CE Radio Test Report

Equipment	:	Metrolinq Outdoor 60GHz PTP + 5 GHz
Brand Name	:	IgniteNet
Model No.	:	ML-60-35, ML-60-35-1
Standard	:	EN 302 217-3 V2.2.1 (2014-04)
Frequency Range	:	57 GHz – 66 GHz
Applicant	:	Accton Technology Corporation No. 1, Creation Rd. III, Science-based Industrial Park Hsin Chu 30077, Taiwan R.O.C.
Manufacturer	:	Joy Technology (ShenZhen) Corporation HengKeng Ind., Shangpai, Shangwu,Aiqun Rd., Shiyan Town,Shenzhen 518108 China

The product sample received on Nov. 30, 2015 and completely tested on Jan. 13, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN 302 217-3 V2.2.1(2014-04) and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Sam Chen
SPORTON INTERNATIONAL INC.

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Summary of Test Result

Harmonized Standard Requirements and Conformance Test Specifications				
Report Clause	**Ref. Std. Clause**	**Description**	**Result**	**Remark**
3.1	4.3.1.1	Transmitter power	Complied	-
3.2	4.3.1.2	Equivalent isotropically radiated power (EIRP)	Complied	-
3.3	4.3.2	Radio Frequency (RF) spectrum mask	Complied	-
3.4	4.3.3	Transmitter Spurious emissions	Complied	-
3.5	4.3.4	Radio frequency tolerance	Complied	-
3.6	4.3.5.1	Off-axis EIRP density - Radiation Pattern Envelope (RPE)	Complied	-
3.7	4.3.5.2	Antenna gain	Complied	-
4.1	4.4.1	Receiver Spurious emissions	Complied	-

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
ER5N2614AB	Rev. 01	Initial issue of report	Feb. 22, 2016

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information	
Frequency Range	57-66 GHz
The Channel Plan(s)	Channel 1: 58.32 GHz Channel 2: 60.48 GHz Channel 3: 62.64 GHz Channel 4: 64.80 GHz

1.1.2 Table of Modulation

MCS index	Modulation	N_{CBPS}	Repetition	Code rate	Data rate (Mbps)
1	π/2-BPSK	1	2	1/2	385
2	π/2-BPSK	1	1	1/2	770
3	π/2-BPSK	1	1	5/8	962.5
4	π/2-BPSK	1	1	3/4	1155
5	π/2-BPSK	1	1	13/16	1251.25
6	π/2-QPSK	2	1	1/2	1540
7	π/2-QPSK	2	1	5/8	1925
8	π/2-QPSK	2	1	3/4	2310
9	π/2-QPSK	2	1	13/16	2502.5
10	π/2-16QAM	4	1	1/2	3080
11	π/2-16QAM	4	1	5/8	3850
12	π/2-16QAM	4	1	3/4	4620

1.1.3 Antenna Information

Ant.	Brand	P/N	Antenna Type	Connector	Antenna Gain (dBi)	Cable Loss (dB)	True Gain (dBi)	Remark
1	IgniteNet	FS5-19N-120	Sector Ant. (PATCH ARRAY)	Type-N	19	1	18	External (5GHz use)
Ant.	**Brand**	**P/N**	**Antenna Type**	**Connector**	**Gain (dBi)**			**Remark**
					5GHz Band 3		**60GHz**	
2	Accton	123400001084A	Dish Ant.	N/A	17.51		42	Internal (5G&60G use)

1.1.4 EUT Operational Condition

EUT Power Type	From PoE		
Operational Voltage	☒ Vnom (230 V)	☒ Vmax (253 V)	☒ Vmin (207 V)
Operational Temperature	☒ Tnom (20°C)	☒ Tmax (70°C)	☒ Tmin (-40°C)

1.1.5 Equipment Spectral Efficiency Class

Equipment Spectral Efficiency Class
☐ Equipment Spectral Efficiency Class 1
☒ Equipment Spectral Efficiency Class 2
☐ Equipment Spectral Efficiency Class 3
☐ Equipment Spectral Efficiency Class 4L
☐ Equipment Spectral Efficiency Class 4H
☐ Equipment Spectral Efficiency Class 5L
☐ Equipment Spectral Efficiency Class 5H

1.1.6 Output power tolerance

Output power tolerance
The supplier declares output power tolerance is 2 dB, it shall be included in the limits in clauses 3.1.1 and 3.2.1.

1.1.7 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

The difference is the type of the antenna equipped.

Model Name	5GHz	60GHz	Remark
ML-60-35	Internal / Dish Ant.	Internal / Dish Ant.	Outdoor use
ML-60-35-1	External / Sector Ant.	Internal / Dish Ant.	

Note: Both models were tested and recorded in the report for 5GHz. But for 60GHz, only the model: ML-60-35 was tested and recorded in the report.

1.2 Accessories

N/A

1.3 Support Equipment

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E4300	DoC
2	PoE	ITE	NU24-F240100-I2	N/A

1.4 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- EN 302 217-3 V2.2.1(2014-04)

1.5 Testing Location Information

Testing Location						
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973				
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085				
Test Condition		**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**	
RF Conducted		TH01-CB	Lucas Huang	26°C / 63%	28-Dec-15 ~ 05-Jan-16	
Radiated Emission		05CH01-CB	Eddie Weng	24°C / 60%	08-Jan-16 ~ 13-Jan-16	

2 Test Configuration of EUT

2.1 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Channel 1 (GHz)	58.32
Channel 2 (GHz)	60.48
Channel 3 (GHz)	62.64
Channel 4 (GHz)	64.80

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter				
Test Software Version	DOS			
Test Frequency (GHz)	**Channel 1**	**Channel 2**	**Channel 3**	**Channel 4**
	58.32	60.48	62.64	64.80
Power Setting Parameter	12.00	12.00	12.00	12.00

2.3 EUT Operation during Test

For Transmitter Spurious emissions and Receiver Spurious emissions:

During the test, “DOS” under WIN 7 was executed the test program to control the EUT continuously transmit/receive RF signal.

