TEST REPORT

Application No.:	SZEM2010010393CR(SGS SZ No:T52010300040EM)
Applicant:	NEW BRIGHT INDUSTRIAL CO., LTD
Address of Applicant:	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG
Equipment Under Test (EUT):	
EUT Name:	TOY Transmitter & Receiver
Model No.:	TX-G31HB40, RX-704A(SMD)-40
	Additional model number: 741 ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Country of Origin：	China
Standard(s) :	EN 300 220-1 V3.1.1
	EN 300 220-2 V3.2.1
Date of Receipt:	2020-10-19
Date of Test:	2020-10-19 to 2020-10-23
Date of Issue:	2020-10-27
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Keny Xu
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2020-10-27		Original

Authorized for issue by:				
		Gebin Sun Gebin Sun /Project Engineer		
		Eric Fu Eric Fu /Reviewer		

2 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Operating frequency	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.1.2	EN 300 220-2 V3.2.1 clause 4.2.1.0	Pass
Effective Radiated Power	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.2.2	EN 300 220-2 V3.2.1 clause 4.3.1.0	Pass
Maximum Effective Radiated Power spectral density	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.3.2	EN 300 220-2 V3.2.1 clause 4.3.2.0	Pass
Duty Cycle	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.4.2	EN 300 220-2 V3.2.1 clause 4.3.3.0	Pass
Occupied Bandwidth	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.6.3	EN 300 220-2 V3.2.1 clause 4.3.4.0	Pass
Unwanted emissions in the spurious domain	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.9.3	EN 300 220-2 V3.2.1 clause 4.2.2.0	Pass
Transient power	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.10.3	EN 300 220-2 V3.2.1 clause 4.3.6.0	Pass
Adjacent Channel Power	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.11.3	EN 300 220-2 V3.2.1 clause 4.3.7.0	Pass
TX behaviour under Low Voltage Conditions	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.12.3	EN 300 220-2 V3.2.1 clause 4.3.8.0	Pass
Blocking	EN 300 220-1 V3.1.1	EN 300 220-1 V3.1.1 clause 5.18.6	EN 300 220-2 V3.2.1 clause 4.4.2.0	Pass

Declaration of EUT Family Grouping:

Model No: TX-G31HB40, RX-704A(SMD)-40

Additional model number: 741

Only the model TX-G31HB40, RX-704A(SMD)-40 was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model number and appearance.

TX-G31HB40 is model No. for Transmitter, RX-704A(SMD)-40 is model No. for Receiver.

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3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply:	3V DC(1.5V x 2 "AA" Size Batteries) for TX 4.5V DC(1.5V x 3 "AA" Size Batteries) for RX
Operation Frequency:	40.680MHz
Sample Type:	Portable production
Antenna Type:	Integral

4.2 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(°C)	Voltage(V)
Normal Temperature & Normal Voltage	24	3
Low Extreme Test Temperature & Low Extreme Test Voltage	-10	2.55
High Extreme Test Temperature & Low Extreme Test Voltage	55	2.55
Low Extreme Test Temperature & High Extreme Test Voltage	-10	3
High Extreme Test Temperature & High Extreme Test Voltage	55	3

4.3 Description of Support Units

The EUT has been tested as an independent unit.

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4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	Conduction emission	± 3.0dB (150kHz to 30MHz)
5	RF conducted power	± 0.75dB
6	RF power density	± 2.84dB
7	Conducted Spurious emissions	± 0.75dB
8	RF Radiated power	± 4.5dB (Below 1GHz)
		± 4.8dB (Above 1GHz)
9	Radiated Spurious emission test	± 4.5dB (Below 1GHz)
		± 4.8dB (Above 1GHz)
10	Temperature test	± 1°C
11	Humidity test	± 3%
12	Supply voltages	± 1%
13	Time	± 3%

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4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Operating frequency					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

Effective Radiated Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-15	2019-12-16	2020-12-15
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-amplifier	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31

Maximum Effective Radiated Power spectral density					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

Duty Cycle					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

Occupied Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

Unwanted emissions in the spurious domain					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-15	2019-12-16	2020-12-15
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-amplifier	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31

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Transient power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

Adjacent Channel Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

TX behaviour under Low Voltage Conditions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

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Blocking					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	N/A	N/A
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2020-09-23	2021-09-22
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020-09-23	2021-09-22

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06

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6 Radio Spectrum Matter Test Results

6.1 Operating frequency

Test Requirement EN 300 220-2 V3.2.1 clause 4.2.1.0

Test Method: EN 300 220-1 V3.1.1 clause 5.1.2

Limit:

Table B.1: EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
A	26,957 MHz to 27,283 MHz	10 mW e.r.p.	No requirement	The whole band		28b	25
B	26,995 MHz, 27,045 MHz, 27,095 MHz, 27,145 MHz, 27,195 MHz	100 mW e.r.p.	≤ 0,1 % duty cycle	10 kHz	Model control devices may operate without duty cycle restrictions.	29, 30, 31, 32, 33	Model control 94, 95, 96, 97, 98
C	40,660 MHZ to 40,700 MHz	10 mW e.r.p.	No requirement	The whole band	Video applications excluded.	35	19
D	169,400 MHz to 169,475 MHz	500 mW e.r.p.	≤ 1,0 % duty cycle	50 kHz		37c	80
E	169,4000 MHz to 169,4875 MHz	10 mW	≤ 0,1 % duty	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	38	128

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
F	169,4875 MHZ to 169,5875 MHz	10 mW	≤ 0,001 % duty cycle Between 00.00 and 06.00 local time a duty cycle limit of 0,1 % may be used	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	39b	124
G	169,5875 MHz to 169,8125 MHz	10 mW	≤ 0,1 % duty cycle	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	40	129
H	433,050 MHz to 434,790 MHz	10 mW	10 %	The whole band		44b, 45b	20, 125
I	433,050 MHz to 434,790 MHz	1 mW e.r.p. -13 dBm/10 kHz PSD for bandwidth modulation larger than 250 kHz	No requirement	The whole band	Audio and video applications are excluded.	44a, 45a	61, 63
J	434,040 MHz to 434,790 MHz	10 mW	No requirement	25 kHz	Audio and video applications are excluded.	45c	65
K	863 MHz to 865 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		46a	66
L	865 MHz to 868 MHz	25 mW e.r.p. Power density: -4,5 dBm/100 kHz The power density can be increased to +6,2 dBm/100 kHz if the band of operation is limited to 865 MHz to 868 MHz	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz	DSSS and any techniques other than FHSS.	47	67

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
M	868,000 MHz to 868,600 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		48	28
N	868,700 MHz to 869,200 MHz	25 mW e.r.p.	≤ 0,1% duty cycle or polite spectrum access	The whole sub-band except for audio & video applications limited to 300 kHz		50	29
O	869,400 MHz to 869,650 MHz	25 mW e.r.p.	≤ 0.1% duty cycle or polite spectrum access	The whole band	.	54a	130
P	869,400 MHz to 869,650 MHz	500 mW e.r.p.	≤ 10 % duty cycle or polite spectrum access	The whole band		54b	30
Q	869,700 MHz to 870,000 MHz	5 mW e.r.p.	No requirement	The whole band	Audio and video applications are excluded.	56a	31
R	869,700 MHz to 870,000 MHz	25 mW e.r.p.	≤ 1% duty cycle or polite spectrum access	The whole band	Analogue audio applications are excluded. Analogue video applications are excluded.	56b	69

