error

Frequency error limit				
Below 47 MHz	**47 MHz to 137 MHz**	**Above 137 MHz to 300 MHz**	**Above 300 MHz to 500 MHz**	**Above 500 MHz**
±0,30 kHz (B) ±0,1 CSP (M)	±0,30 kHz (B) ±0,1 CSP (M)	±0,30 kHz (B) ±0,1 CSP (M)	±0,50 kHz (B) ±0,1 CSP (M)	±0,50 kHz (B) ±0,1 CSP (M)
NOTE: For mobile and handportable equipment that is tested following synchronization (see clause 7.7.2) the frequency error shall at no time exceed the above limits up to 4 minutes after the start of transmission. For handportable equipment, these limits only apply to the reduced extreme temperature conditions 0 °C to +40 °C (see clause 5.4.1). At severe extreme temperature conditions -20 °C to +55 °C the frequency limit is ±0,25 CSP. (B) Base station. (M) Mobile station and handportable.				

TEST CONFIGURATION

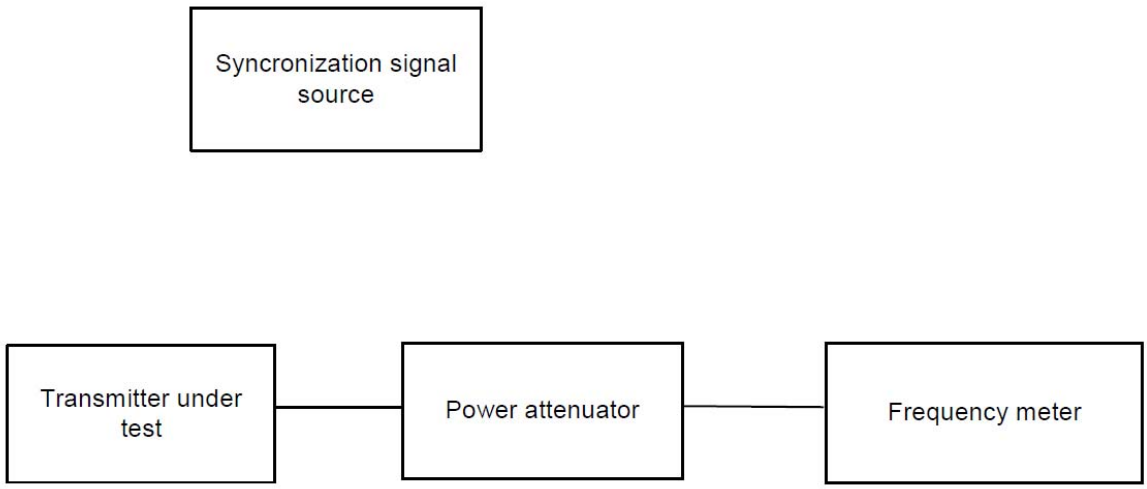


Figure 5: Measurement arrangement

TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 5.3 and Sub-clause 5.4 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 7.7.2 for the measurement method.

TEST RESULTS

406.1125MHz of 6.25 kHz Channel Separation

Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	406.1130	0.5
T_{min} (-10)	DC 4.5	406.1116	-0.9
	DC 3.4	406.1117	-0.8
T_{max} (+40)	DC 4.5	406.1122	-0.3
	DC 3.4	406.1118	-0.7
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 406.1125MHz	
Result		Pass	

418.0625MHz of 6.25 kHz Channel Separation

Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	418.0630	0.50
T_{min} (-10)	DC 4.5	418.0622	-0.30
	DC 3.4	418.0621	-0.40
T_{max} (+40)	DC 4.5	418.0614	-1.10
	DC 3.4	418.0611	-1.40
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 418.0625MHz	
Result		Pass	

429.9875MHz of 6.25 kHz Channel Separation

Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	429.9880	0.5
T_{min} (-10)	DC 4.5	429.9886	1.1
	DC 3.4	429.9885	1.0
T_{max} (+40)	DC 4.5	429.9887	1.2
	DC 3.4	429.9881	0.6
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 429.9875MHz	
Result		Pass	

450.0125MHz of 6.25 kHz Channel Separation

Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	450.0130	0.5
T_{min} (-10)	DC 4.5	450.0122	-0.3
	DC 3.4	450.0121	-0.4
T_{max} (+40)	DC 4.5	450.0114	-1.1
	DC 3.4	450.0111	-1.4
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 450.0125MHz	
Result		Pass	

460.0000MHz of 6.25 kHz Channel Separation

Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	460.0000	0.0
T_{min} (-10)	DC 4.5	459.9996	-0.4
	DC 3.4	459.9997	-0.3
T_{max} (+40)	DC 4.5	459.9992	-0.8
	DC 3.4	459.9998	-0.2
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 460.0000MHz	
Result		Pass	

469.9875MHz of 6.25 kHz Channel Separation

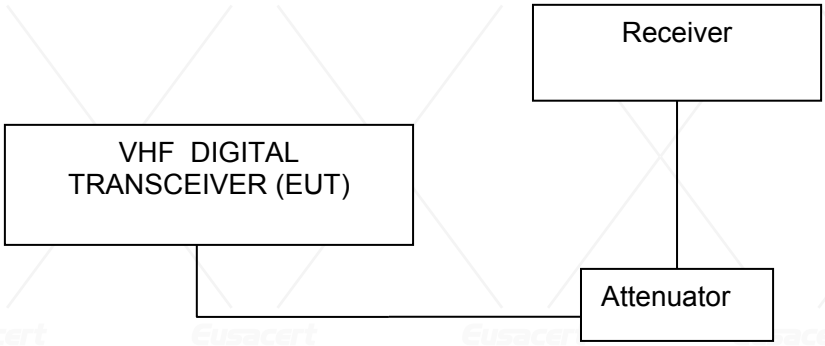
Test Condition		Frequency Measured (MHz)	Frequency Error (kHz)
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	469.9870	-0.5
T_{min} (-10)	DC 4.5	469.9866	-0.9
	DC 3.4	469.9865	-1.0
T_{max} (+40)	DC 4.5	469.9867	-0.8
	DC 3.4	469.9869	-0.6
Limit		Normal=±0.625kHz, Extreme=±1.5625kHz @ 469.9875MHz	
Result		Pass	

4.8 Transmitter timeout timer

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 7.8.4
The maximum transmission time shall be less than 180 seconds.
This requirement only applies to PMR446 equipment [i.6].

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 7.8.2 for the measurement method.

TEST RESULTS

N/A
This requirement only applies to PMR446 equipment.

5. Requirements for receiver

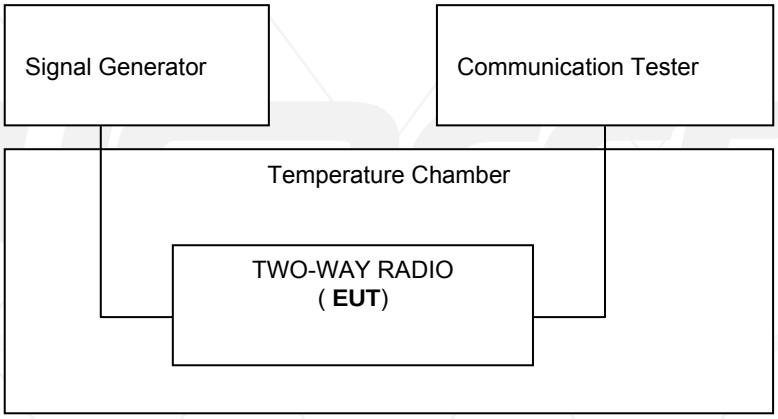
5.1 Maximum usable sensitivity (analogue, conducted)

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.1.3

This requirement applies only to equipment capable of analogue transmission/reception.
The maximum usable sensitivity shall not exceed an emf of 6,0 dBµV under normal test conditions, and an emf of 12,0 dBµV under extreme test conditions.
Under extreme test conditions, the receiver audio output power shall be within ±3,0 dB of the value obtained under normal test conditions.
For equipment capable of duplex operation an additional requirement is contained in clause 9.1.3.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 & 5.4 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.1.2 for the measurement method.

TEST RESULTS

Test Result of 6.25 kHz Channel Separation			
Test Condition		Result Measured (dBm)	Limit (dBm)
Temperature (℃)	Voltage (V)		
Tnor (+25)	DC 4.2	-116.83	-110
Tmin (-10)	DC 4.5	-118.93	-104
	DC 3.4	-118.81	-104
Tmax (+40)	DC 4.5	-119.80	-104
	DC 3.4	-120.93	-104
Result		Pass	

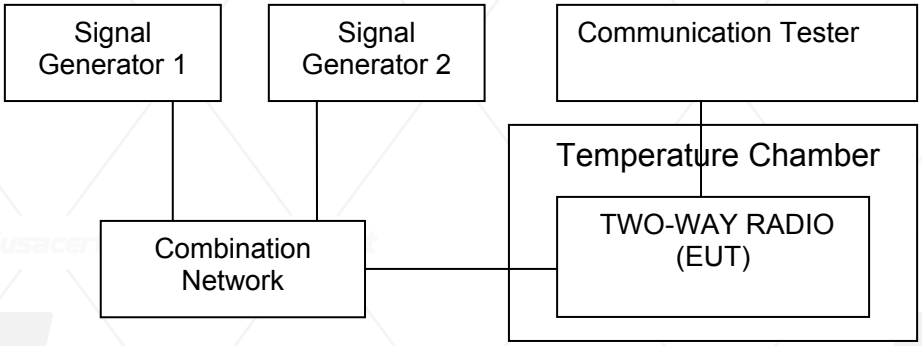
5.2 Adjacent channel selectivity

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.5.3

The minimum adjacent channel rejection shall be:
- 60 dB for base station equipment under normal test conditions and 50 dB under extreme test conditions;
- 54 dB for mobile equipment under normal test conditions and 44 dB under extreme test conditions;
- 50 dB for handportable equipment under normal test conditions and 40 dB under extreme test conditions.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 and 5.4 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.5.2 for the measurement method.

TEST RESULTS

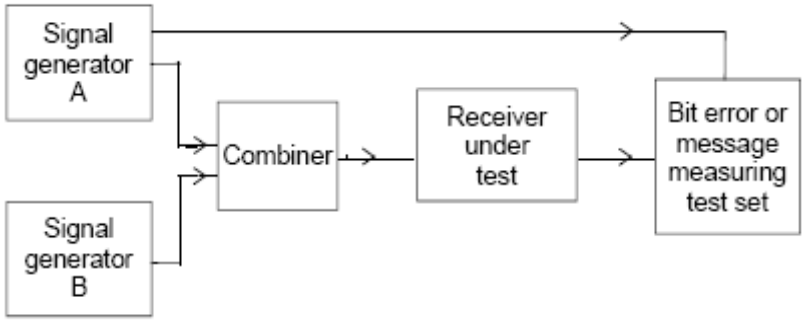
Test Result of 6.25 kHz Channel Separation at unwanted signal frequency above wanted signal frequency			
Test Condition		Result Measured (dBm)	Limit (dBm)
Temperature (°C)	Voltage (V)		
T_{nor} (+25)	DC 4.2	65.05	50
T_{min} (-10)	DC 4.5	62.06	40
	DC 3.4	64.08	40
T_{max} (+40)	DC 4.5	61.00	40
	DC 3.4	58.08	40
Result		Pass	

5.3 Spurious response rejection

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.6.3
At any frequency separated from the nominal frequency of the receiver by more than 250 % of CSP but less than 25 kHz, the spurious response rejection shall be such that under the specified test conditions, the given degradation shall not be exceeded for levels of the unwanted signal up to 66,0 dBµV.
At any frequency separated from the nominal frequency of the receiver by 25 kHz or more, the spurious response rejection shall be such that under the specified test conditions, the given degradation shall not be exceeded for levels of the unwanted signal up to 76,0 dBµV.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.6.3 for the measurement method.