For other test items:

During the test, “DOS” under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

2.4 Conformance Tests and Related Test Frequencies

Test Item	Test Frequencies (GHz)
Transmitter power	58.32,60.48, 62.64, 64.80
Equivalent isotropically radiated power (EIRP)	58.32,60.48, 62.64, 64.80
Radio Frequency (RF) spectrum mask	58.32,60.48, 62.64, 64.80
Transmitter Spurious emissions	58.32,60.48, 62.64, 64.80
Radio frequency tolerance	58.32,60.48, 62.64, 64.80
Off-axis EIRP density - Radiation Pattern Envelope (RPE)	-
Antenna gain	-
Receiver Spurious emissions	58.32,60.48, 62.64, 64.80

Note1:

The power of EUT is supplied by PoE. But the PoE is for measurement only, and it would not be marketed.

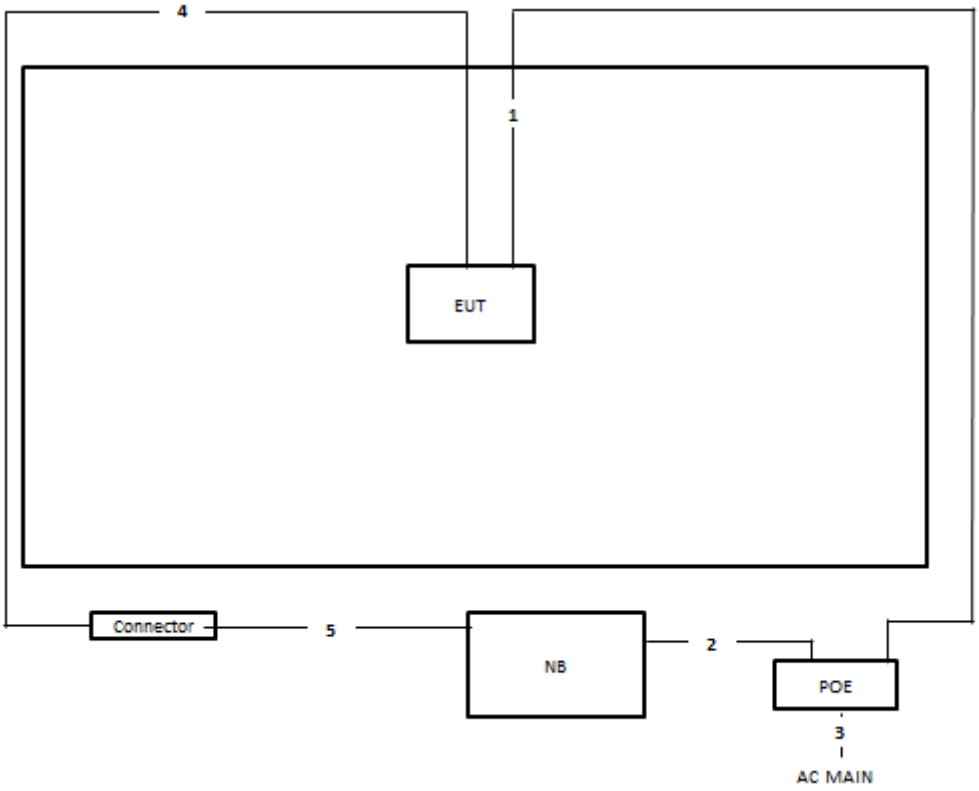
Equipment	Brand Name	Model Name
PoE	ITE	NU24-F240100-I2

Note2: The USB port can not be used by end user.

Note3: The EUT can only be used in Y-axis position.

2.5 Test Setup Diagram

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)
1	RJ-45 cable	No	10
2	RJ-45 cable	No	0.5
3	Power cable	No	0.3
4	RJ-45 cable	No	10
5	Console cable	No	0.5

3 Transmitter Test Result

3.1 Transmitter power

3.1.1 Transmitter power Limit

Transmitter power Limit
Transmitter power ≤ 10 dBm

3.1.2 Measuring Instruments

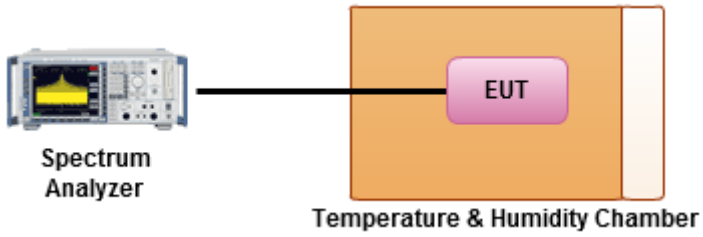
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Method of measurement: Refer as clause 5.2.1 of EN 301 126-1 [6].

3.1.4 Test Setup

Transmitter power



3.1.5 Test Result of Transmitter power

Test Frequency (GHz)	Test Conditions	EIRP (dBm)	Antenna Gain (dBi)	Pout (dBm)	Limit (dBm)
58.32	NTNV	48.00	42.00	6.00	10
	HTHV	51.14	42.00	9.14	10
	HTLV	51.13	42.00	9.13	10
	LTHV	43.82	42.00	1.82	10
	LTLV	43.84	42.00	1.84	10
Result		Complied			

Test Frequency (GHz)	Test Conditions	EIRP (dBm)	Antenna Gain (dBi)	Pout (dBm)	Limit (dBm)
60.48	NTNV	51.02	42.00	9.02	10
	HTHV	51.98	42.00	9.98	10
	HTLV	51.98	42.00	9.98	10
	LTHV	48.68	42.00	6.68	10
	LTLV	48.67	42.00	6.67	10
Result		Complied			

Test Frequency (GHz)	Test Conditions	EIRP (dBm)	Antenna Gain (dBi)	Pout (dBm)	Limit (dBm)
62.64	NTNV	48.28	42.00	6.28	10
	HTHV	51.42	42.00	9.42	10
	HTLV	51.41	42.00	9.41	10
	LTHV	44.19	42.00	2.19	10
	LTLV	44.18	42.00	2.18	10
Result		Complied			

Test Frequency (GHz)	Test Conditions	EIRP (dBm)	Antenna Gain (dBi)	Pout (dBm)	Limit (dBm)
64.80	NTNV	47.75	42.00	5.75	10
	HTHV	50.89	42.00	8.89	10
	HTLV	50.88	42.00	8.88	10
	LTHV	43.66	42.00	1.66	10
	LTLV	43.56	42.00	1.56	10
Result		Complied			