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Table C.1: National Radio Interfaces not EU wide harmonised

Operational Frequency Band		Maximum Effective Radiated Power	Channel access and occupation rules	Additional/other spectrum access parameters	Maximum occupied bandwidth	Other usage restriction	Notes	CEPT/ERC/REC 70-03 [i.1] implementation status
S	34,995 MHz to 35,225 MHz	100 mW e.r.p.	No requirement		10 kHz	Flying radio models		100 %
T	40,665 MHz, 40,675 MHz, 40,685 MHz, 40,695 MHz	100 mW e.r.p.	No requirement		10 kHz	Radio models		100 %
U	138,20 MHz to 138,45 MHz	10 mW e.r.p.	≤ 1,0 % duty cycle		The whole band			50 %
V	169,4750 MHz to 169,4875 MHz	10 mW e.r.p.	≤ 0,1 % duty cycle		12,5 kHz	Social alarms		Not included
W	169,5875 MHz to 169,6000 MHz	10 mW e.r.p.	≤ 0,1 % duty cycle		12,5 kHz	Social alarms		Not included

Operational Frequency Band		Maximum Effective Radiated Power	Channel access and occupation rules	Additional/other spectrum access parameters	Maximum occupied bandwidth	Other usage restriction	Notes	CEPT/ERC/REC 70-03 [i.1] implementation status
X	863 MHz to 870 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle or polite spectrum access	≤ 1 % Duty Cycle if the band is limited to 865 MHz to 868 MHz	100 kHz for 47 or more channels	FHSS	Sub-bands for alarms [868,6 MHz to 868,7 MHz], [869,250 - 869,4 MHz], [869,650 MHz to 869,700 MHz] are excluded.	90 %
		25 mW e.r.p. Power density: -4,5 dBm/100 kHz. The power density can be increased to +6,2 dBm/100 kHz if the band of operation is limited to 865 MHz to 868 MHz. The power density can be increased to -0,8 dBm/100 kHz, if the band of operation is limited 865 MHz to 870 MHz.	≤ 0,1 % duty cycle or polite spectrum access	Duty cycle may be increased to 1 % if the band is limited to 865 MHz to 868 MHz and power limited to 10 mW e.r.p.	The whole band except for audio & video limited to 300 kHz and voice limited to 25 kHz		DSSS and any techniques other than FHSS Sub-bands [868,6 MHz to 868,7 MHz], [869,250 MHz to 869,4 MHz], [869,650 MHz to 869,700 MHz] for alarms are excluded.	90 %
		25 mW e.r.p.	≤ 0,1 % duty cycle or polite spectrum access		300 kHz except for voice limited to 25 kHz		Sub-bands [868,6 MHz to 868,7 MHz], [869,250 - 869,4 MHz], [869,650 MHz to 869,700 MHz] for alarms are excluded.	90 %

Operational Frequency Band		Maximum Effective Radiated Power	Channel access and occupation rules	Additional/other spectrum access parameters	Maximum occupied bandwidth	Other usage restriction	Notes	CEPT/ERC/REC 70-03 [i.1] implementation status
Y	870,000 MHz to 875,800 MHz	25 mW e.r.p.	≤ 1 % duty cycle For ER-GSM protection (873 MHz to 875,8 MHz, where applicable), the duty cycle is limited to ≤ 0,01 % and Ton_max is limited to 5 ms /1 s		600 kHz		See note.	20 %
Z	875,8 MHz to 876 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle For ER-GSM protection where applicable, the duty cycle is limited to ≤ 0,01 % and Ton_max is limited to 5 ms/1 s	DCT with Ton_max ≤ 200 ms, Toff_min ≥ 200 ms Alternatively DCT with Ton_cum= 10 s Tobs=24h Ton_max ≤ 800 ms, Toff_min ≥ 200 ms	200 kHz		See note.	20 %
AA	870,000 MHz to 875,800 MHz	500 mW e.r.p. restricted to vehicle-to-vehicle applications. 100 mW e.r.p. is restricted to in-vehicle applications.	≤ 0,1 % duty cycle For ER-GSM protection (873 MHz to 875,8 MHz, where applicable), the duty cycle is limited to ≤ 0,01 % and Ton_max is limited to 5 ms/1 s		500 kHz	Tracking, tracing and data acquisition	Adaptive Power Control (APC) is required. The APC is able to reduce a link's transmit power from its maximum to ≤ 5 mW. See note.	10 %

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Operational Frequency Band		Maximum Effective Radiated Power	Channel access and occupation rules	Additional/other spectrum access parameters	Maximum occupied bandwidth	Other usage restriction	Notes	CEPT/ERC/REC 70-03 [i.1] implementation status
AB	915 MHz to 915,2 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle	DCT with Ton_max ≤ 200 ms, Toff_min ≥ 200 ms Alternatively DCT with Ton_cum= 10 s Tobs=24h Ton_max ≤ 800 ms, Toff_min ≥ 200 ms	200 kHz		See note.	20 %
AC	920,8 MHz to 921 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle For ER-GSM protection where applicable, the duty cycle is limited to ≤ 0,01 % and Ton_max is limited to 5 ms/1 s	DCT with Ton_max ≤ 200 ms, Toff_min ≥ 200 ms Alternatively DCT with Ton_cum= 10 s Tobs=24h Ton_max ≤ 800 ms, Toff_min ≥ 200 ms	200 kHz		See note.	20 %
AD	915,200 MHz to 920,800 MHz	25 mW e.r.p. except for the 4 channels for the 4 channels identified in channel with centre frequencies at 916,3 MHz, 917,5 MHz, 918,7 MHz and 919,9 MHz, where 100 mW e.r.p. applies	≤ 1 % duty cycle For ER-GSM protection (918 MHz to 920,8 MHz, where applicable), the duty cycle is limited to ≤ 0,01 % and Ton_max is limited to 5 ms/1 s		600 kHz except for the 4 channels identified in channel with centre frequencies at 916,3 MHz, 917,5 MHz, 918,7 MHz and 919,9 MHz. The channel bandwidth is limited to 400 kHz		See note.	

Operational Frequency Band	Maximum Effective Radiated Power	Channel access and occupation rules	Additional/other spectrum access parameters	Maximum occupied bandwidth	Other usage restriction	Notes	CEPT/ERC/REC 70-03 [i.1] implementation status

NOTE: To bands Y to AD: Use of all or part of sub-bands Y to AD may be denied in some European countries that use all or part of these sub-bands for defence/governmental systems. In some member states the upper sub-bands 873 MHz to 876 MHz and 918 MHz to 921 MHz are allocated to the railways for ER-GSM. For the case that a frequency allocation is available in those countries for SRDs, sharing of these sub-bands by SRDs with ER-GSM is permitted provided SRD systems operate in accordance with agreedmitigation measures such as transmission timing limitations as set out in ECC Report 200 [i.6]. The required timing restrictions are included in the column "Channel access and occupation rules". See Appendix 3 of CEPT/ERC/REC 70-03 [i.1] for national implementation concerning ER-GSM and defence/governmental services.

The adjacent frequency bands below 862 MHz and above 870 MHz may be used by high power systems. The same applies to the bands below 915 MHz and above 876 MHz as well as above 921 MHz. Manufacturers should take this into account in the design of equipment and choice of power levels.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar

Test mode c:TX mode_Keep the EUT in transmitting mode.