TEST RESULTS

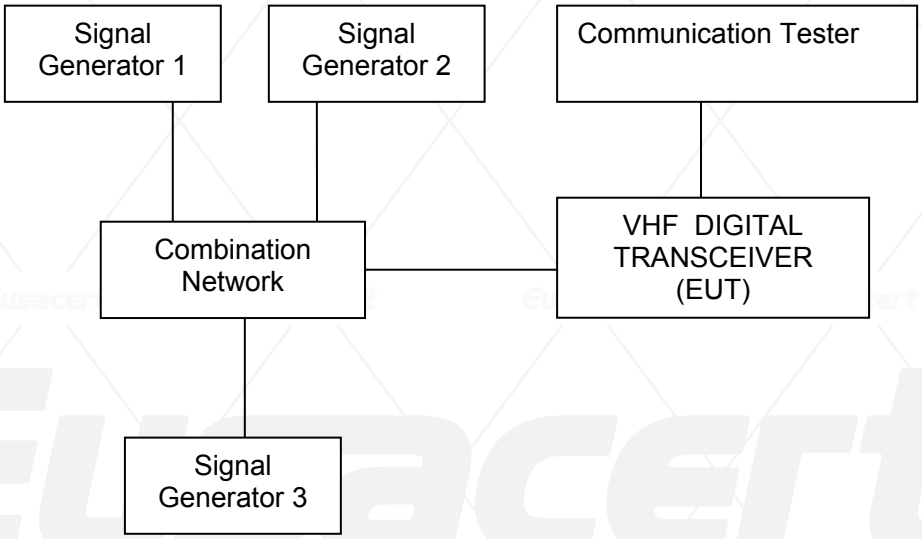
Test Result of 6.25 kHz Channel Separation at unwanted signal frequency above wanted signal frequency				
Test Condition		Frequency separated	Result Measured (dBm)	Limit (dBm)
Temperature (°C)	Voltage (V)			
T_{nor} (+25)	DC 4.2	15.975	45	66
		20.125	48	66
		25.125	54	76
Result		Pass		

5.4 Intermodulation response rejection

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.7.3
The intermodulation response rejection of the equipment shall be such that under the specified test conditions, the given degradation shall not be exceeded for levels of the unwanted signal up to 76 dBµV for base stations and 71 dBµV for mobile and handportable stations

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.8.2 for the measurement method.

TEST RESULTS

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	406.1125	406.1125+0.025	406.1125+0.050	54.15	≤71	Pass
		406.1125	406.1125+0.050	406.1125+0.100	52.85	≤71	Pass
T_{min} (-10)	DC 4.5	406.1125	406.1125+0.025	406.1125+0.050	53.95	≤71	Pass
		406.1125	406.1125+0.050	406.1125+0.100	52.58	≤71	Pass
	DC 3.4	406.1125	406.1125+0.025	406.1125+0.050	53.55	≤71	Pass
		406.1125	406.1125+0.050	406.1125+0.100	53.75	≤71	Pass
T_{max} (+40)	DC 4.5	406.1125	406.1125+0.025	406.1125+0.050	54.08	≤71	Pass
		406.1125	406.1125+0.050	406.1125+0.100	53.16	≤71	Pass
	DC 3.4	406.1125	406.1125+0.025	406.1125+0.050	54.26	≤71	Pass
		406.1125	406.1125+0.050	406.1125+0.100	53.94	≤71	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	418.0625	418.0625+0.025	418.0625+0.050	54.18	≤71	Pass
		418.0625	418.0625+0.050	418.0625+0.100	52.93	≤71	Pass
T_{min} (-10)	DC 4.5	418.0625	418.0625+0.025	418.0625+0.050	53.96	≤71	Pass
		418.0625	418.0625+0.050	418.0625+0.100	52.62	≤71	Pass
	DC 3.4	418.0625	418.0625+0.025	418.0625+0.050	53.62	≤71	Pass
		418.0625	418.0625+0.050	418.0625+0.100	53.78	≤71	Pass
T_{max} (+40)	DC 4.5	418.0625	418.0625+0.025	418.0625+0.050	54.09	≤71	Pass
		418.0625	418.0625+0.050	418.0625+0.100	53.22	≤71	Pass
	DC 3.4	418.0625	418.0625+0.025	418.0625+0.050	54.27	≤71	Pass
		418.0625	418.0625+0.050	418.0625+0.100	53.95	≤71	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	429.9875	429.9875+0.025	429.9875+0.050	54.21	≤71	Pass
		429.9875	429.9875+0.050	429.9875+0.100	52.88	≤71	Pass
T_{min} (-10)	DC 4.5	429.9875	429.9875+0.025	429.9875+0.050	54.00	≤71	Pass
		429.9875	429.9875+0.050	429.9875+0.100	52.62	≤71	Pass
	DC 3.4	429.9875	429.9875+0.025	429.9875+0.050	53.56	≤71	Pass
		429.9875	429.9875+0.050	429.9875+0.100	53.82	≤71	Pass
T_{max} (+40)	DC 4.5	429.9875	429.9875+0.025	429.9875+0.050	54.15	≤71	Pass
		429.9875	429.9875+0.050	429.9875+0.100	53.19	≤71	Pass
	DC 3.4	429.9875	429.9875+0.025	429.9875+0.050	54.29	≤71	Pass
		429.9875	429.9875+0.050	429.9875+0.100	54.02	≤71	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	450.0125	450.0125+0.025	450.0125+0.050	54.15	≤71	Pass
		450.0125	450.0125+0.050	450.0125+0.100	52.85	≤71	Pass
T_{min} (-10)	DC 4.5	450.0125	450.0125+0.025	450.0125+0.050	53.95	≤71	Pass
		450.0125	450.0125+0.050	450.0125+0.100	52.58	≤71	Pass
	DC 3.4	450.0125	450.0125+0.025	450.0125+0.050	53.55	≤71	Pass
		450.0125	450.0125+0.050	450.0125+0.100	53.75	≤71	Pass
T_{max} (+40)	DC 4.5	450.0125	450.0125+0.025	450.0125+0.050	54.08	≤71	Pass
		450.0125	450.0125+0.050	450.0125+0.100	53.16	≤71	Pass
	DC 3.4	450.0125	450.0125+0.025	450.0125+0.050	54.26	≤71	Pass
		450.0125	450.0125+0.050	450.0125+0.100	53.94	≤71	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	460.0000	460.0000+0.025	460.0000+0.050	54.15	≤71	Pass
		460.0000	460.0000+0.050	460.0000+0.100	52.85	≤71	Pass
T_{min} (-10)	DC 4.5	460.0000	460.0000+0.025	460.0000+0.050	53.95	≤71	Pass
		460.0000	460.0000+0.050	460.0000+0.100	52.58	≤71	Pass
	DC 3.4	460.0000	460.0000+0.025	460.0000+0.050	53.55	≤71	Pass
		460.0000	460.0000+0.050	460.0000+0.100	53.75	≤71	Pass
T_{max} (+40)	DC 4.5	460.0000	460.0000+0.025	460.0000+0.050	54.08	≤71	Pass
		460.0000	460.0000+0.050	460.0000+0.100	53.16	≤71	Pass
	DC 3.4	460.0000	460.0000+0.025	460.0000+0.050	54.26	≤71	Pass
		460.0000	460.0000+0.050	460.0000+0.100	53.94	≤71	Pass

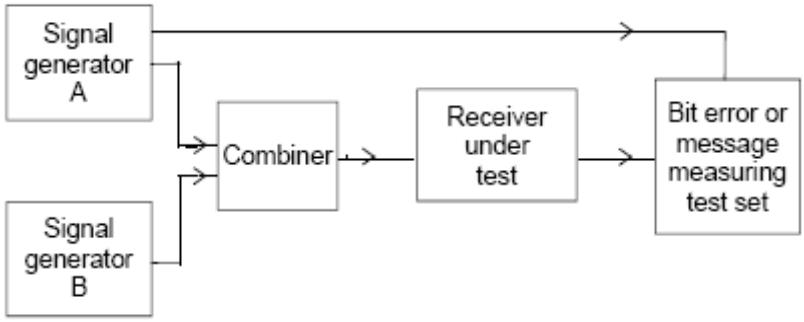
Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel							
Test Condition		Wanted Signal Channel (MHz)	Unmodulated Unwanted Signal Frequency (MHz)	Modulated Unwanted Signal Frequency (MHz)	Test Result (dBuV)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2	469.9875	469.9875+0.025	469.9875+0.050	54.15	≤71	Pass
		469.9875	469.9875+0.050	469.9875+0.100	52.85	≤71	Pass
T_{min} (-10)	DC 4.5	469.9875	469.9875+0.025	469.9875+0.050	53.95	≤71	Pass
		469.9875	469.9875+0.050	469.9875+0.100	52.58	≤71	Pass
	DC 3.4	469.9875	469.9875+0.025	469.9875+0.050	53.55	≤71	Pass
		469.9875	469.9875+0.050	469.9875+0.100	53.75	≤71	Pass
T_{max} (+40)	DC 4.5	469.9875	469.9875+0.025	469.9875+0.050	54.08	≤71	Pass
		469.9875	469.9875+0.050	469.9875+0.100	53.16	≤71	Pass
	DC 3.4	469.9875	469.9875+0.025	469.9875+0.050	54.26	≤71	Pass
		469.9875	469.9875+0.050	469.9875+0.100	53.94	≤71	Pass

5.5 Blocking or desensitization

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.8.3
The blocking level, for any frequency within the specified ranges, shall not be less than 90,0 dBµV except at frequencies on which spurious responses are found, clause 8.6.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.8.2 for the measurement method.

TEST RESULTS

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	406.1125	396.1125	98.16	⩾90	Pass
			401.1125	98.20	⩾90	Pass
			404.1125	98.22	⩾90	Pass
			405.1125	98.27	⩾90	Pass
			407.1125	98.25	⩾90	Pass
			408.1125	98.26	⩾90	Pass
			411.1125	98.29	⩾90	Pass
			416.1125	98.35	⩾90	Pass
T_{nor} (+10)	DC 4.5	406.1125	396.1125	98.25	⩾90	Pass
			401.1125	98.21	⩾90	Pass
			404.1125	98.27	⩾90	Pass
			405.1125	98.35	⩾90	Pass
			407.1125	98.33	⩾90	Pass
			408.1125	98.35	⩾90	Pass
			411.1125	98.29	⩾90	Pass
			416.1125	98.39	⩾90	Pass
T_{nor} (+10)	DC 3.4	406.1125	396.1125	98.25	⩾90	Pass
			401.1125	98.23	⩾90	Pass
			404.1125	98.35	⩾90	Pass
			405.1125	98.42	⩾90	Pass
			407.1125	98.39	⩾90	Pass
			408.1125	98.35	⩾90	Pass
			411.1125	98.37	⩾90	Pass
			416.1125	98.41	⩾90	Pass

T_{nor} (-40)	DC 4.5	406.1125	396.1125	98.35	⩾90	Pass
			401.1125	98.29	⩾90	Pass
			404.1125	98.40	⩾90	Pass
			405.1125	98.45	⩾90	Pass
			407.1125	98.44	⩾90	Pass
			408.1125	98.44	⩾90	Pass
			411.1125	98.41	⩾90	Pass
			416.1125	98.47	⩾90	Pass
T_{nor} (-40)	DC 3.4	406.1125	396.1125	98.44	⩾90	Pass
			401.1125	98.39	⩾90	Pass
			404.1125	98.48	⩾90	Pass
			405.1125	98.54	⩾90	Pass
			407.1125	98.49	⩾90	Pass
			408.1125	98.50	⩾90	Pass
			411.1125	98.41	⩾90	Pass
			416.1125	98.53	⩾90	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	418.0625	408.0625	98.22	⩾90	Pass
			413.0625	98.31	⩾90	Pass
			416.0625	98.32	⩾90	Pass
			417.0625	98.44	⩾90	Pass
			419.0625	98.32	⩾90	Pass
			420.0625	98.37	⩾90	Pass
			423.0625	98.36	⩾90	Pass
			428.0625	98.46	⩾90	Pass
T_{nor} (+10)	DC 4.5	418.0625	408.0625	98.34	⩾90	Pass
			413.0625	98.33	⩾90	Pass
			416.0625	98.42	⩾90	Pass
			417.0625	98.47	⩾90	Pass
			419.0625	98.42	⩾90	Pass
			420.0625	98.53	⩾90	Pass
			423.0625	98.32	⩾90	Pass
			428.0625	98.50	⩾90	Pass
T_{nor} (+10)	DC 3.4	418.0625	408.0625	98.33	⩾90	Pass
			413.0625	98.42	⩾90	Pass
			416.0625	98.53	⩾90	Pass
			417.0625	98.51	⩾90	Pass
			419.0625	98.54	⩾90	Pass
			420.0625	98.46	⩾90	Pass
			423.0625	98.46	⩾90	Pass
			428.0625	98.52	⩾90	Pass