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

3.2 Equivalent isotropically radiated power

3.2.1 Equivalent isotropically radiated power Limit

Equivalent isotropically radiated power Limit
Mean equivalent isotropic radiated power (e.i.r.p.) ≤ 52 dBm

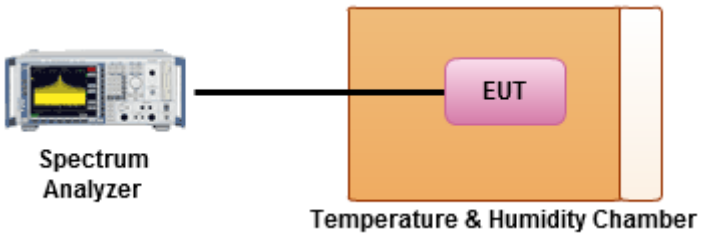
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Method of measurement: Refer as clause 6.3 of EN 301 126-3-1 [7].

3.2.4 Test Setup

Equivalent isotropically radiated power


3.2.5 Test Result of Equivalent isotropically radiated power

Test Frequency (GHz)	Test Conditions	Measured Power (dBm)	Output power tolerance (dB)	EIRP (dBm)	Limit (dBm)
58.32	NTNV	-33.57	2.00	48.00	52.00
	HTHV	-30.43	2.00	51.14	52.00
	HTLV	-30.44	2.00	51.13	52.00
	LTHV	-37.75	2.00	43.82	52.00
	LTLV	-37.73	2.00	43.84	52.00
Result		Complied			

Test Frequency (GHz)	Test Conditions	Measured Power (dBm)	Output power tolerance (dB)	EIRP (dBm)	Limit (dBm)
60.48	NTNV	-30.86	2.00	51.02	52.00
	HTHV	-29.90	2.00	51.98	52.00
	HTLV	-29.90	2.00	51.98	52.00
	LTHV	-33.20	2.00	48.68	52.00
	LTLV	-33.21	2.00	48.67	52.00
Result		Complied			

Test Frequency (GHz)	Test Conditions	Measured Power (dBm)	Output power tolerance (dB)	EIRP (dBm)	Limit (dBm)
62.64	NTNV	-33.91	2.00	48.28	52.00
	HTHV	-30.77	2.00	51.42	52.00
	HTLV	-30.78	2.00	51.41	52.00
	LTHV	-38.00	2.00	44.19	52.00
	LTLV	-38.01	2.00	44.18	52.00
Result		Complied			

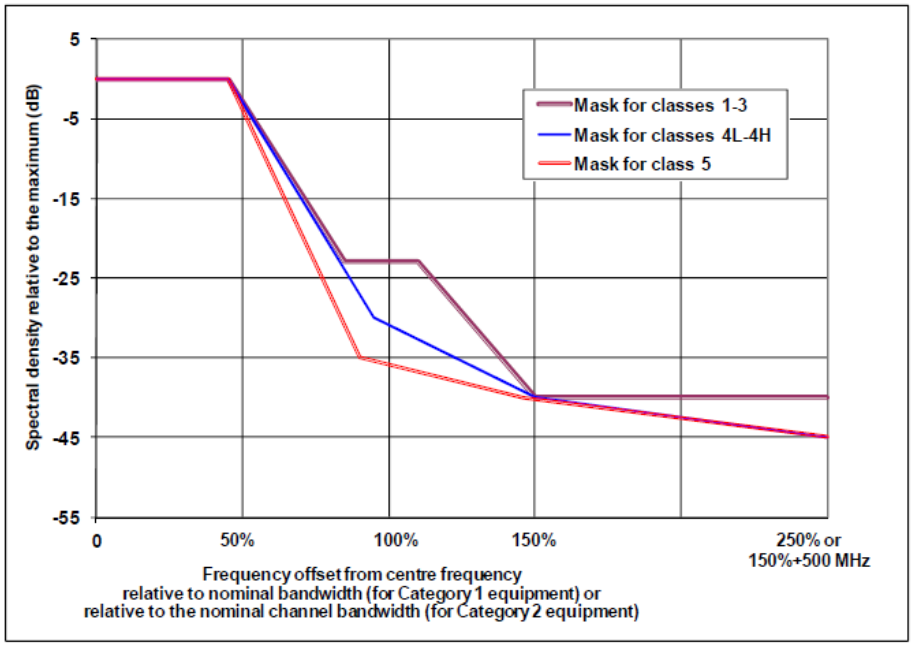
Test Frequency (GHz)	Test Conditions	Measured Power (dBm)	Output power tolerance (dB)	EIRP (dBm)	Limit (dBm)
64.80	NTNV	-34.73	2.00	47.75	52.00
	HTHV	-31.59	2.00	50.89	52.00
	HTLV	-31.60	2.00	50.88	52.00
	LTHV	-38.82	2.00	43.66	52.00
	LTLV	-38.92	2.00	43.56	52.00
Result		Complied			

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

3.3 Radio Frequency (RF) spectrum mask

3.3.1 Radio Frequency (RF) spectrum mask Limit

Radio Frequency (RF) spectrum mask Limit



Spectral efficiency Classes 1÷3		Spectral efficiency Classes 4L, 4H		Spectral efficiency Classes 5L, 5H	
Offset (%) (see note 1)	Relative power density (dB/MHz)	Offset (%) (see note 1)	Relative power density (dB/MHz)	Offset (%) (see note 1)	Relative power density (dB/MHz)
0	0	0	0	0	0
45	0	45	0	45	0
85	-23	95	-30	90	-35
110	-23	150	-40	146	-40
150	-40	250 or 150 + 500 MHz (see note 2)	-45	250 or 150 + 500 MHz (see note 2)	-45
250 or 150 + 500 MHz (see note 2)	-40				

NOTE 1: According the definition of nominal bandwidth and nominal channel bandwidth in clause UBa.1.3.

NOTE 2: The 250 % value applies only for nominal bandwidth and nominal channel bandwidth ≤ 500 MHz; the other value for nominal bandwidth and nominal channel bandwidth > 500 MHz; see Recommendation ITU-R SM.1539-1 [13].