6.1.2 Measurement Procedure and Data

Test Data:

Measurement Conditions		Operating frequency	Nominal Operating Frequency	OCW	Limit (dBm)	Result
T_{normal} (24°C)	V_{norm}: 3.0V dc	40.6855MHz	40.680MHz	19.0kHz	40.66 MHz to 40.7MHz	PASS

6.2 Effective Radiated Power

Test Requirement EN 300 220-2 V3.2.1 clause 4.3.1.0
Test Method: EN 300 220-1 V3.1.1 clause 5.2.2
Measurement Distance: 3m
Limit:

Table B.1: EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
A	26,957 MHz to 27,283 MHz	10 mW e.r.p.	No requirement	The whole band		28b	25
B	26,995 MHz, 27,045 MHz, 27,095 MHz, 27,145 MHz, 27,195 MHz	100 mW e.r.p.	≤ 0,1 % duty cycle	10 kHz	Model control devices may operate without duty cycle restrictions.	29, 30, 31, 32, 33	Model control 94, 95, 96, 97, 98
C	40,660 MHZ to 40,700 MHz	10 mW e.r.p.	No requirement	The whole band	Video applications excluded.	35	19
D	169,400 MHz to 169,475 MHz	500 mW e.r.p.	≤ 1,0 % duty cycle	50 kHz		37c	80
E	169,4000 MHz to 169,4875 MHz	10 mW	≤ 0,1 % duty	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	38	128

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
F	169,4875 MHZ to 169,5875 MHz	10 mW	≤ 0,001 % duty cycle Between 00.00 and 06.00 local time a duty cycle limit of 0,1 % may be used	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	39b	124
G	169,5875 MHz to 169,8125 MHz	10 mW	≤ 0,1 % duty cycle	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	40	129
H	433,050 MHz to 434,790 MHz	10 mW	10 %	The whole band		44b, 45b	20, 125
I	433,050 MHz to 434,790 MHz	1 mW e.r.p. -13 dBm/10 kHz PSD for bandwidth modulation larger than 250 kHz	No requirement	The whole band	Audio and video applications are excluded.	44a, 45a	61, 63
J	434,040 MHz to 434,790 MHz	10 mW	No requirement	25 kHz	Audio and video applications are excluded.	45c	65
K	863 MHz to 865 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		46a	66
L	865 MHz to 868 MHz	25 mW e.r.p. Power density: -4,5 dBm/100 kHz The power density can be increased to +6,2 dBm/100 kHz if the band of operation is limited to 865 MHz to 868 MHz	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz	DSSS and any techniques other than FHSS.	47	67

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
M	868,000 MHz to 868,600 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		48	28
N	868,700 MHz to 869,200 MHz	25 mW e.r.p.	≤ 0,1% duty cycle or polite spectrum access	The whole sub-band except for audio & video applications limited to 300 kHz		50	29
O	869,400 MHz to 869,650 MHz	25 mW e.r.p.	≤ 0.1% duty cycle or polite spectrum access	The whole band	.	54a	130
P	869,400 MHz to 869,650 MHz	500 mW e.r.p.	≤ 10 % duty cycle or polite spectrum access	The whole band		54b	30
Q	869,700 MHz to 870,000 MHz	5 mW e.r.p.	No requirement	The whole band	Audio and video applications are excluded.	56a	31
R	869,700 MHz to 870,000 MHz	25 mW e.r.p.	≤ 1% duty cycle or polite spectrum access	The whole band	Analogue audio applications are excluded. Analogue video applications are excluded.	56b	69

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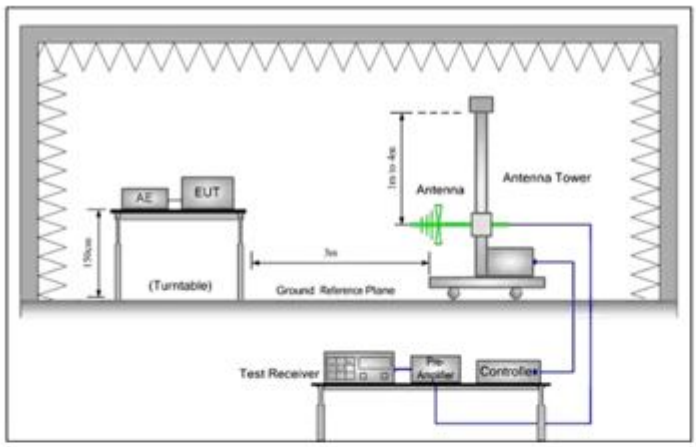
6.2.1 E.U.T. Operation

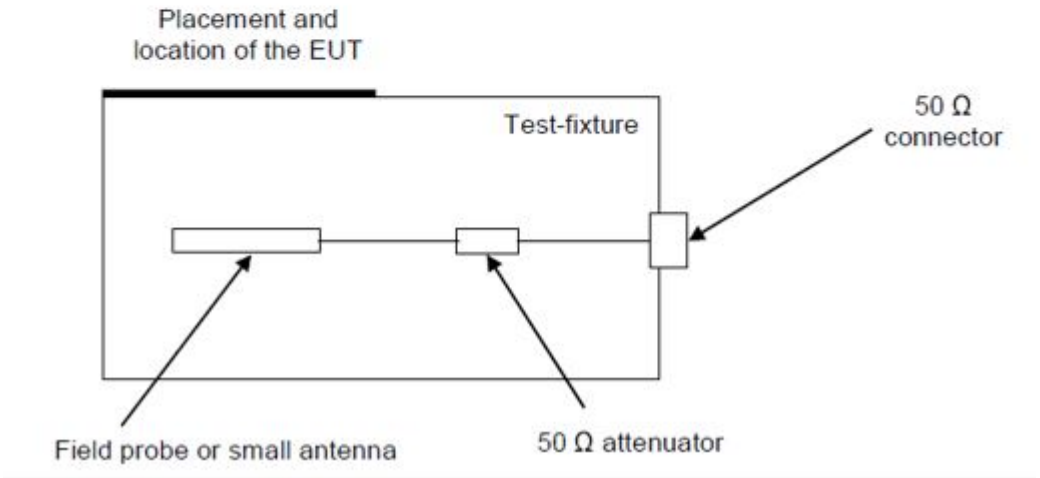
Operating Environment:

Temperature: 25.8 °C Humidity: 56.5 % RH Atmospheric Pressure: 1015 mbar

Test mode c:TX mode_Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram





6.2.3 Measurement Procedure and Data

1） The EUT was powered ON and placed on a 1.5m high table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.

2） The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3） Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4） The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5） A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6） The output power into the substitution antenna was then measured.

7） Steps 5) and 6) were repeated with both antennas polarized.

8） Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Test Data:

Measurement Conditions	Operation Frequency	ERP	Limit	Result
TNVN	40.6855MHz	-31.52dBm	10mW (i.e. 10 dBm)	PASS
TLVL	40.6853MHz	-31.77dBm	10mW (i.e. 10 dBm)	PASS
TLVH	40.6855MHz	-31.38dBm	10mW (i.e. 10 dBm)	PASS
THVL	40.6852MHz	-31.74dBm	10mW (i.e. 10 dBm)	PASS
THVH	40.6854MHz	-31.41dBm	10mW (i.e. 10 dBm)	PASS

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6.3 Maximum Effective Radiated Power spectral density

Not applicable, since the test item is for device below:

1) Maximum e.r.p. spectral density applies to transmitters using annex B bands I, L.