T_{nor} (-40)	DC 4.5	418.0625	408.0625	98.38	⩾90	Pass
			413.0625	98.41	⩾90	Pass
			416.0625	98.40	⩾90	Pass
			417.0625	98.51	⩾90	Pass
			419.0625	98.46	⩾90	Pass
			420.0625	98.52	⩾90	Pass
			423.0625	98.44	⩾90	Pass
			428.0625	98.58	⩾90	Pass
T_{nor} (-40)	DC 3.4	418.0625	408.0625	98.45	⩾90	Pass
			413.0625	98.46	⩾90	Pass
			416.0625	98.49	⩾90	Pass
			417.0625	98.51	⩾90	Pass
			419.0625	98.49	⩾90	Pass
			420.0625	98.54	⩾90	Pass
			423.0625	98.53	⩾90	Pass
			428.0625	98.49	⩾90	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	429.9875	419.9875	98.29	⩾90	Pass
			424.9875	98.34	⩾90	Pass
			427.9875	98.31	⩾90	Pass
			428.9875	98.47	⩾90	Pass
			430.9875	98.40	⩾90	Pass
			431.9875	98.28	⩾90	Pass
			434.9875	98.41	⩾90	Pass
			439.9875	98.54	⩾90	Pass
T_{nor} (+10)	DC 4.5	429.9875	419.9875	98.35	⩾90	Pass
			424.9875	98.38	⩾90	Pass
			427.9875	98.42	⩾90	Pass
			428.9875	98.49	⩾90	Pass
			430.9875	98.47	⩾90	Pass
			431.9875	98.54	⩾90	Pass
			434.9875	98.41	⩾90	Pass
			439.9875	98.47	⩾90	Pass
T_{nor} (+10)	DC 3.4	429.9875	419.9875	98.39	⩾90	Pass
			424.9875	98.41	⩾90	Pass
			427.9875	98.52	⩾90	Pass
			428.9875	98.50	⩾90	Pass
			430.9875	98.53	⩾90	Pass
			431.9875	98.59	⩾90	Pass
			434.9875	98.45	⩾90	Pass
			439.9875	98.60	⩾90	Pass

T_{nor} (-40)	DC 4.5	429.9875	419.9875	98.45	⩾90	Pass
			424.9875	98.52	⩾90	Pass
			427.9875	98.46	⩾90	Pass
			428.9875	98.58	⩾90	Pass
			430.9875	98.48	⩾90	Pass
			431.9875	98.64	⩾90	Pass
			434.9875	98.48	⩾90	Pass
			439.9875	98.54	⩾90	Pass
T_{nor} (-40)	DC 3.4	429.9875	419.9875	98.49	⩾90	Pass
			424.9875	98.41	⩾90	Pass
			427.9875	98.62	⩾90	Pass
			428.9875	98.56	⩾90	Pass
			430.9875	98.62	⩾90	Pass
			431.9875	98.58	⩾90	Pass
			434.9875	98.51	⩾90	Pass
			439.9875	98.61	⩾90	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	450.0125	440.0125	98.17	⩾90	Pass
			445.0125	98.24	⩾90	Pass
			448.0125	98.23	⩾90	Pass
			449.0125	98.36	⩾90	Pass
			451.0125	98.32	⩾90	Pass
			452.0125	98.28	⩾90	Pass
			455.0125	98.33	⩾90	Pass
			460.0125	98.43	⩾90	Pass
T_{nor} (+10)	DC 4.5	450.0125	440.0125	98.30	⩾90	Pass
			445.0125	98.29	⩾90	Pass
			448.0125	98.36	⩾90	Pass
			449.0125	98.45	⩾90	Pass
			451.0125	98.38	⩾90	Pass
			452.0125	98.44	⩾90	Pass
			455.0125	98.30	⩾90	Pass
			460.0125	98.46	⩾90	Pass
T_{nor} (+10)	DC 3.4	450.0125	440.0125	98.31	⩾90	Pass
			445.0125	98.32	⩾90	Pass
			448.0125	98.44	⩾90	Pass
			449.0125	98.49	⩾90	Pass
			451.0125	98.45	⩾90	Pass
			452.0125	98.41	⩾90	Pass
			455.0125	98.41	⩾90	Pass
			460.0125	98.44	⩾90	Pass

T_{nor} (-40)	DC 4.5	450.0125	440.00625	98.37	⩾90	Pass
			445.00625	98.34	⩾90	Pass
			448.00625	98.40	⩾90	Pass
			449.00625	98.50	⩾90	Pass
			451.00625	98.38	⩾90	Pass
			452.00625	98.44	⩾90	Pass
			455.00625	98.40	⩾90	Pass
			460.00625	98.50	⩾90	Pass
T_{nor} (-40)	DC 3.4	450.0125	440.00625	98.39	⩾90	Pass
			445.00625	98.42	⩾90	Pass
			448.00625	98.46	⩾90	Pass
			449.00625	98.51	⩾90	Pass
			451.00625	98.48	⩾90	Pass
			452.00625	98.46	⩾90	Pass
			455.00625	98.50	⩾90	Pass
			460.00625	98.48	⩾90	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	460.0000	450.0000	98.21	⩾90	Pass
			455.0000	98.27	⩾90	Pass
			458.0000	98.22	⩾90	Pass
			459.0000	98.29	⩾90	Pass
			461.0000	98.25	⩾90	Pass
			462.0000	98.33	⩾90	Pass
			465.0000	98.32	⩾90	Pass
			470.0000	98.40	⩾90	Pass
T_{nor} (+10)	DC 4.5	460.0000	450.0000	98.26	⩾90	Pass
			455.0000	98.27	⩾90	Pass
			458.0000	98.34	⩾90	Pass
			459.0000	98.41	⩾90	Pass
			461.0000	98.34	⩾90	Pass
			462.0000	98.43	⩾90	Pass
			465.0000	98.37	⩾90	Pass
			470.0000	98.45	⩾90	Pass
T_{nor} (+10)	DC 3.4	460.0000	450.0000	98.30	⩾90	Pass
			455.0000	98.23	⩾90	Pass
			458.0000	98.35	⩾90	Pass
			459.0000	98.50	⩾90	Pass
			461.0000	98.39	⩾90	Pass
			462.0000	98.38	⩾90	Pass
			465.0000	98.44	⩾90	Pass
			470.0000	98.42	⩾90	Pass

T_{nor} (-40)	DC 4.5	460.0000	450.0000	98.41	⩾90	Pass
			455.0000	98.34	⩾90	Pass
			458.0000	98.44	⩾90	Pass
			459.0000	98.49	⩾90	Pass
			461.0000	98.52	⩾90	Pass
			462.0000	98.51	⩾90	Pass
			465.0000	98.48	⩾90	Pass
			470.0000	98.53	⩾90	Pass
T_{nor} (-40)	DC 3.4	460.0000	450.0000	98.53	⩾90	Pass
			455.0000	98.41	⩾90	Pass
			458.0000	98.50	⩾90	Pass
			459.0000	98.63	⩾90	Pass
			461.0000	98.49	⩾90	Pass
			462.0000	98.50	⩾90	Pass
			465.0000	98.49	⩾90	Pass
			470.0000	98.56	⩾90	Pass

Test Result of 6.25 kHz Channel Separation At Above Wanted Signal Channel						
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Result (dBm)	Limit (dBuV)	Result
Temperature (°C)	Voltage (V)					
T_{nor} (+25)	DC 4.2	469.9875	459.9875	98.25	⩾90	Pass
			464.9875	98.24	⩾90	Pass
			467.9875	98.25	⩾90	Pass
			468.9875	98.41	⩾90	Pass
			470.9875	98.37	⩾90	Pass
			471.9875	98.28	⩾90	Pass
			474.9875	98.37	⩾90	Pass
			479.9875	98.47	⩾90	Pass
T_{nor} (+10)	DC 4.5	469.9875	459.9875	98.32	⩾90	Pass
			464.9875	98.36	⩾90	Pass
			467.9875	98.37	⩾90	Pass
			468.9875	98.49	⩾90	Pass
			470.9875	98.41	⩾90	Pass
			471.9875	98.52	⩾90	Pass
			474.9875	98.36	⩾90	Pass
			479.9875	98.47	⩾90	Pass
T_{nor} (+10)	DC 3.4	469.9875	459.9875	98.36	⩾90	Pass
			464.9875	98.38	⩾90	Pass
			467.9875	98.48	⩾90	Pass
			468.9875	98.50	⩾90	Pass
			470.9875	98.49	⩾90	Pass
			471.9875	98.50	⩾90	Pass
			474.9875	98.43	⩾90	Pass
			479.9875	98.50	⩾90	Pass

T_{nor} (-40)	DC 4.5	469.9875	459.9875	98.42	⩾90	Pass
			464.9875	98.42	⩾90	Pass
			467.9875	98.37	⩾90	Pass
			468.9875	98.52	⩾90	Pass
			470.9875	98.46	⩾90	Pass
			471.9875	98.55	⩾90	Pass
			474.9875	98.46	⩾90	Pass
			479.9875	98.51	⩾90	Pass
T_{nor} (-40)	DC 3.4	469.9875	459.9875	98.44	⩾90	Pass
			464.9875	98.40	⩾90	Pass
			467.9875	98.53	⩾90	Pass
			468.9875	98.55	⩾90	Pass
			470.9875	98.58	⩾90	Pass
			471.9875	98.53	⩾90	Pass
			474.9875	98.47	⩾90	Pass
			479.9875	98.59	⩾90	Pass

5.6 Spurious radiations

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.9.3
The power of any spurious radiations shall not exceed the values given in tables 8 and 9.

Table 8: Conducted components

Frequency range	9 kHz to 1 GHz	Above 1 GHz to 4 GHz, or above 1 GHz to 12,75 GHz (see clause 8.9.2)
Limit	2,0 nW (-57,0 dBm)	20,0 nW (-47,0 dBm)

Table 9: Radiated components

Frequency range	30 MHz to 1 GHz	Above 1 GHz to 4 GHz or above 1 GHz to 12,75 GHz (see clause 8.9.2.2)
Limit	2,0 nW (-57,0 dBm)	20,0 nW (-47,0 dBm)

TEST CONFIGURATION

Refer to Chapter 4.4

TEST PROCEDURE

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.10.2 and 8.10.3 for the measurement method.