NOTE 3: This product is 802.11ad product. Please refer to 802.11ad Spectrum Mask limit.

3.3.2 Measuring Instruments

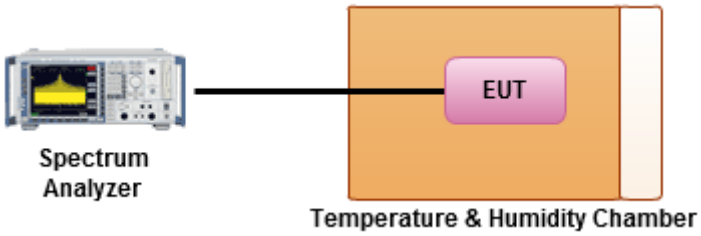
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Method of measurement: Refer as clause 5.2.6 of EN 301 126-1 [6].

3.3.4 Test Setup

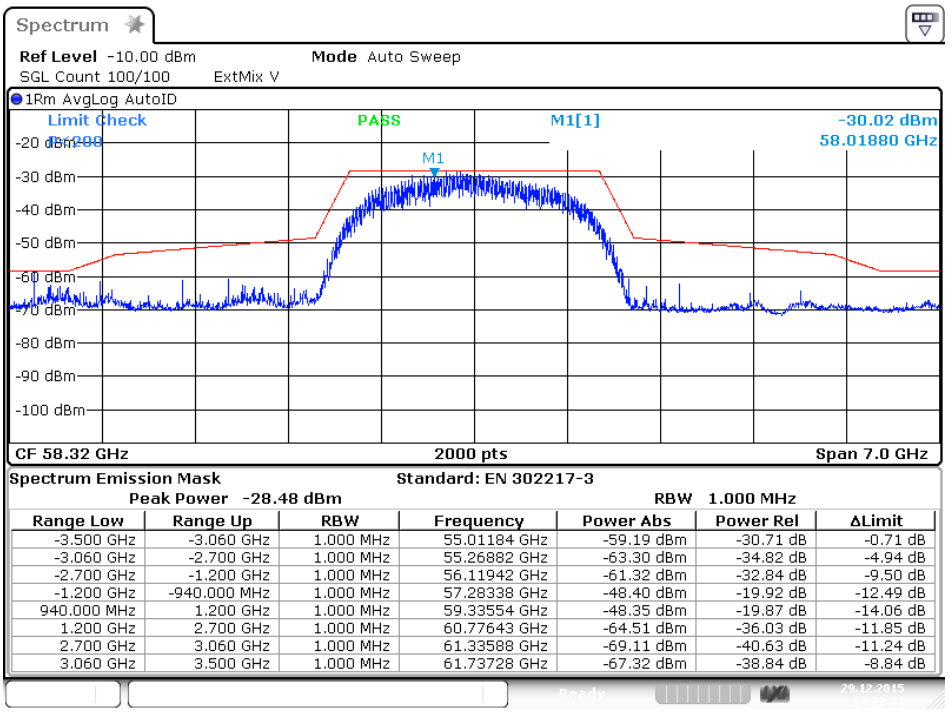
Radio Frequency (RF) spectrum mask



3.3.5 Test Result of Radio Frequency (RF) spectrum mask

Test Frequency (GHz): 58.32

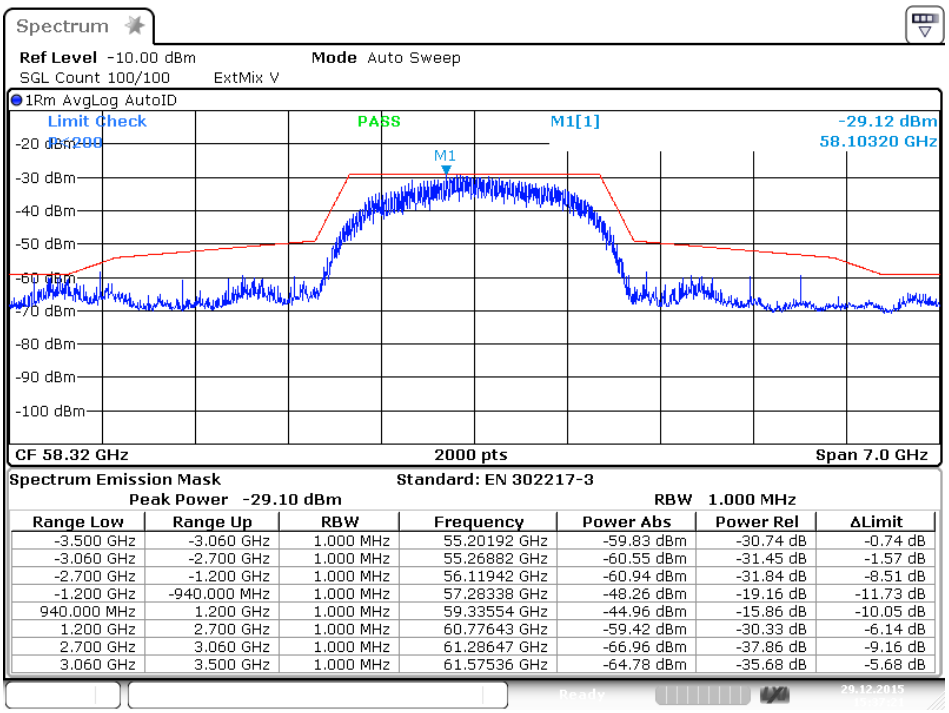
Test Conditions: NTNV



Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	55.01184 GHz	-59.19 dBm	-30.71 dB	-0.71 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	55.26882 GHz	-63.30 dBm	-34.82 dB	-4.94 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	56.11942 GHz	-61.32 dBm	-32.84 dB	-9.50 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	57.28338 GHz	-48.40 dBm	-19.92 dB	-12.49 dB
940.000 MHz	1.200 GHz	1.000 MHz	59.33554 GHz	-48.35 dBm	-19.87 dB	-14.06 dB
1.200 GHz	2.700 GHz	1.000 MHz	60.77643 GHz	-64.51 dBm	-36.03 dB	-11.85 dB
2.700 GHz	3.060 GHz	1.000 MHz	61.33588 GHz	-69.11 dBm	-40.63 dB	-11.24 dB
3.060 GHz	3.500 GHz	1.000 MHz	61.73728 GHz	-67.32 dBm	-38.84 dB	-8.84 dB