2) Maximum e.r.p. spectral density applies to transmitters using DSSS or wideband techniques other than FHSS modulation, in annex C band X.

Please also refer to EN 300 220-2 V3.2.1 Clause 4.3.2.0.

6.4 Duty Cycle

Test Requirement EN 300 220-2 V3.2.1 clause 4.3.3.0

According to the EN 300 220-2 Clause 4.3.3.0 table B.1, no duty cycle restriction in 40.66 MHz to 40.7MHz.

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6.5 Occupied Bandwidth

Test Requirement EN 300 220-2 V3.2.1 clause 4.3.4.0

Test Method: EN 300 220-1 V3.1.1 clause 5.6.3

Limit:

Table B.1: EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
A	26,957 MHz to 27,283 MHz	10 mW e.r.p.	No requirement	The whole band		28b	25
B	26,995 MHz, 27,045 MHz, 27,095 MHz, 27,145 MHz, 27,195 MHz	100 mW e.r.p.	≤ 0,1 % duty cycle	10 kHz	Model control devices may operate without duty cycle restrictions.	29, 30, 31, 32, 33	Model control 94, 95, 96, 97, 98
C	40,660 MHZ to 40,700 MHz	10 mW e.r.p.	No requirement	The whole band	Video applications excluded.	35	19
D	169,400 MHz to 169,475 MHz	500 mW e.r.p.	≤ 1,0 % duty cycle	50 kHz		37c	80
E	169,4000 MHz to 169,4875 MHz	10 mW	≤ 0,1 % duty	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	38	128

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
F	169,4875 MHZ to 169,5875 MHz	10 mW	≤ 0,001 % duty cycle Between 00.00 and 06.00 local time a duty cycle limit of 0,1 % may be used	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	39b	124
G	169,5875 MHz to 169,8125 MHz	10 mW	≤ 0,1 % duty cycle	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	40	129
H	433,050 MHz to 434,790 MHz	10 mW	10 %	The whole band		44b, 45b	20, 125
I	433,050 MHz to 434,790 MHz	1 mW e.r.p. -13 dBm/10 kHz PSD for bandwidth modulation larger than 250 kHz	No requirement	The whole band	Audio and video applications are excluded.	44a, 45a	61, 63
J	434,040 MHz to 434,790 MHz	10 mW	No requirement	25 kHz	Audio and video applications are excluded.	45c	65
K	863 MHz to 865 MHz	25 mW e.r.p.	≤ 0,1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		46a	66
L	865 MHz to 868 MHz	25 mW e.r.p. Power density: -4,5 dBm/100 kHz The power density can be increased to +6,2 dBm/100 kHz if the band of operation is limited to 865 MHz to 868 MHz	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz	DSSS and any techniques other than FHSS.	47	67

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2013/752/EU [i.3]	Class 1 sub-class number according Commission Decision 2000/299/EU [i.7]
M	868,000 MHz to 868,600 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		48	28
N	868,700 MHz to 869,200 MHz	25 mW e.r.p.	≤ 0,1% duty cycle or polite spectrum access	The whole sub-band except for audio & video applications limited to 300 kHz		50	29
O	869,400 MHz to 869,650 MHz	25 mW e.r.p.	≤ 0.1% duty cycle or polite spectrum access	The whole band	.	54a	130
P	869,400 MHz to 869,650 MHz	500 mW e.r.p.	≤ 10 % duty cycle or polite spectrum access	The whole band		54b	30
Q	869,700 MHz to 870,000 MHz	5 mW e.r.p.	No requirement	The whole band	Audio and video applications are excluded.	56a	31
R	869,700 MHz to 870,000 MHz	25 mW e.r.p.	≤ 1% duty cycle or polite spectrum access	The whole band	Analogue audio applications are excluded. Analogue video applications are excluded.	56b	69

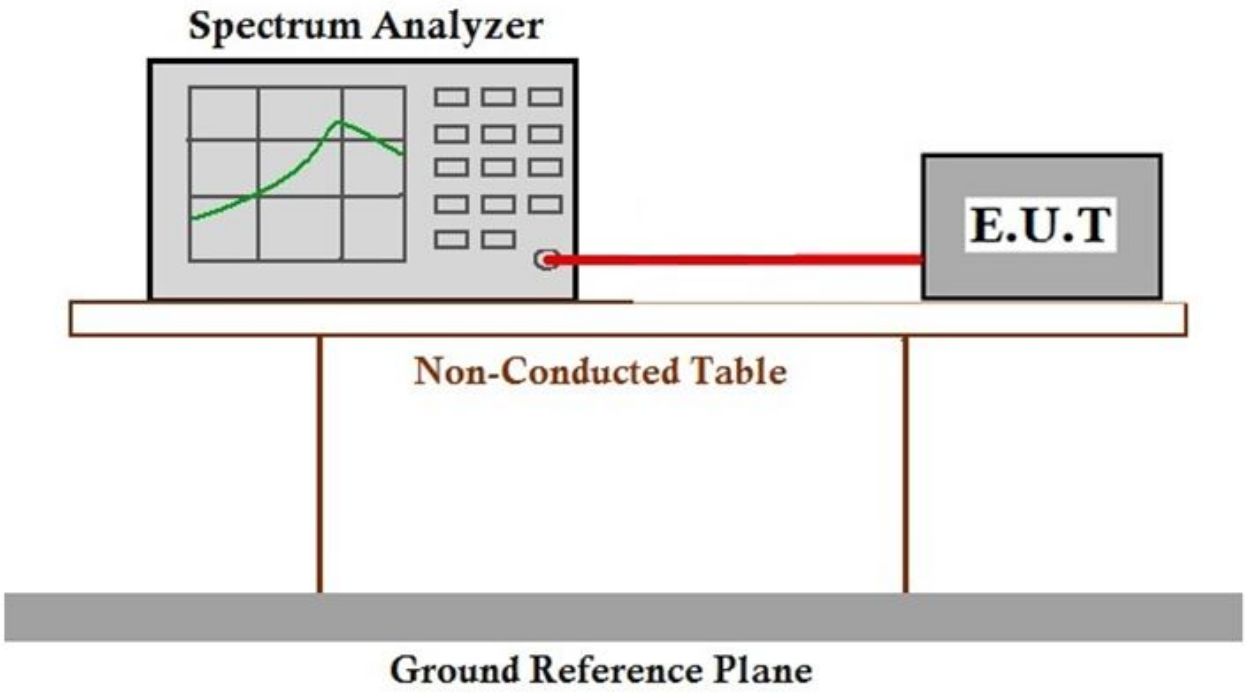
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar

Test mode c:TX mode_Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Procedure and Data

Test Data:

Measurement Conditions	Operating frequency	OBW	Limit	Result
TNVN	40.6855MHz	17.5kHz	25 kHz	PASS
TLVL	40.6853MHz	17.3kHz	25 kHz	PASS
TLVH	40.6855MHz	17.5Hz	25 kHz	PASS
THVL	40.6852MHz	17.2kHz	25 kHz	PASS
THVH	40.6854MHz	17.4kHz	25 kHz	PASS

6.6 Unwanted emissions in the spurious domain

Test Requirement EN 300 220-2 V3.2.1 clause 4.2.2.0
Test Method: EN 300 220-1 V3.1.1 clause 5.9.3
Measurement Distance: 3m
Limit:

Table 19: Spurious domain emission limits

Frequency / State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies below 1 000 MHz	Frequencies above 1 000 MHz
TX mode	-54 dBm	-36 dBm	-30 dBm
RX and all other modes	-57 dBm	-57 dBm	-47 dBm