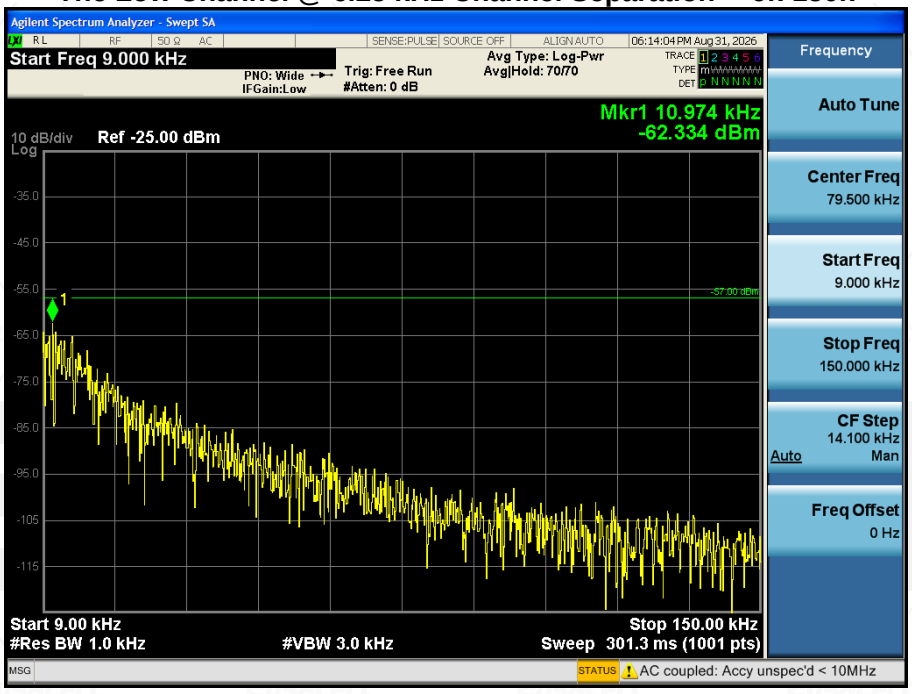
TEST RESULTS

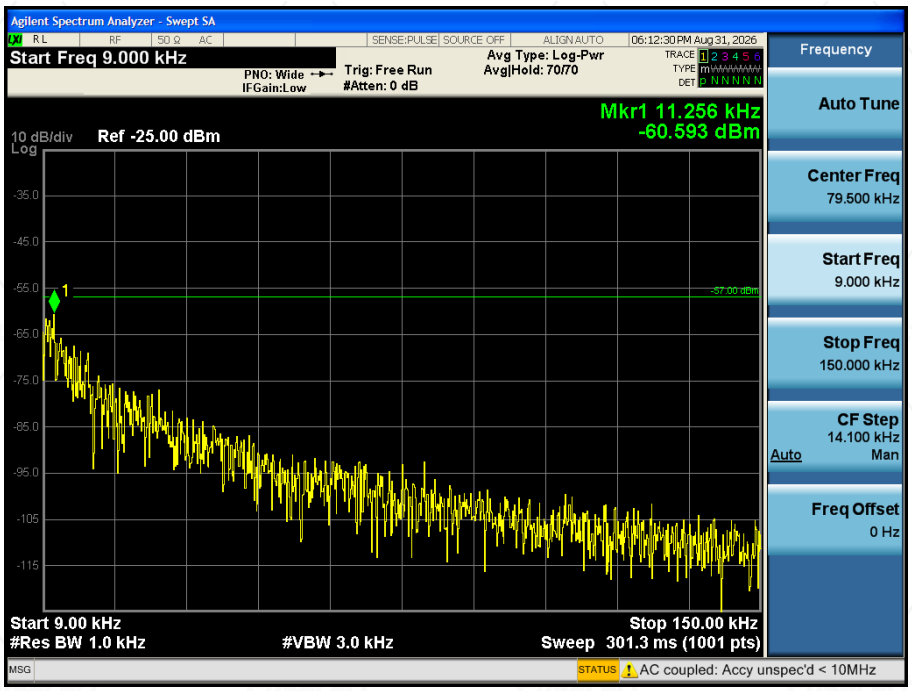
Conducted Measurement (9 kHz to 12.75GHz) --- PASS

The Radiated Measurement are performed to the three channels (the top channel, the middle channel and the lowest channel) at each channel separation (12.5 kHz), the datum recorded below is the worst case for each channel separation.

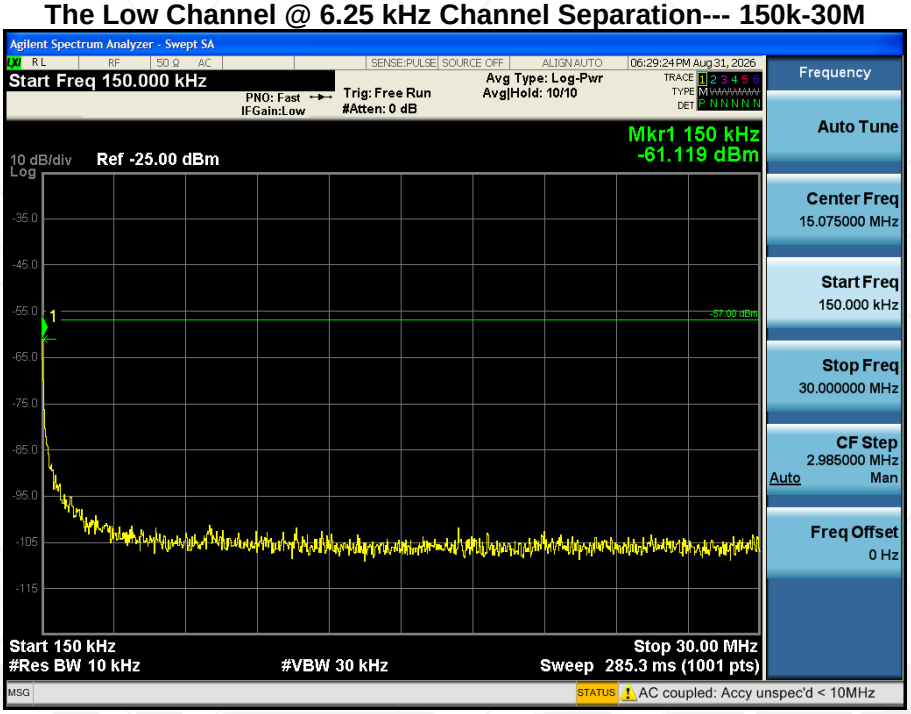
The Bottom Channel is the worst case for 6.25 kHz Channel Separation

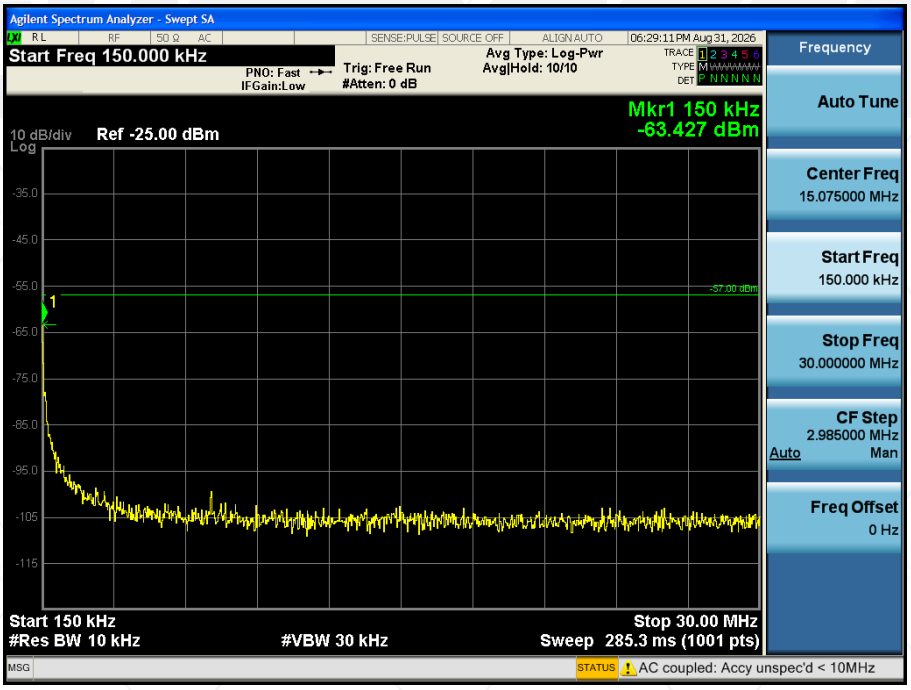
The Low Channel @ 6.25 kHz Channel Separation--- 9k-150k



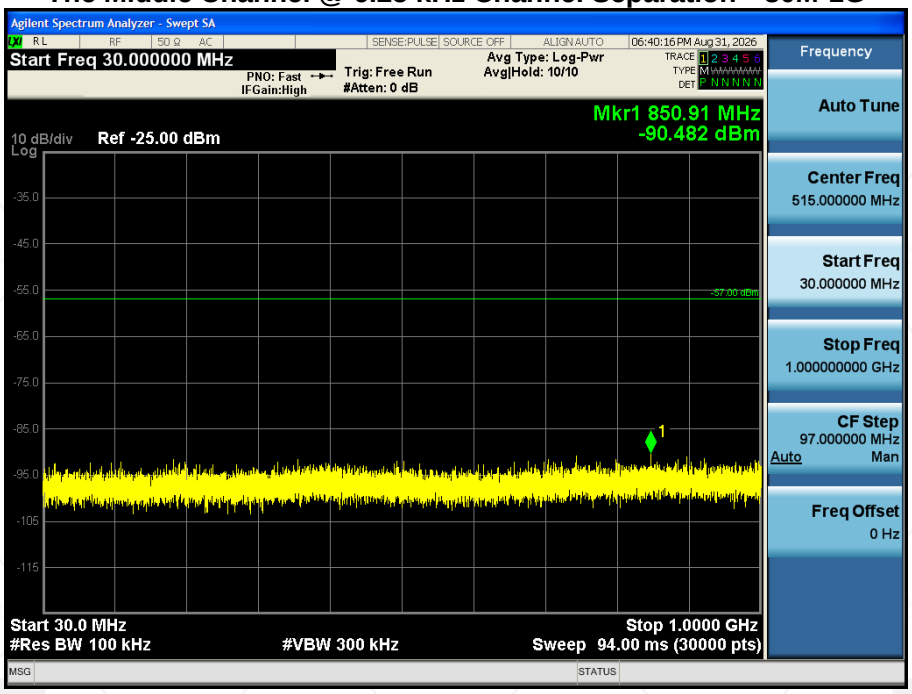


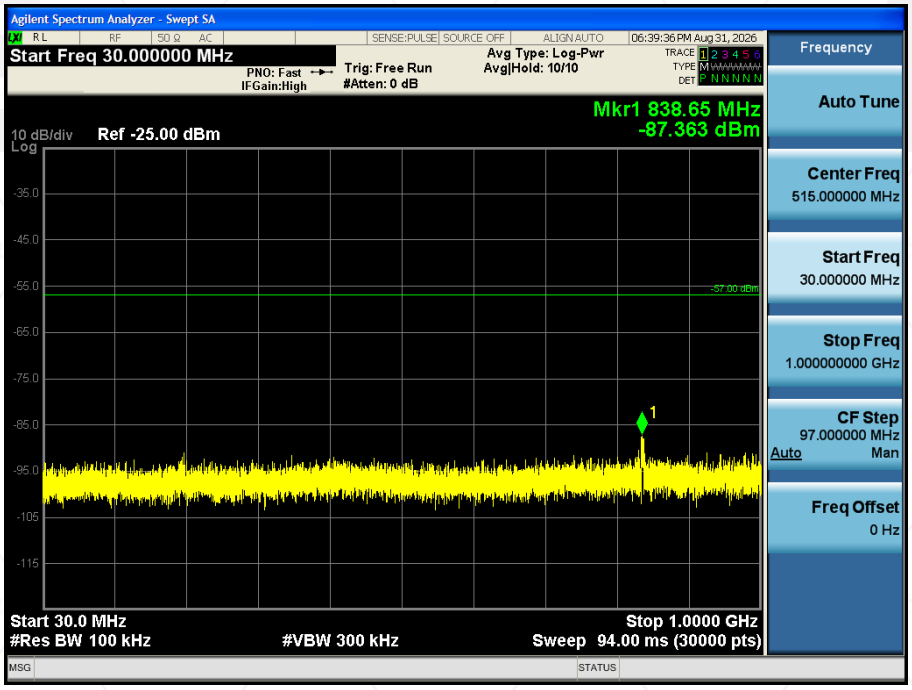
The Low Channel @ 6.25 kHz Channel Separation--- 150k-30M