Date: 29.DEC.2015 14:22:51

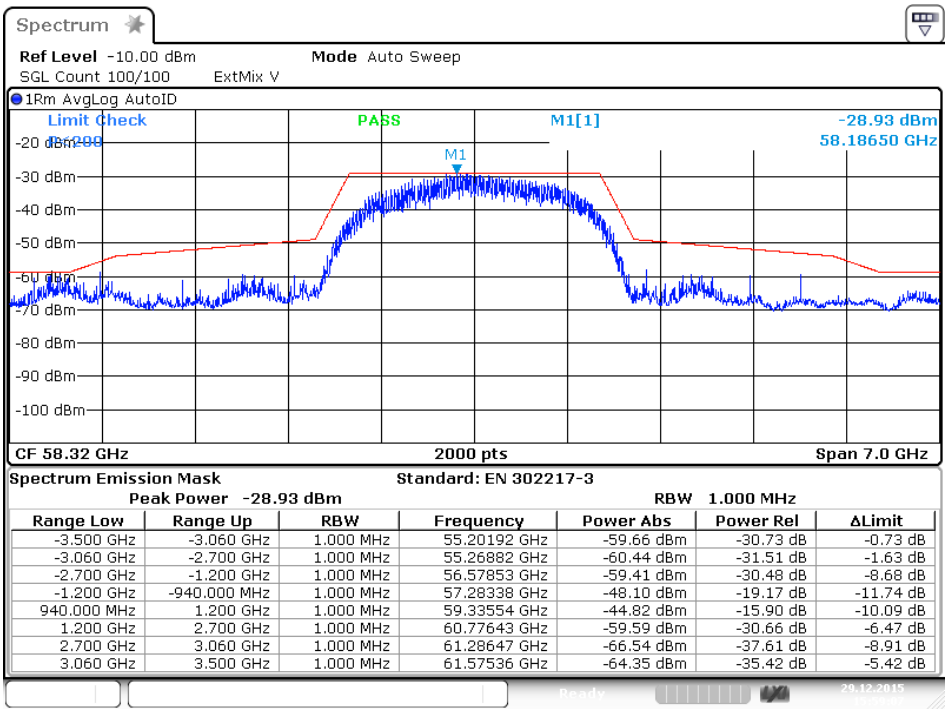
Test Conditions: HTHV



Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	55.20192 GHz	-59.83 dBm	-30.74 dB	-0.74 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	55.26882 GHz	-60.55 dBm	-31.45 dB	-1.57 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	56.11942 GHz	-60.94 dBm	-31.84 dB	-8.51 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	57.28338 GHz	-48.26 dBm	-19.16 dB	-11.73 dB
940.000 MHz	1.200 GHz	1.000 MHz	59.33554 GHz	-44.96 dBm	-15.86 dB	-10.05 dB
1.200 GHz	2.700 GHz	1.000 MHz	60.77643 GHz	-59.42 dBm	-30.33 dB	-6.14 dB
2.700 GHz	3.060 GHz	1.000 MHz	61.28647 GHz	-66.96 dBm	-37.86 dB	-9.16 dB
3.060 GHz	3.500 GHz	1.000 MHz	61.57536 GHz	-64.78 dBm	-35.68 dB	-5.68 dB

Date: 29.DEC.2015 15:37:21

Test Conditions: HTLV



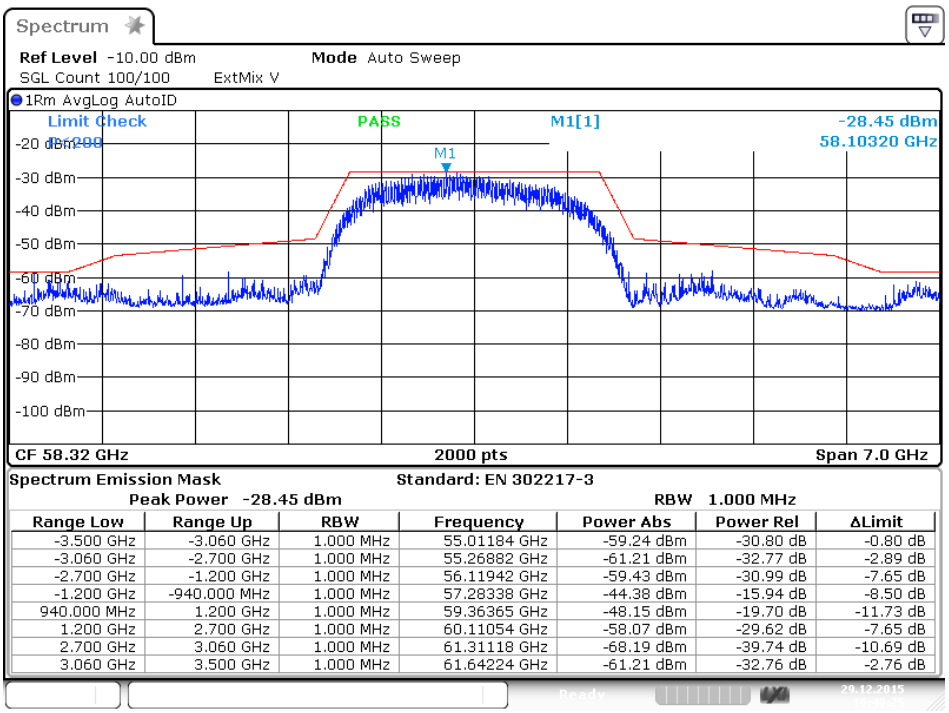
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -28.93 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	55.20192 GHz	-59.66 dBm	-30.73 dB	-0.73 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	55.26882 GHz	-60.44 dBm	-31.51 dB	-1.63 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	56.57853 GHz	-59.41 dBm	-30.48 dB	-8.68 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	57.28338 GHz	-48.10 dBm	-19.17 dB	-11.74 dB
940.000 MHz	1.200 GHz	1.000 MHz	59.33554 GHz	-44.82 dBm	-15.90 dB	-10.09 dB
1.200 GHz	2.700 GHz	1.000 MHz	60.77643 GHz	-59.59 dBm	-30.66 dB	-6.47 dB
2.700 GHz	3.060 GHz	1.000 MHz	61.28647 GHz	-66.54 dBm	-37.61 dB	-8.91 dB
3.060 GHz	3.500 GHz	1.000 MHz	61.57536 GHz	-64.35 dBm	-35.42 dB	-5.42 dB