6.6.1 E.U.T. Operation

Operating Environment:

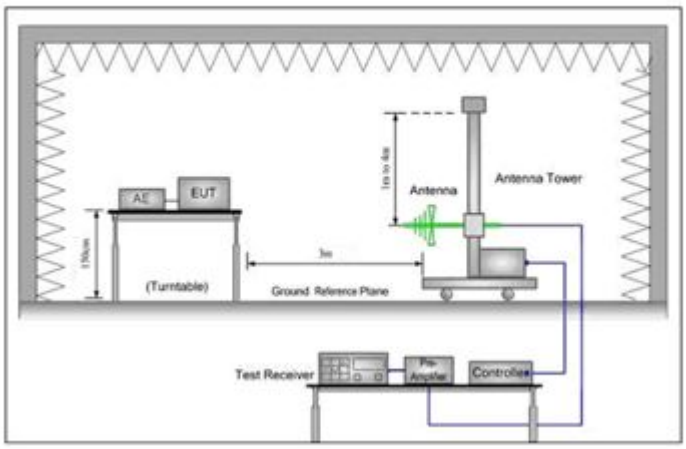
Temperature: 25.5 °C Humidity: 56.4 % RH Atmospheric Pressure: 1015 mbar

Pretest these modes to find the worst case:
c:TX mode_Keep the EUT in transmitting mode.
d:RX mode_Keep the EUT in receiving mode.

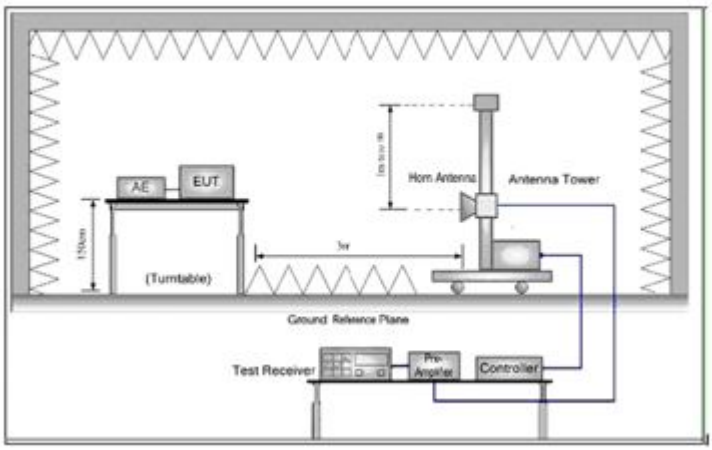
The worst case for final test:
c:TX mode_Keep the EUT in transmitting mode.
d:RX mode_Keep the EUT in receiving mode.

6.6.2 Test Setup Diagram

30MHz to 1GHz



Above 1GHz



6.6.3 Measurement Procedure and Data

Below 1GHz test procedure as below:

1) The EUT was powered ON and placed on a 1.5m high table in the chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.

2) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3) Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6) The output power into the substitution antenna was then measured.

7) Steps 5) and 6) were repeated with both antennas polarized.

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (Db) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and receiving antenna is moved from 1m to 2m.

2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (Db) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

Standby mode test procedure as below:

1) Below 1GHz test procedure Steps 1) to 8) and Above 1GHz test procedure 1) to 2) shall be repeated with the transmitter in the standby condition if this option is available.

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Test Data:

Tx mode				
Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
81.497	H	-69.14	-36	-33.14
121.976	H	-76.79	-36	-40.79
244.232	H	-73.97	-36	-37.97
284.977	H	-71.62	-36	-35.62
325.596	H	-67.84	-36	-31.84
366.823	H	-66.93	-36	-30.93
81.497	V	-62.16	-36	-26.16
121.976	V	-75.88	-36	-39.88
162.611	V	-71.73	-36	-35.73
325.596	V	-75.34	-36	-39.34
716.682	V	-67.29	-54	-13.29
972.337	V	-64.93	-36	-28.93

Rx mode				
Maximum Frequency	Spurious Emission Level		Limit	Over Limit
MHz	Polaxis	dBm	dBm	dB
37.374	H	-74.38	-57	-17.38
70.749	H	-76.75	-57	-19.75
176.617	H	-70.29	-57	-13.29
210.829	H	-61.28	-57	-4.28
246.16	H	-65.62	-57	-8.62
834.64	H	-67.95	-57	-10.95
36.02	V	-70.63	-57	-13.63
40.235	V	-65.72	-57	-8.72
71.273	V	-73.76	-57	-16.76
105.766	V	-75.81	-57	-18.81
141.028	V	-70.79	-57	-13.79
211.608	V	-65.31	-57	-8.31

Remark: The Radiated Emissions measurement results above 1GHz-range have a margin of at least 10dB

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6.7 Transient power

Test Requirement EN 300 220-2 V3.2.1 clause 4.3.6.0

Test Method: EN 300 220-1 V3.1.1 clause 5.10.3

Limit:

Table 23: Transmitter Transient Power limits

Absolute offset from centre frequency	RBW_{REF}	Peak power limit applicable at measurement points
≤ 400 kHz	1 kHz	0 dBm
> 400 kHz	1 kHz	-27 dBm

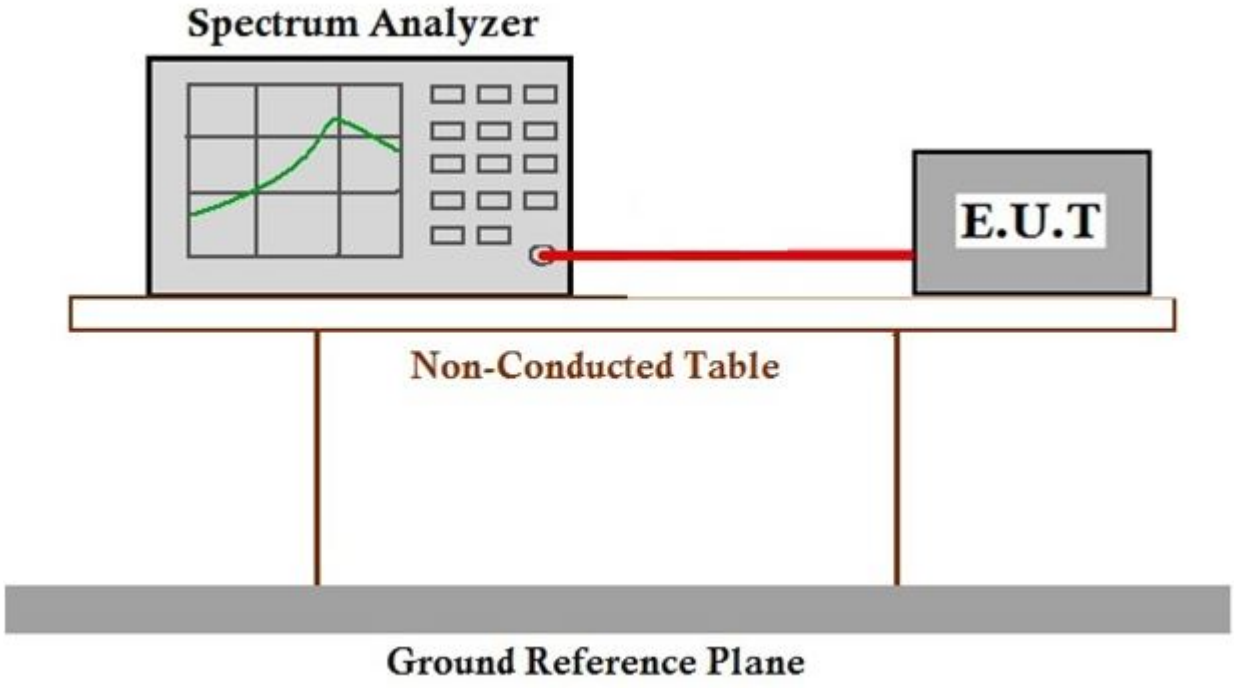
6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar

Test mode c:TX mode_Keep the EUT in transmitting mode.