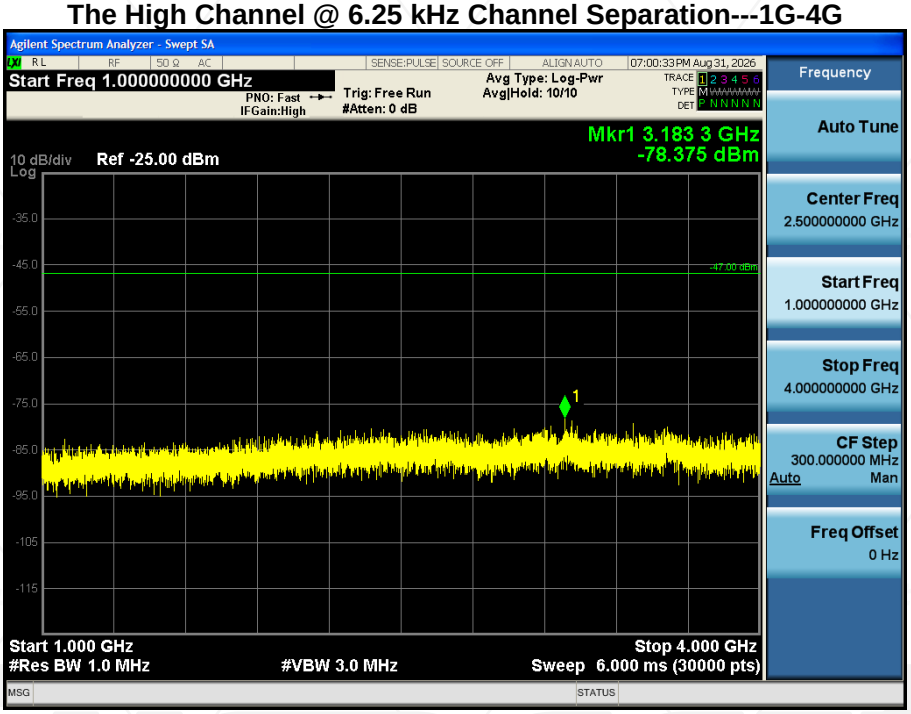


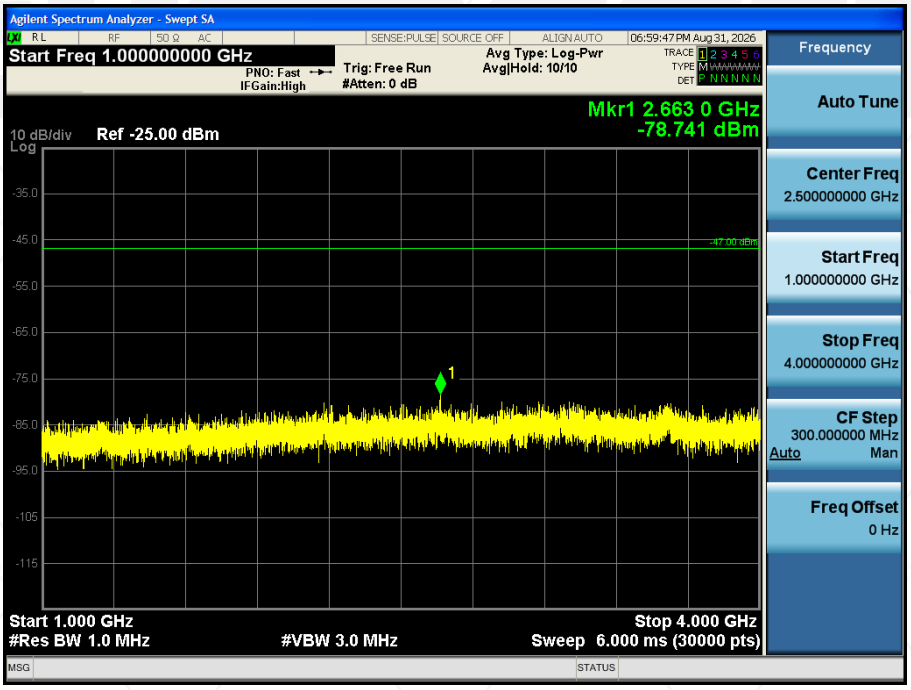
The Middle Channel @ 6.25 kHz Channel Separation---30M-1G





The High Channel @ 6.25 kHz Channel Separation---1G-4G

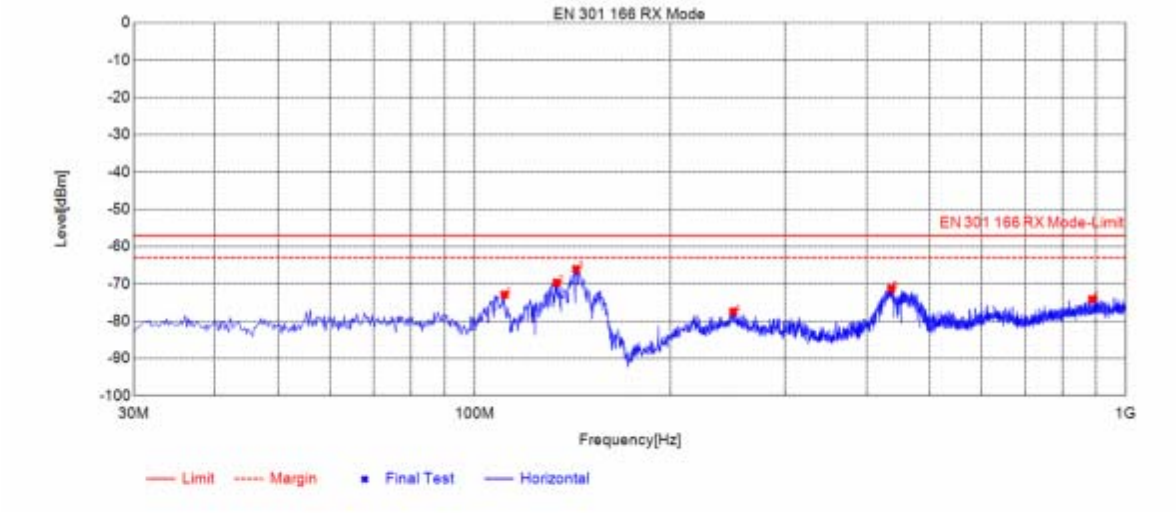




Effective Radiated Power measurement (30 MHz to 12.75GHz) --- PASS

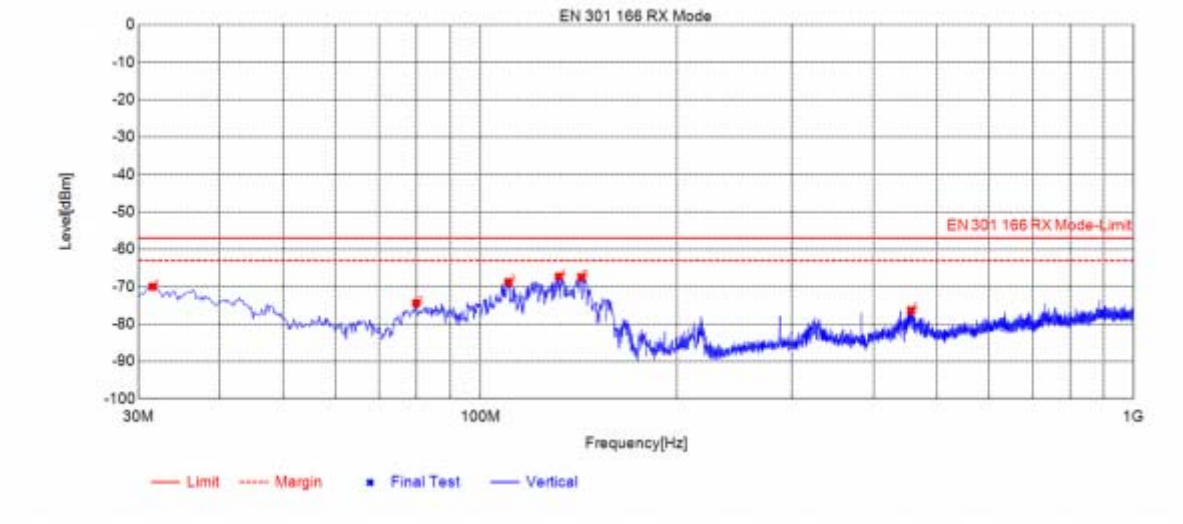
All Channels for for 6.25 kHz Channel Separation/UHF

Low Channel



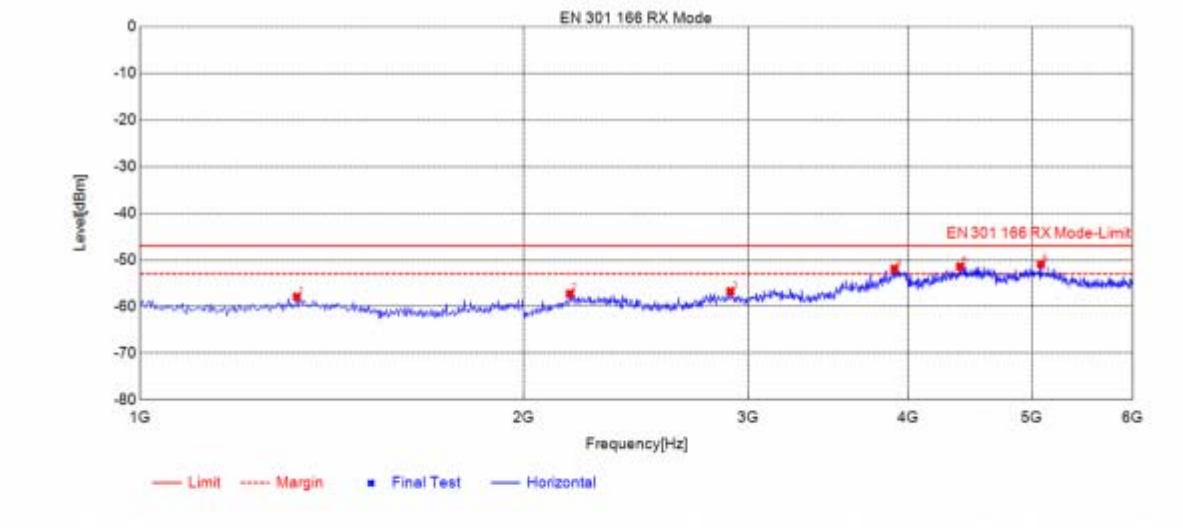
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	111.302	-75.82	-72.88	-57.00	15.88	2.94	Horizontal
2	133.810	-68.22	-69.65	-57.00	12.65	-1.43	Horizontal
3	143.318	-66.95	-66.04	-57.00	9.04	0.91	Horizontal
4	249.846	-83.61	-77.44	-57.00	20.44	6.17	Horizontal
5	436.511	-75.24	-71.29	-57.00	14.29	3.95	Horizontal
6	888.039	-83.94	-74.16	-57.00	17.16	9.78	Horizontal



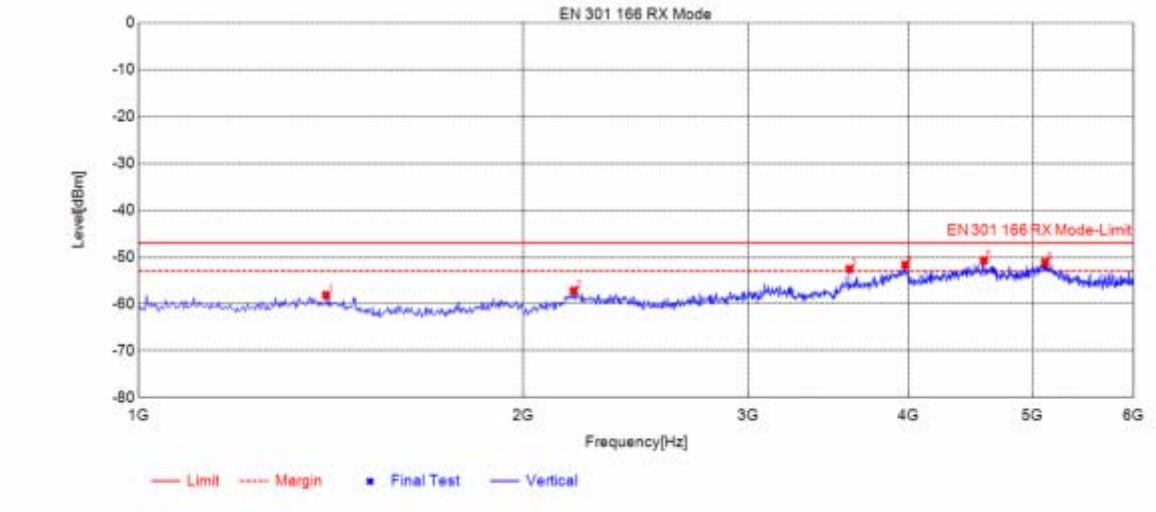
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	31.5523	-72.55	-70.01	-57.00	13.01	2.54	Vertical
2	79.868	-71.99	-74.41	-57.00	17.41	-2.42	Vertical
3	110.526	-81.06	-68.79	-57.00	11.79	12.27	Vertical
4	132.064	-66.99	-67.33	-57.00	10.33	-0.34	Vertical
5	142.930	-66.71	-67.47	-57.00	10.47	-0.76	Vertical
6	456.691	-78.85	-76.38	-57.00	19.38	2.47	Vertical