Date: 29.DEC.2015 15:59:08

Test Conditions: LTHV



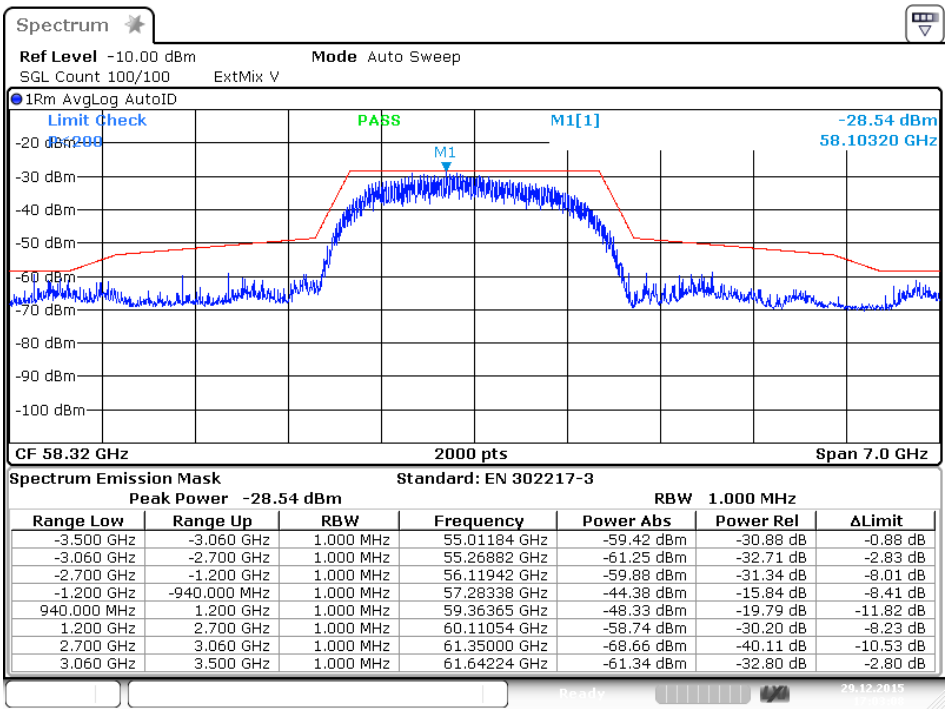
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -28.45 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	55.01184 GHz	-59.24 dBm	-30.80 dB	-0.80 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	55.26882 GHz	-61.21 dBm	-32.77 dB	-2.89 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	56.11942 GHz	-59.43 dBm	-30.99 dB	-7.65 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	57.28338 GHz	-44.38 dBm	-15.94 dB	-8.50 dB
940.000 MHz	1.200 GHz	1.000 MHz	59.36365 GHz	-48.15 dBm	-19.70 dB	-11.73 dB
1.200 GHz	2.700 GHz	1.000 MHz	60.11054 GHz	-58.07 dBm	-29.62 dB	-7.65 dB
2.700 GHz	3.060 GHz	1.000 MHz	61.31118 GHz	-68.19 dBm	-39.74 dB	-10.69 dB
3.060 GHz	3.500 GHz	1.000 MHz	61.64224 GHz	-61.21 dBm	-32.76 dB	-2.76 dB

Date: 29.DEC.2015 16:48:25

Test Conditions: LTLV



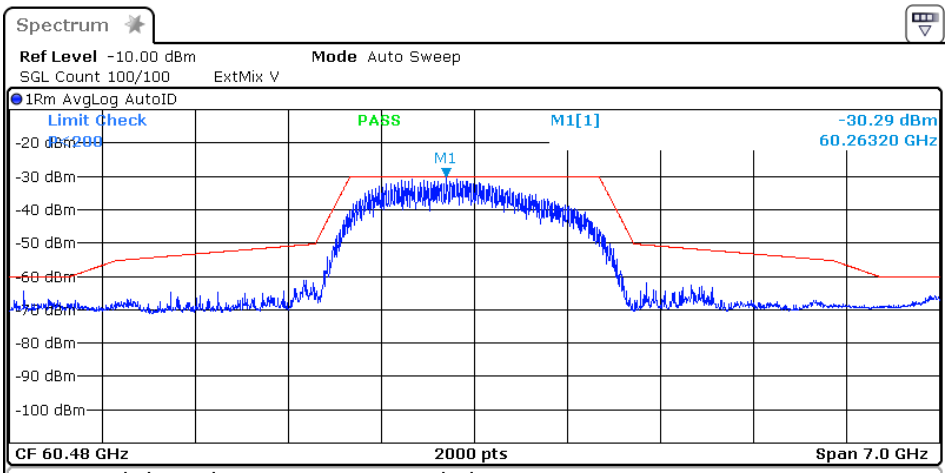
Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	55.01184 GHz	-59.42 dBm	-30.88 dB	-0.88 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	55.26882 GHz	-61.25 dBm	-32.71 dB	-2.83 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	56.11942 GHz	-59.88 dBm	-31.34 dB	-8.01 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	57.28338 GHz	-44.38 dBm	-15.84 dB	-8.41 dB
940.000 MHz	1.200 GHz	1.000 MHz	59.36365 GHz	-48.33 dBm	-19.79 dB	-11.82 dB
1.200 GHz	2.700 GHz	1.000 MHz	60.11054 GHz	-58.74 dBm	-30.20 dB	-8.23 dB
2.700 GHz	3.060 GHz	1.000 MHz	61.35000 GHz	-68.66 dBm	-40.11 dB	-10.53 dB
3.060 GHz	3.500 GHz	1.000 MHz	61.64224 GHz	-61.34 dBm	-32.80 dB	-2.80 dB