6.7.2 Test Setup Diagram



6.7.3 Measurement Procedure and Data

Test Data:

Measurement points: offset from centre frequency	Transient Power (dBm) REF	Limit(dBm)	Result
-0,5 x OCW - 3 kHz 0,5 x OCW + 3 kHz Not applicable for OCW < 25 kHz	N/A	0	N/A
-12,5 kHz or -OCW whichever is the greater	-50.6	0	PASS
12,5 kHz or OCW whichever is the greater	-51.2	0	PASS
-0,5 x OCW - 400 kHz	-73.5	-27	PASS
0,5 x OCW + 400 kHz	-72.8	-27	PASS
-0,5 x OCW -1 200 kHz	-89.6	-27	PASS
0,5 x OCW + 1 200 kHz	-88.3	-27	PASS
Remark: OCW is 19.0kHz per the result of sub clause 6.1.2			

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6.8 Adjacent Channel Power

Test Requirement EN 300 220-2 V3.2.1 clause 4.3.7.0
Test Method: EN 300 220-1 V3.1.1 clause 5.11.3
Limit:

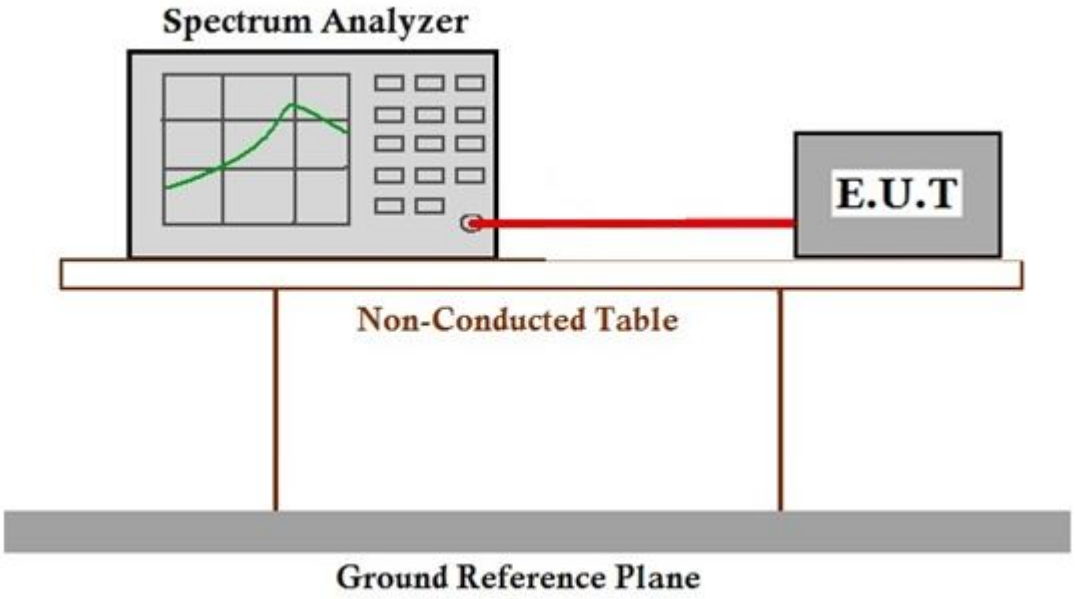
Table 26: Adjacent channel power limits for transmitters with OCW ≤ 25 kHz

		Adjacent Channel power integrated over 0,7 x OCW	Alternate Adjacent Channel power integrated over 0,7 x OCW
OCW < 20 kHz	Normal test conditions	-20 dBm	-20 dBm
	Extreme test conditions	-15 dBm	-20 dBm
OCW ≥ 20 kHz	Normal test conditions	-37 dBm	-40 dBm
	Extreme test conditions	-32 dBm	-37 dBm

6.8.1 E.U.T. Operation

Operating Environment:
Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar
Test mode c:TX mode_Keep the EUT in transmitting mode.

6.8.2 Test Setup Diagram



6.8.3 Measurement Procedure and Data

Test Data:

Measurement Conditions (in Normal & Extreme)		Adjacent channel	ACP Measured (dBm)	Limit (dBm)	Result
T_{normal} (24°C)	V_{norm}: 3.0V dc	+adjacent channel	-23.26	-20 (10μW)	PASS
		-adjacent channel	-23.41		
T_{upper} (+55°C) after Tx on for 30 minutes	V_{max}: 3.0V dc	+adjacent channel	-22.76	-15 (32μW)	PASS
		-adjacent channel	-22.81		
	V_{min}: 2.55V dc	+adjacent channel	-23.17	-15 (32μW)	PASS
		-adjacent channel	-22.91		
T_{lower} (-10°C) after Tx on for 1 minute	V_{max}: 3.0V dc	+adjacent channel	-23.49	-15 (32μW)	PASS
		-adjacent channel	-23.08		
	V_{min}: 2.55V dc	+adjacent channel	-23.64	-15 (32μW)	PASS
		-adjacent channel	-23.36		

Measurement Conditions (in Normal & Extreme)		Alternate channel	ACP Measured (dBm)	Limit (dBm)	Result
T_{normal} (24°C)	V_{max}: 3.0V dc	+alternate channel	-30.05	-20 (10μW)	PASS
		-alternate channel	-30.37		
T_{upper} (+55°C) after Tx on for 30 minutes	V_{max}: 3.0V dc	+alternate channel	-29.38	-20 (10μW)	PASS
		-alternate channel	-29.74		
	V_{min}: 2.55V dc	+alternate channel	-29.89	-20 (10μW)	PASS
		-alternate channel	-30.27		
T_{lower} (-10°C) after Tx on for 1 minute	V_{max}: 3.0V dc	+alternate channel	-29.69	-20 (10μW)	PASS
		-alternate channel	-29.93		
	V_{min}: 2.55V dc	+alternate channel	-30.18	-20 (10μW)	PASS
		-alternate channel	-30.07		

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6.9 TX behaviour under Low Voltage Conditions

Test Requirement: EN 300 220-2 V3.2.1 clause 4.3.8.0

Test Method: EN 300 220-1 V3.1.1 clause 5.12.3

Limit: The equipment shall either:

a) remain in the Operating Channel OC without exceeding any applicable limits (e.g. Duty Cycle); or

b) reduce its effective radiated power below the Spurious Emission limits without exceeding any applicable limits(e.g. Duty Cycle); or

c) shut down, (ceasing function);

as the voltage falls below the manufacturers declared operating voltage.