Suspected List

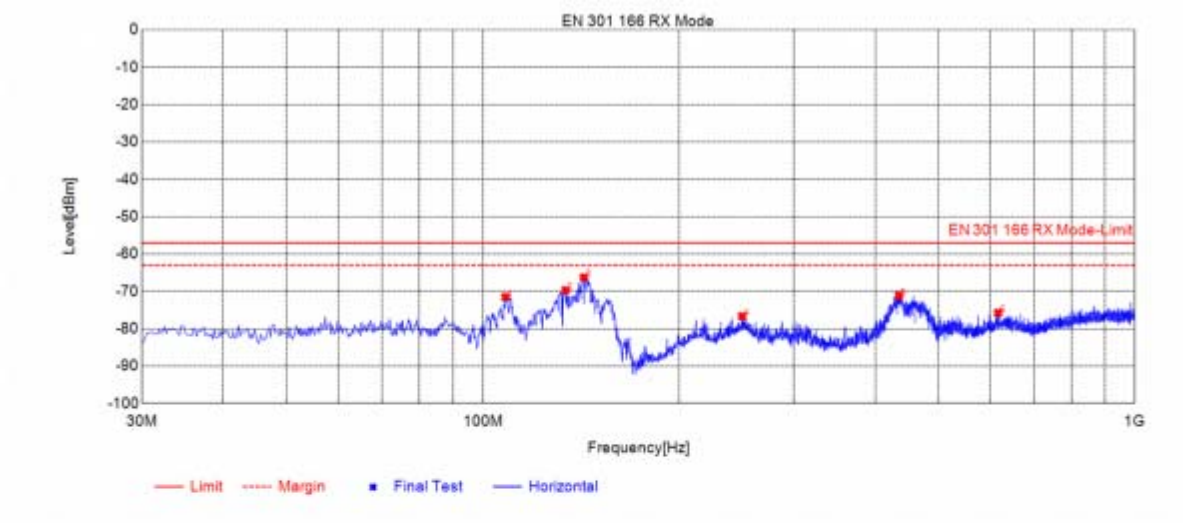
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1327.66	-54.62	-57.92	-47.00	10.92	-3.30	Horizontal
2	2173.08	-56.82	-57.26	-47.00	10.26	-0.44	Horizontal
3	2903.45	-57.15	-56.76	-47.00	9.76	0.39	Horizontal
4	3903.95	-55.94	-51.89	-47.00	4.89	4.05	Horizontal
5	4394.19	-57.26	-51.41	-47.00	4.41	5.85	Horizontal
6	5084.54	-60.78	-50.94	-47.00	3.94	9.84	Horizontal



Suspected List

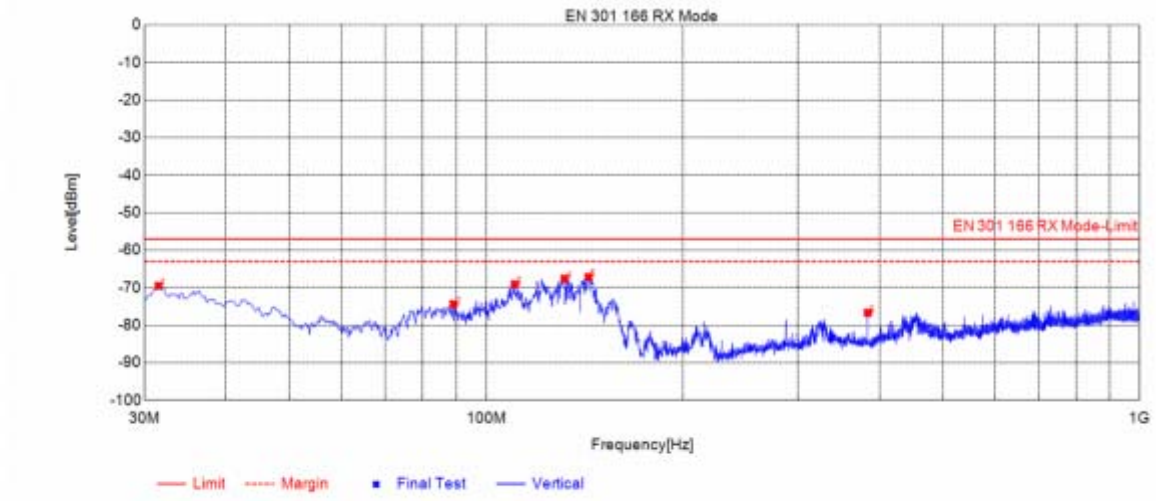
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1402.70	-54.91	-58.10	-47.00	11.10	-3.19	Vertical
2	2190.59	-57.07	-57.18	-47.00	10.18	-0.11	Vertical
3	3598.79	-55.77	-52.55	-47.00	5.55	3.22	Vertical
4	3978.98	-55.51	-51.66	-47.00	4.66	3.85	Vertical
5	4584.29	-57.12	-50.73	-47.00	3.73	6.39	Vertical
6	5117.05	-60.83	-51.11	-47.00	4.11	9.72	Vertical

Middle Channel



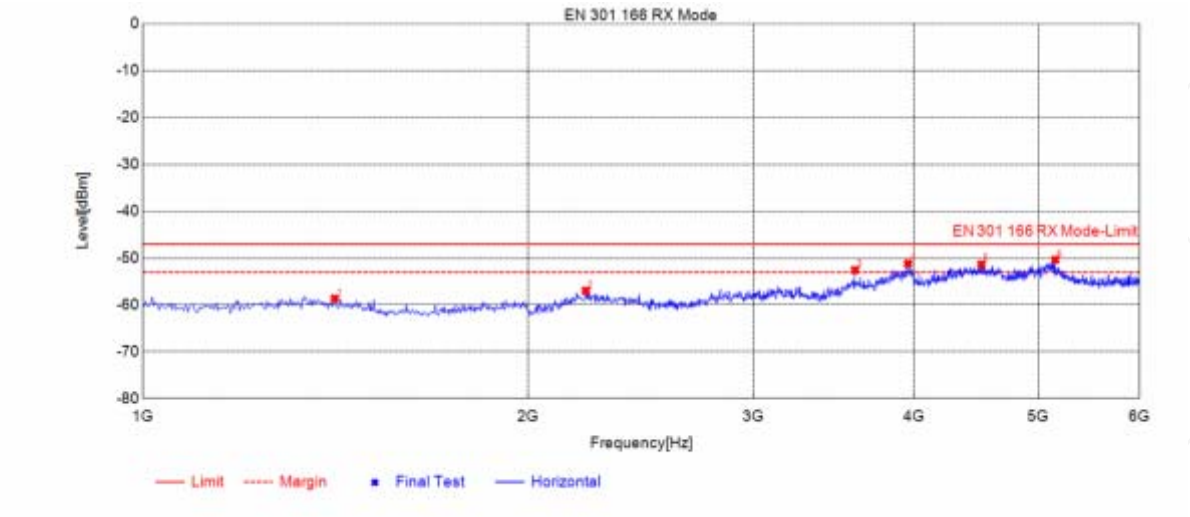
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	108.391	-74.44	-71.50	-57.00	14.50	2.94	Horizontal
2	134.004	-68.32	-69.70	-57.00	12.70	-1.38	Horizontal
3	142.930	-67.08	-66.27	-57.00	9.27	0.81	Horizontal
4	250.04	-82.86	-76.67	-57.00	19.67	6.19	Horizontal
5	434.959	-75.06	-71.13	-57.00	14.13	3.93	Horizontal
6	617.355	-83.31	-75.76	-57.00	18.76	7.55	Horizontal



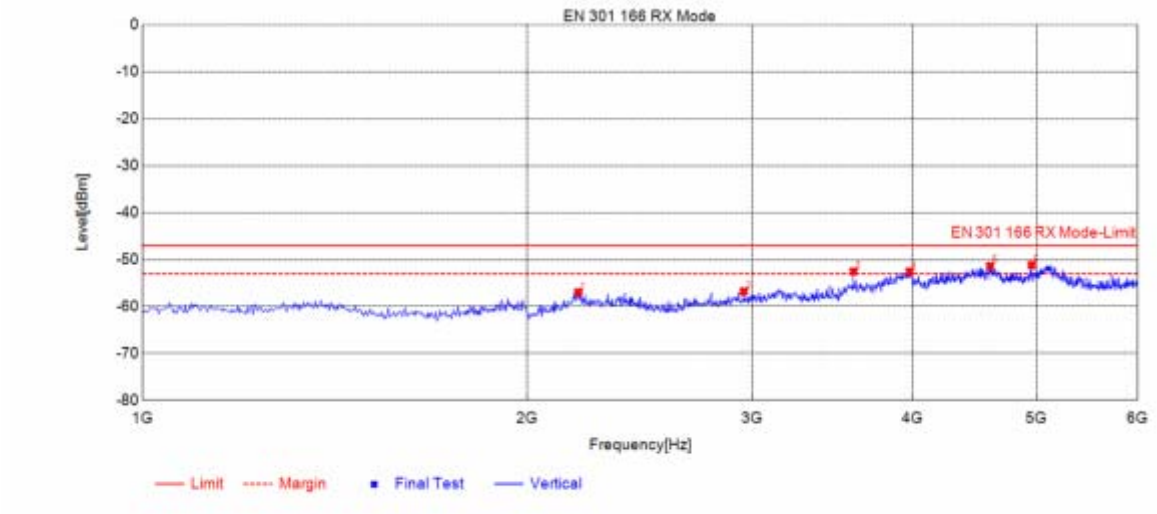
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	31.5523	-72.05	-69.51	-57.00	12.51	2.54	Vertical
2	89.1818	-74.97	-74.34	-57.00	17.34	0.63	Vertical
3	110.720	-81.21	-69.06	-57.00	12.06	12.15	Vertical
4	131.870	-67.25	-67.59	-57.00	10.59	-0.34	Vertical
5	143.512	-66.36	-67.15	-57.00	10.15	-0.79	Vertical
6	383.926	-77.99	-76.69	-57.00	19.69	1.30	Vertical



Suspected List

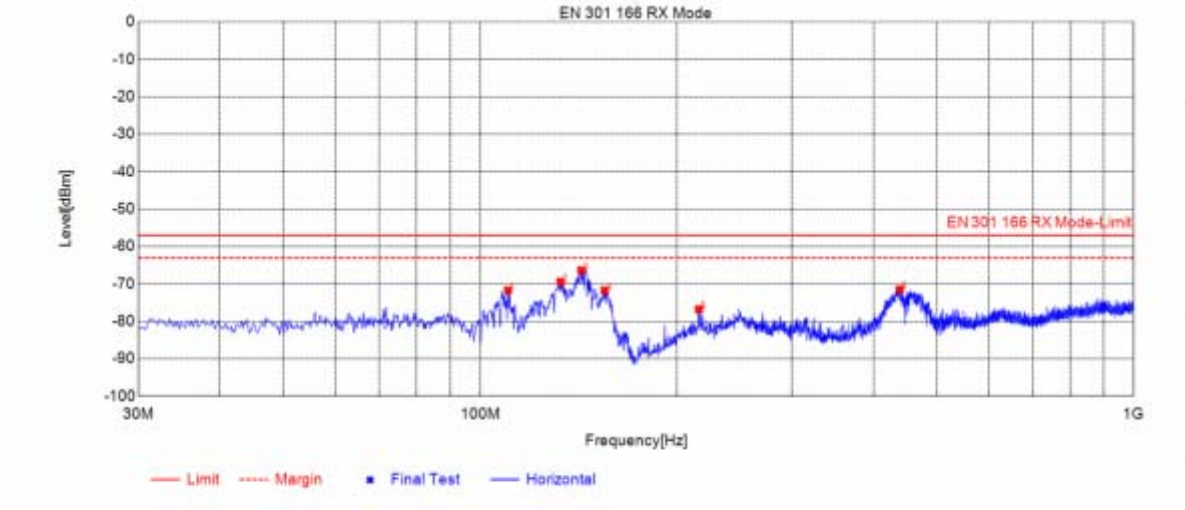
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	1412.70	-55.33	-58.66	-47.00	11.66	-3.33	Horizontal
2	2218.10	-56.94	-56.97	-47.00	9.97	-0.03	Horizontal
3	3598.79	-56.01	-52.57	-47.00	5.57	3.44	Horizontal
4	3958.97	-55.18	-51.19	-47.00	4.19	3.99	Horizontal
5	4516.75	-57.69	-51.37	-47.00	4.37	6.32	Horizontal
6	5157.07	-59.89	-50.38	-47.00	3.38	9.51	Horizontal