Date: 29.DEC.2015 17:03:09

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

Test Frequency (GHz): 60.48

Test Conditions: NTNV



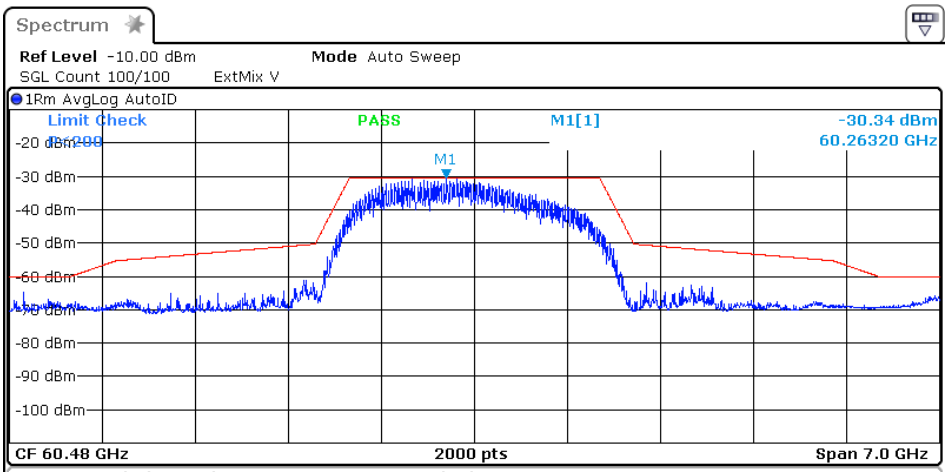
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -30.29 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	57.08384 GHz	-64.31 dBm	-34.02 dB	-4.02 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	57.47471 GHz	-67.41 dBm	-37.11 dB	-7.87 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	59.19414 GHz	-61.13 dBm	-30.84 dB	-10.55 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	59.49959 GHz	-43.10 dBm	-12.81 dB	-9.70 dB
940.000 MHz	1.200 GHz	1.000 MHz	61.52365 GHz	-51.53 dBm	-21.24 dB	-13.27 dB
1.200 GHz	2.700 GHz	1.000 MHz	62.18993 GHz	-62.84 dBm	-32.54 dB	-10.84 dB
2.700 GHz	3.060 GHz	1.000 MHz	63.53824 GHz	-69.16 dBm	-38.86 dB	-8.89 dB
3.060 GHz	3.500 GHz	1.000 MHz	63.94304 GHz	-65.85 dBm	-35.56 dB	-5.56 dB

Date: 29.DEC.2015 17:31:05

Test Conditions: HTHV



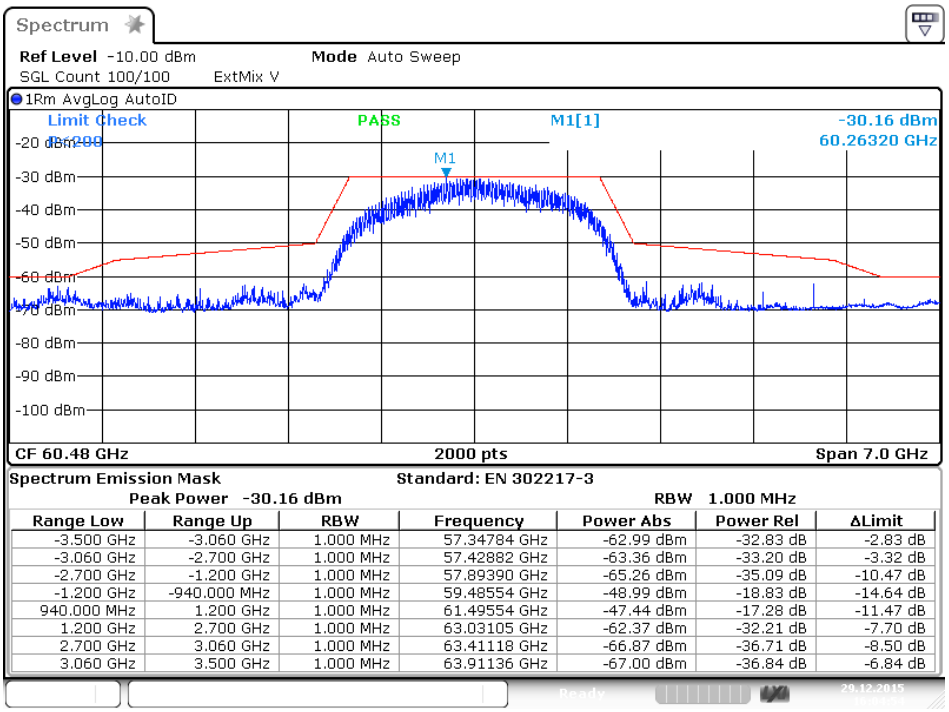
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -30.34 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	57.08384 GHz	-64.73 dBm	-34.38 dB	-4.38 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	57.47471 GHz	-67.56 dBm	-37.22 dB	-7.98 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	59.19414 GHz	-61.07 dBm	-30.72 dB	-10.44 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	59.49959 GHz	-43.12 dBm	-12.78 dB	-9.67 dB
940.000 MHz	1.200 GHz	1.000 MHz	61.52365 GHz	-51.53 dBm	-21.19 dB	-13.22 dB
1.200 GHz	2.700 GHz	1.000 MHz	62.18993 GHz	-62.98 dBm	-32.64 dB	-10.94 dB
2.700 GHz	3.060 GHz	1.000 MHz	63.53824 GHz	-69.14 dBm	-38.79 dB	-8.82 dB
3.060 GHz	3.500 GHz	1.000 MHz	63.94304 GHz	-65.93 dBm	-35.59 dB	-5.59 dB