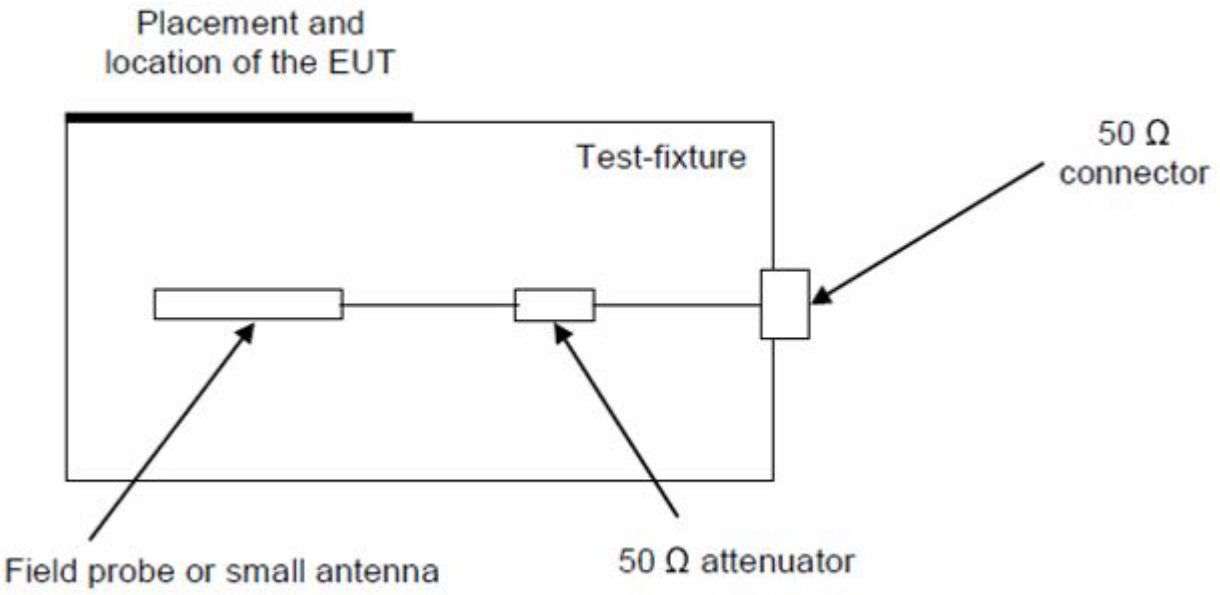
6.9.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar

Test mode c:TX mode_Keep the EUT in transmitting mode.

6.9.2 Test Setup Diagram



6.9.3 Measurement Procedure and Data

Step 1:

Operation of the EUT shall be started, on Operating Frequency as declared by the manufacturer, with the appropriate test signal and with the EUT operating at nominal operating voltage.

The centre frequency of the transmitted signal shall be measured and noted.

Step 2:

The operating voltage shall be reduced by appropriate steps until the voltage reaches zero.

The centre frequency of the transmitted signal shall be measured and noted.

Any abnormal behaviour shall be noted.

Test Data:

Nominal Frequency was: 40.680 **MHz**

Test Voltage (V)	Test result (MHz)	Test result (output power for relative value)	Limit	Result
$V_{norm:}$ 3.0V dc	40.6855	-31.52dBm(REF)	40.66 MHz to 40.7MHz	PASS
$V_{ext:}$2.55V dc	40.6852	-31.69 dBm	40.66 MHz to 40.7MHz	PASS
Vext: 2.0V dc	40.6848	-32.75dBm	40.66 MHz to 40.7MHz	PASS
Vlowest:1.1V dc		cease function		PASS
Remark: 1) No other exceeding any applicable limits were found during the tests 2) Applied test voltage: reduced from 3V to 0V DC				

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6.10 Blocking

Test Requirement EN 300 220-2 V3.2.1 clause 4.4.2.0

Test Method: EN 300 220-1 V3.1.1 clause 5.18.6

Limit:

Table 41: Blocking level parameters for RX category 2

Requirement	Limits
	Receiver category 2
Blocking at ±2 MHz from OC edge f_{high} and f_{low}	≥ -69 dBm
Blocking at ±10 MHz from OC edge f_{high} and f_{low}	≥ -44 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -44 dBm

Table 42: Blocking level parameters for RX category 1.5

Requirement	Limits
	Receiver category 1.5
Blocking at ±2 MHz from OC edge f_{high} and f_{low}	≥ -43 dBm
Blocking at ±10 MHz from OC edge f_{high} and f_{low}	≥ -33 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -33 dBm

Table 43: Blocking level parameters for RX category 1

Requirement	Limits
	Receiver category 1
Blocking at ±2 MHz from Centre Frequency	≥ -20 dBm
Blocking at ±10 MHz from Centre Frequency	≥ -20 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -20 dBm

6.10.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1010 mbar

Test mode d:RX mode_Keep the EUT in receiving mode.

6.10.2 Test Setup Diagram

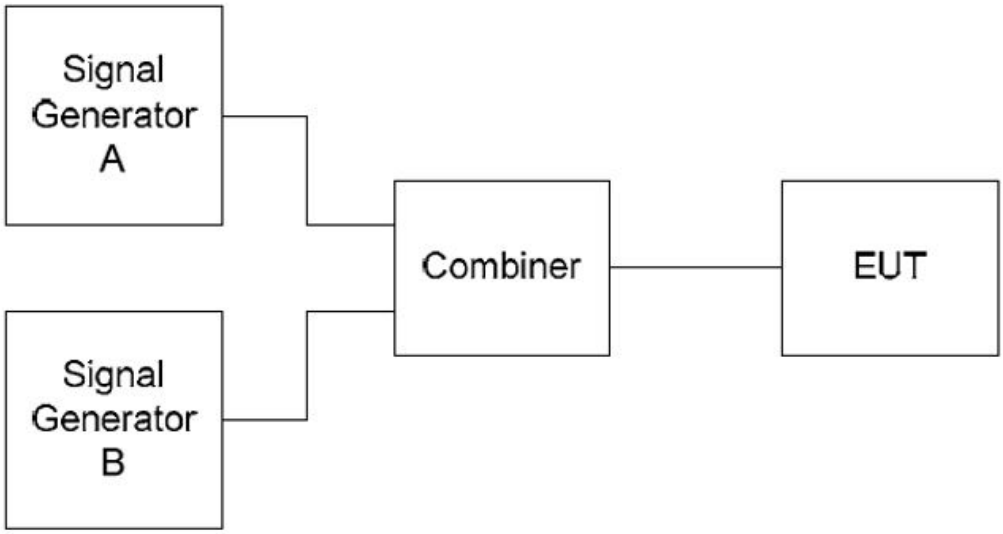


Figure 10: Blocking measurement arrangement

6.10.3 Measurement Procedure and Data

Signal generator A shall be set to an appropriate modulated test signal at the operating frequency of the EUT receiver.

Signal generator B shall be unmodulated.

Measurements shall be carried out at frequencies of the unwanted signal at approximately the frequency(ies) offset(s) defined in technical requirement avoiding those frequencies at which spurious responses occur. Additional

measurement points may be requested by technical requirements clause.

If several operational frequency bands are used by the equipment, at least one blocking measurement by bands has to be performed.

Step 1:

Signal generator B shall be powered off. Signal generator A shall be set to the minimum level which gives the wanted performance criterion of EUT or the reference level in Table 32, whichever is the higher The output level of generator A shall then be increased by 3 dB unless otherwise specified in technical requirement.

Step 2:

Signal generator B is powered on and set to operate at the nominal operating frequency - offset frequency.

Signal generator B is then switched on and the signal amplitude is adjusted to the minimum level at which the wanted performance criterion is not achieved.