Suspected List

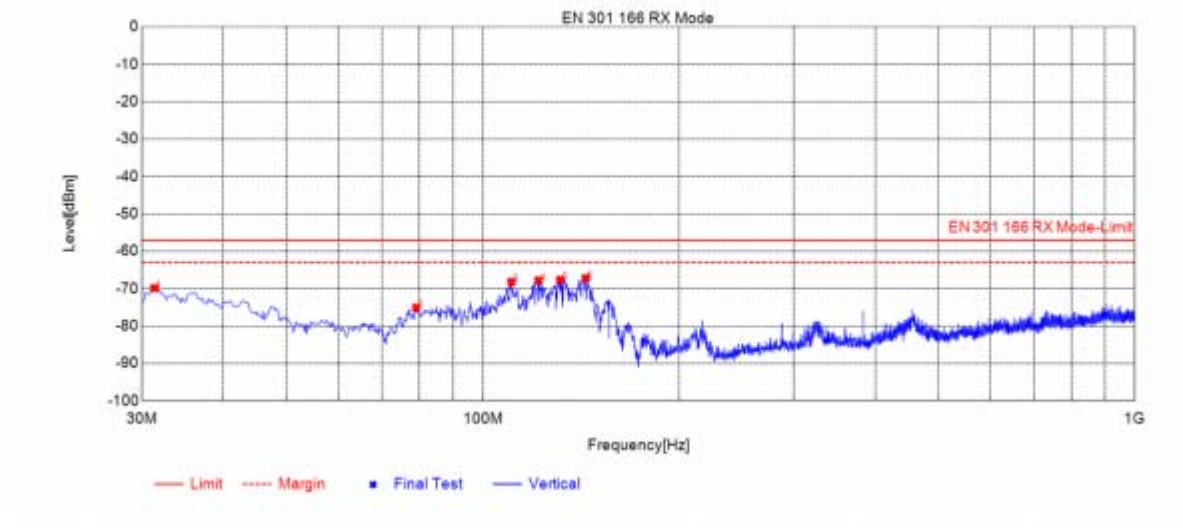
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2193.09	-56.87	-56.94	-47.00	9.94	-0.07	Vertical
2	2953.47	-57.17	-56.78	-47.00	9.78	0.39	Vertical
3	3598.79	-55.76	-52.54	-47.00	5.54	3.22	Vertical
4	3981.49	-56.39	-52.54	-47.00	5.54	3.85	Vertical
5	4601.80	-57.86	-51.39	-47.00	4.39	6.47	Vertical
6	4959.47	-59.36	-51.17	-47.00	4.17	8.19	Vertical

High Channel



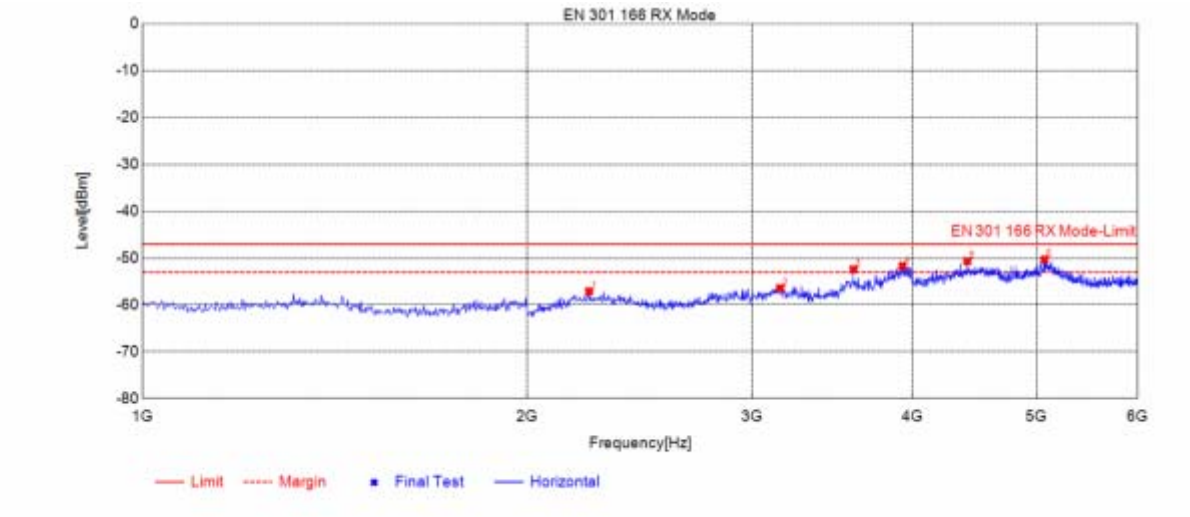
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	110.332	-74.96	-71.75	-57.00	14.75	3.21	Horizontal
2	132.840	-67.77	-69.45	-57.00	12.45	-1.68	Horizontal
3	142.930	-67.21	-66.40	-57.00	9.40	0.81	Horizontal
4	155.155	-72.25	-71.76	-57.00	14.76	0.49	Horizontal
5	216.277	-80.06	-76.80	-57.00	19.80	3.26	Horizontal
6	439.033	-75.48	-71.49	-57.00	14.49	3.99	Horizontal



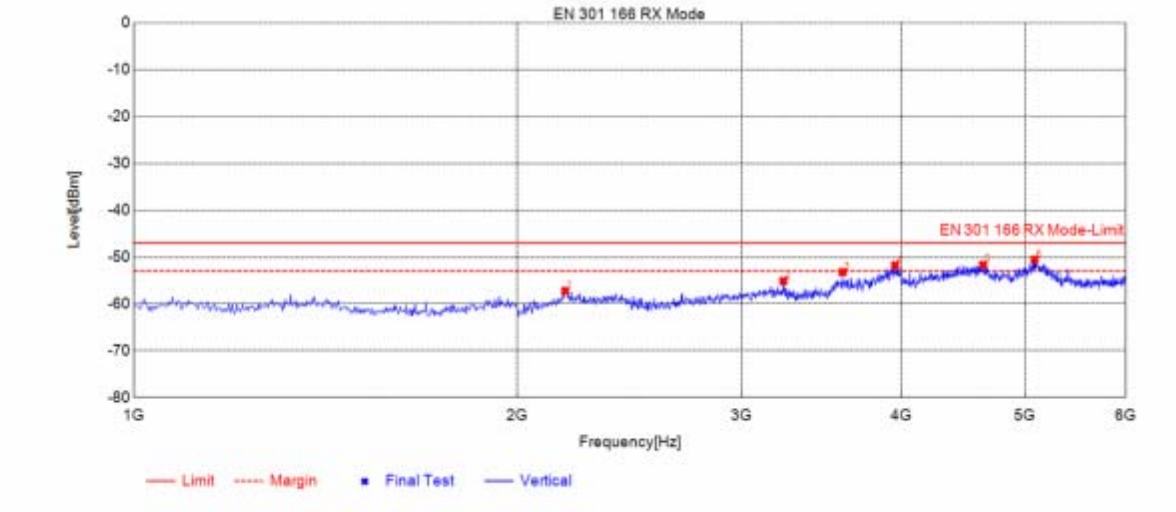
Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	31.3583	-72.47	-69.86	-57.00	12.86	2.61	Vertical
2	79.0918	-72.42	-75.11	-57.00	18.11	-2.69	Vertical
3	110.720	-80.34	-68.19	-57.00	11.19	12.15	Vertical
4	121.780	-72.92	-67.81	-57.00	10.81	5.11	Vertical
5	131.482	-67.33	-67.65	-57.00	10.65	-0.32	Vertical
6	143.900	-66.39	-67.20	-57.00	10.20	-0.81	Vertical



Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2235.61	-57.04	-57.11	-47.00	10.11	-0.07	Horizontal
2	3153.57	-57.71	-56.43	-47.00	9.43	1.28	Horizontal
3	3598.79	-55.85	-52.41	-47.00	5.41	3.44	Horizontal
4	3931.46	-55.70	-51.68	-47.00	4.68	4.02	Horizontal
5	4416.70	-56.60	-50.65	-47.00	3.65	5.95	Horizontal
6	5074.53	-60.03	-50.32	-47.00	3.32	9.71	Horizontal



Suspected List

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	2180.59	-56.94	-57.21	-47.00	10.21	-0.27	Vertical
2	3233.61	-56.04	-55.11	-47.00	8.11	0.93	Vertical
3	3598.79	-56.43	-53.21	-47.00	6.21	3.22	Vertical
4	3956.47	-55.55	-51.78	-47.00	4.78	3.77	Vertical
5	4636.81	-58.36	-51.66	-47.00	4.66	6.70	Vertical
6	5089.54	-60.25	-50.54	-47.00	3.54	9.71	Vertical

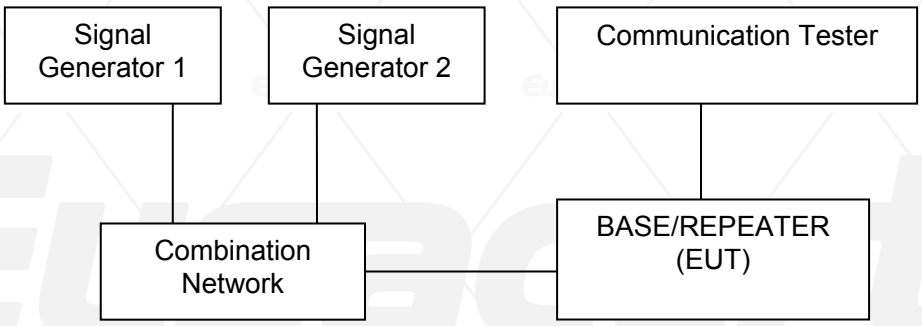
5.7 Co-channel rejection

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 8.10.3

The value of co-channel rejection ratio shall be:
- greater than -15 dB for analogue tests;
- greater than -12 dB for equipment operating with data rates of up to 2 400 bits per second;
- greater than -15 dB for equipment operating with data rates between 2 401 bits per second and 4 800 bits per second;
- greater than -18 dB for equipment operating with data rates between 4 801 bits per second and 9 600 bits per second;
- greater than -24 dB for equipment operating with data rates greater than 9 600 bits per second..

TEST CONFIGURATION



TEST PROCEDURE

.

1. Please refer to ETSI EN 301 166 V2.1.1 Sub-clause 8.5.2 for the measurement method.

TEST RESULTS

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	406.1125	406.1050	30	78	⩾60	Pass
		406.1125	406.1200	30	95	⩾60	Pass
T_{nor} (+10)	DC 4.5V	406.1125	406.1050	30	89	⩾60	Pass
		406.1125	406.1200	30	84	⩾60	Pass
T_{nor} (+10)	DC 3.4V	406.1125	406.1050	30	94	⩾60	Pass
		406.1125	406.1200	30	77	⩾60	Pass
T_{nor} (-40)	DC 4.5V	406.1125	406.1050	30	75	⩾60	Pass
		406.1125	406.1200	30	79	⩾60	Pass
T_{nor} (-40)	DC 3.4V	406.1125	406.1050	30	74	⩾60	Pass
		406.1125	406.1200	30	79	⩾60	Pass

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	418.0625	418.0700	30	78.10	⩾60	Pass
		418.0625	418.0550	30	95.08	⩾60	Pass
T_{nor} (+10)	DC 4.5V	418.0625	418.0700	30	89.10	⩾60	Pass
		418.0625	418.0550	30	84.18	⩾60	Pass
T_{nor} (+10)	DC 3.4V	418.0625	418.0700	30	94.14	⩾60	Pass
		418.0625	418.0550	30	77.14	⩾60	Pass
T_{nor} (-40)	DC 4.5V	418.0625	418.0700	30	75.13	⩾60	Pass
		418.0625	418.0550	30	79.07	⩾60	Pass
T_{nor} (-40)	DC 3.4V	418.0625	418.0700	30	74.16	⩾60	Pass
		418.0625	418.0550	30	79.04	⩾60	Pass

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	429.9875	429.9950	30	78.12	⩾60	Pass
		429.9875	429.9800	30	95.05	⩾60	Pass
T_{nor} (+10)	DC 4.5V	429.9875	429.9950	30	89.18	⩾60	Pass
		429.9875	429.9800	30	84.11	⩾60	Pass
T_{nor} (+10)	DC 3.4V	429.9875	429.9950	30	94.24	⩾60	Pass
		429.9875	429.9800	30	77.10	⩾60	Pass
T_{nor} (-40)	DC 4.5V	429.9875	429.9950	30	75.13	⩾60	Pass
		429.9875	429.9800	30	79.14	⩾60	Pass
T_{nor} (-40)	DC 3.4V	429.9875	429.9950	30	74.20	⩾60	Pass
		429.9875	429.9800	30	79.16	⩾60	Pass

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	450.0125	450.0050	30	78.09	⩾60	Pass
		450.0125	450.0200	30	95.03	⩾60	Pass
T_{nor} (+10)	DC 4.5V	450.0125	450.0050	30	89.08	⩾60	Pass
		450.0125	450.0200	30	84.08	⩾60	Pass
T_{nor} (+10)	DC 3.4V	450.0125	450.0050	30	94.07	⩾60	Pass
		450.0125	450.0200	30	77.08	⩾60	Pass
T_{nor} (-40)	DC 4.5V	450.0125	450.0050	30	75.06	⩾60	Pass
		450.0125	450.0200	30	79.02	⩾60	Pass
T_{nor} (-40)	DC 3.4V	450.0125	450.0050	30	74.07	⩾60	Pass
		450.0125	450.0200	30	79.01	⩾60	Pass

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	460.0000	460.0075	30	78.03	⩾60	Pass
		460.0000	459.9925	30	95.05	⩾60	Pass
T_{nor} (+10)	DC 4.5V	460.0000	460.0075	30	89.06	⩾60	Pass
		460.0000	459.9925	30	84.02	⩾60	Pass
T_{nor} (+10)	DC 3.4V	460.0000	460.0075	30	94.08	⩾60	Pass
		460.0000	459.9925	30	77.08	⩾60	Pass
T_{nor} (-40)	DC 4.5V	460.0000	460.0075	30	75.05	⩾60	Pass
		460.0000	459.9925	30	79.07	⩾60	Pass
T_{nor} (-40)	DC 3.4V	460.0000	460.0075	30	74.02	⩾60	Pass
		460.0000	459.9925	30	79.09	⩾60	Pass

Test Result of 6.25 kHz Channel Separation							
Test Condition		Wanted Signal Channel (MHz)	Unwanted Signal Frequency (MHz)	Test Power(dB)	Test Result (dB)	Limit (dB)	Result
Temperature (°C)	Voltage (V)						
T_{nor} (+25)	DC 4.2V	469.9875	469.9800	30	78.09	⩾60	Pass
		469.9875	469.9950	30	95.04	⩾60	Pass
T_{nor} (+10)	DC 4.5V	469.9875	469.9800	30	89.12	⩾60	Pass
		469.9875	469.9950	30	84.11	⩾60	Pass
T_{nor} (+10)	DC 3.4V	469.9875	469.9800	30	94.16	⩾60	Pass
		469.9875	469.9950	30	77.09	⩾60	Pass
T_{nor} (-40)	DC 4.5V	469.9875	469.9800	30	75.08	⩾60	Pass
		469.9875	469.9950	30	79.06	⩾60	Pass
T_{nor} (-40)	DC 3.4V	469.9875	469.9800	30	74.14	⩾60	Pass
		469.9875	469.9950	30	79.06	⩾60	Pass

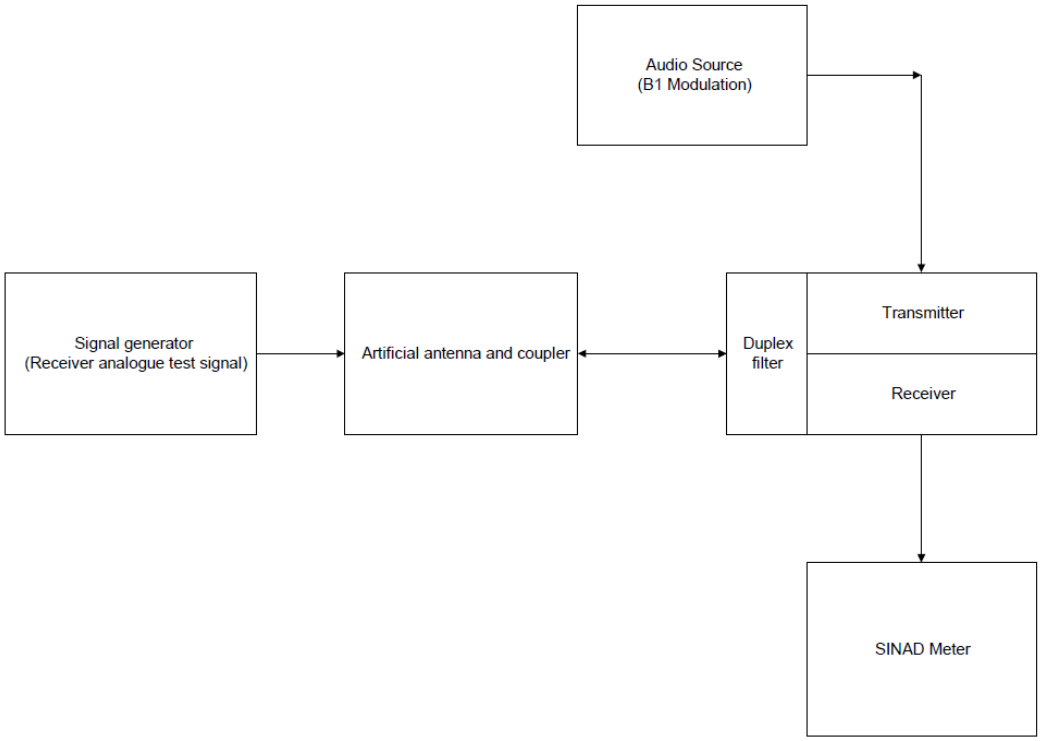
6. Duplex operation

6.1 Receiver desensitization (with simultaneous transmission and reception)

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 9.1.3
The desensitization shall not exceed 3,0 dB.
The limit of maximum usable sensitivity measured in clauses 8.1.2 and 8.1.3 under normal test conditions shall exceed the specified limits in clauses 8.1.3 and 8.3.3 by an amount not less than the measured desensitization in the relevant clause 9.1.2.

TEST CONFIGURATION



TEST RESULTS

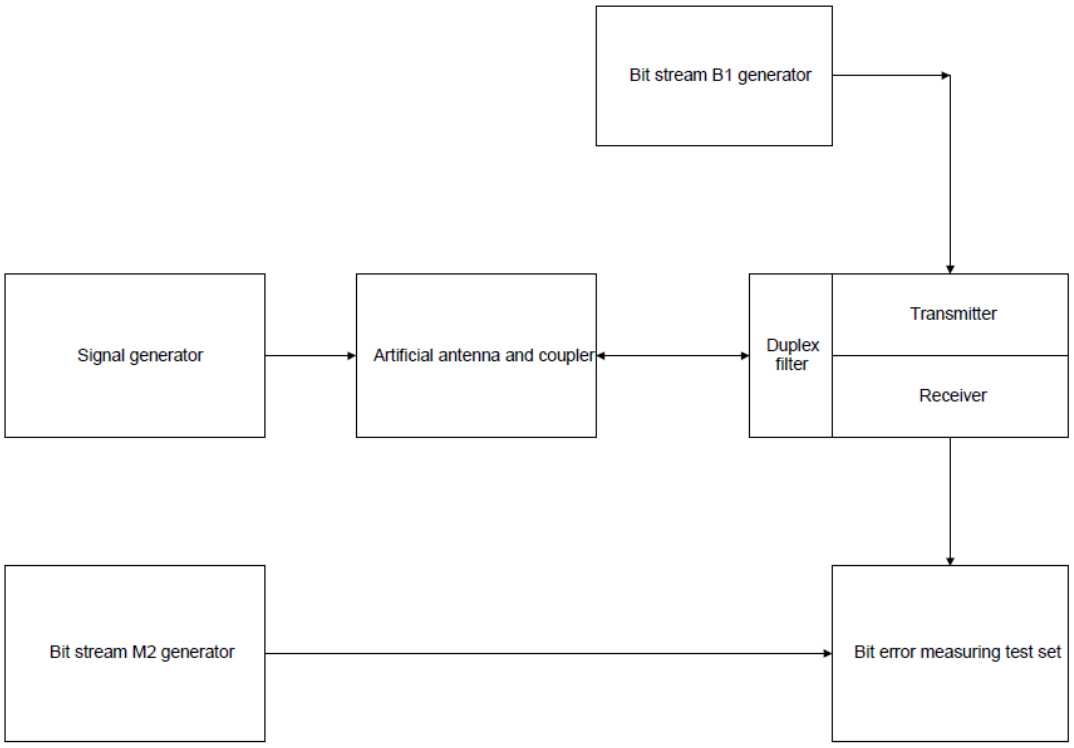
Test Condition		Reading	Result
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	Reading＜3dB	PASS

6.2 Receiver spurious response rejection (with simultaneous transmission and reception)

LIMIT

ETSI EN 301 166 V2.1.1 Sub-clause 9.2.3
At any frequency separated from the nominal frequency of the receiver by two channels or more, the spurious response rejection ratio shall be greater than 67,0 dB.

TEST CONFIGURATION

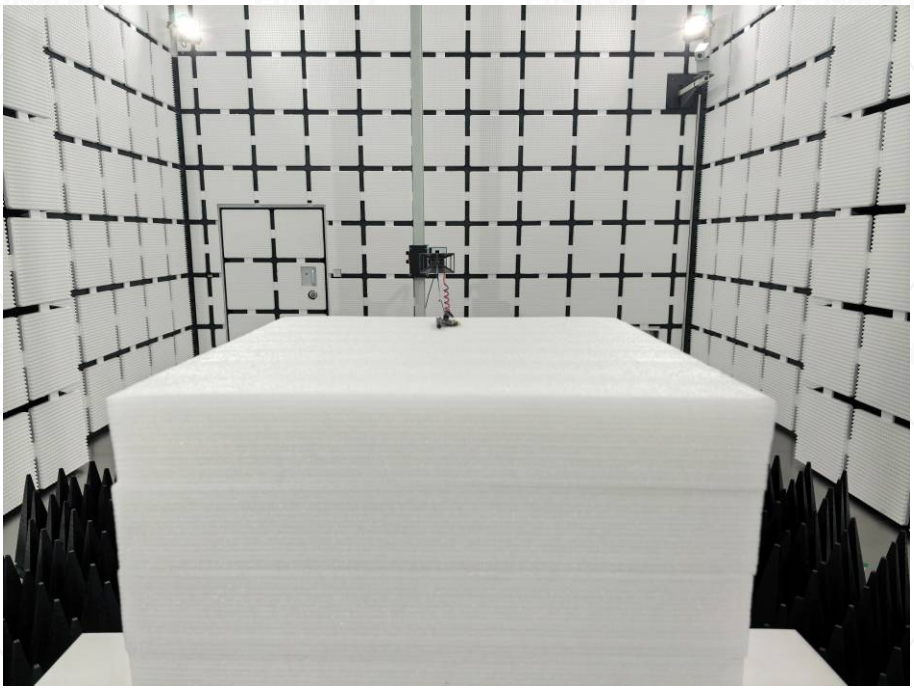


TEST RESULTS

Test Condition		Reading	Result
Temperature (℃)	Voltage (V)		
T_{nor} (+25)	DC 4.2	75	PASS
Limit		＞67 dB	

7. Test Setup Photos of the EUT





8. External and Internal Photos of the EUT

Reference to the test report No. SZE2607150575ET03.

.....End of Report.....