With signal generator B settings unchanged, the receiver shall be replaced with a suitable RF power measuring equipment. The power into the measuring equipment shall be measured and noted.

The blocking level is then the conducted power received from generator B at the EUT antenna connector.

This can either be measured on the antenna connector for conducted test or be calculated for radiated test (see clause C.5.4).

The blocking level shall be higher or equal to the blocking power level requested in the technical requirement clause.

Step 3:

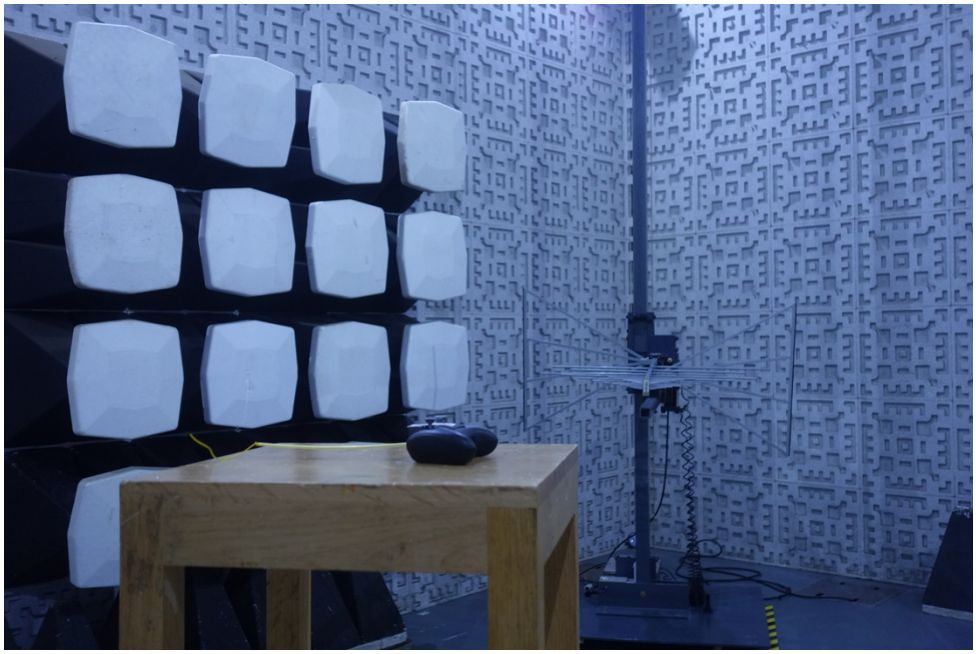
The measurement in steps 1 to 3 shall be repeated with signal offsets at required frequencies.

Test Data:

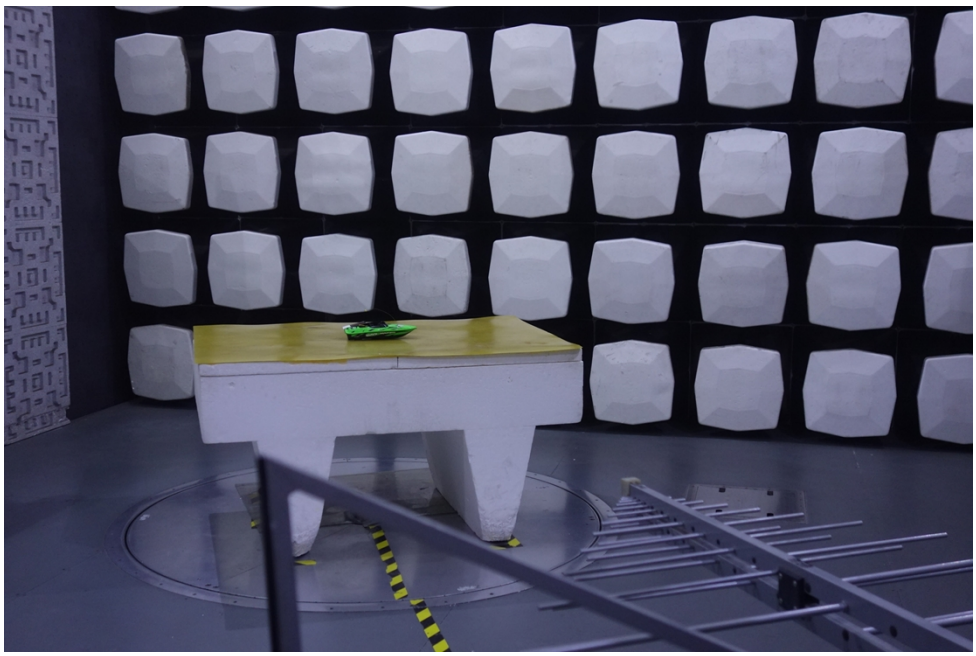
Receiver Category	Frequency Offset	Value(dBm)	Limit(dBm)	Result
2	+2MHz	-49.2	-69	Pass
2	-2MHz	-49.6	-69	Pass
2	+10MHz	-33.9	-44	Pass
2	-10MHz	-32.6	-44	Pass
2	+15MHz	-28.7	-44	Pass
2	-15MHz	-26.4	-44	Pass

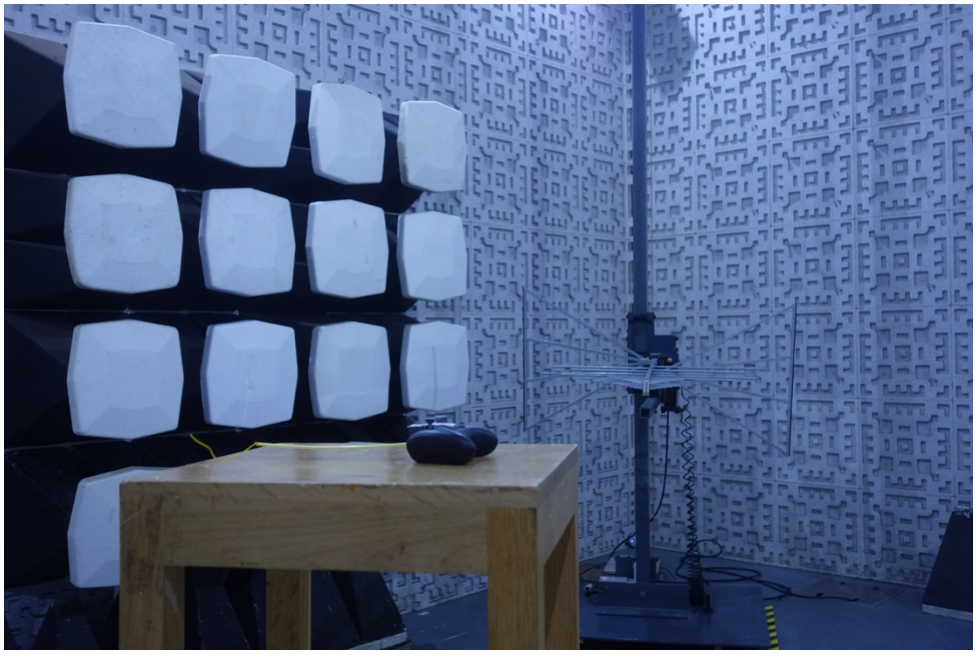
7 Photographs

7.1 Effective Radiated Power Test Setup



7.2 Unwanted emissions in the spurious domain Test Setup





7.3 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of Constructional Details for SZEM2010010393CR

- End of the Report -