Date: 29.DEC.2015 17:42:04

Test Conditions: HTLV



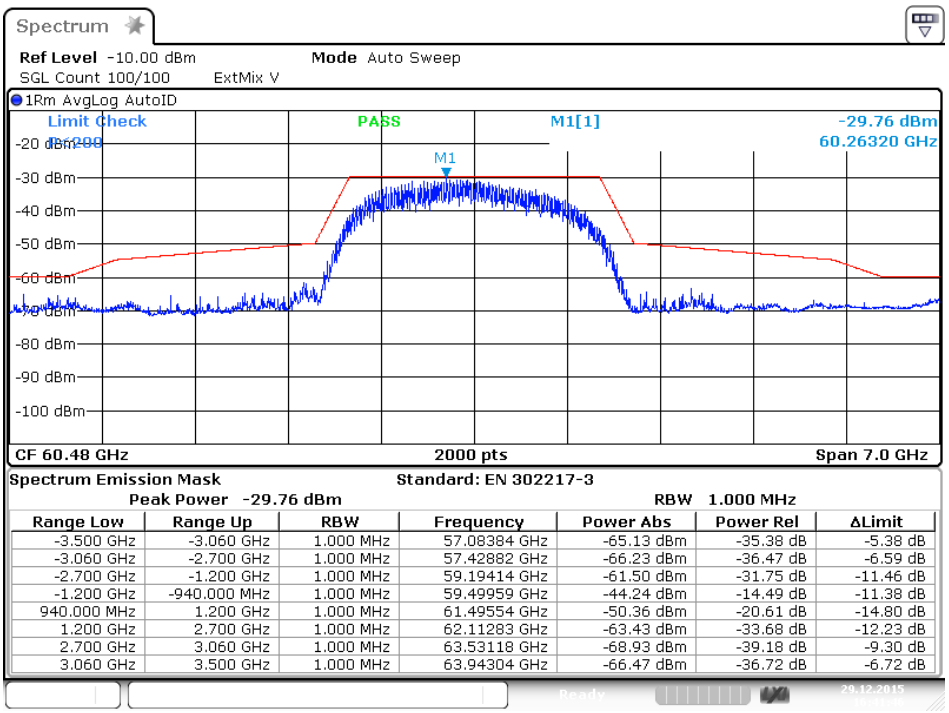
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -30.16 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	57.34784 GHz	-62.99 dBm	-32.83 dB	-2.83 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	57.42882 GHz	-63.36 dBm	-33.20 dB	-3.32 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	57.89390 GHz	-65.26 dBm	-35.09 dB	-10.47 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	59.48554 GHz	-48.99 dBm	-18.83 dB	-14.64 dB
940.000 MHz	1.200 GHz	1.000 MHz	61.49554 GHz	-47.44 dBm	-17.28 dB	-11.47 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.03105 GHz	-62.37 dBm	-32.21 dB	-7.70 dB
2.700 GHz	3.060 GHz	1.000 MHz	63.41118 GHz	-66.87 dBm	-36.71 dB	-8.50 dB
3.060 GHz	3.500 GHz	1.000 MHz	63.91136 GHz	-67.00 dBm	-36.84 dB	-6.84 dB

Date: 29.DEC.2015 16:04:54

Test Conditions: LTHV



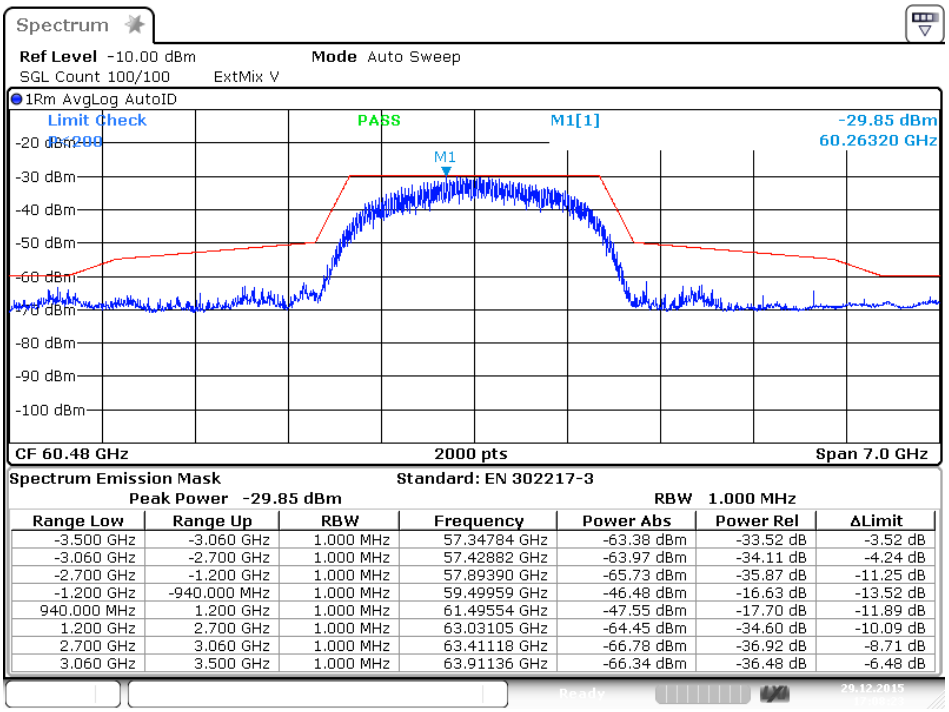
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -29.76 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	57.08384 GHz	-65.13 dBm	-35.38 dB	-5.38 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	57.42882 GHz	-66.23 dBm	-36.47 dB	-6.59 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	59.19414 GHz	-61.50 dBm	-31.75 dB	-11.46 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	59.49959 GHz	-44.24 dBm	-14.49 dB	-11.38 dB
940.000 MHz	1.200 GHz	1.000 MHz	61.49554 GHz	-50.36 dBm	-20.61 dB	-14.80 dB
1.200 GHz	2.700 GHz	1.000 MHz	62.11283 GHz	-63.43 dBm	-33.68 dB	-12.23 dB
2.700 GHz	3.060 GHz	1.000 MHz	63.53118 GHz	-68.93 dBm	-39.18 dB	-9.30 dB
3.060 GHz	3.500 GHz	1.000 MHz	63.94304 GHz	-66.47 dBm	-36.72 dB	-6.72 dB

Date: 29.DEC.2015 16:41:47

Test Conditions: LTLV

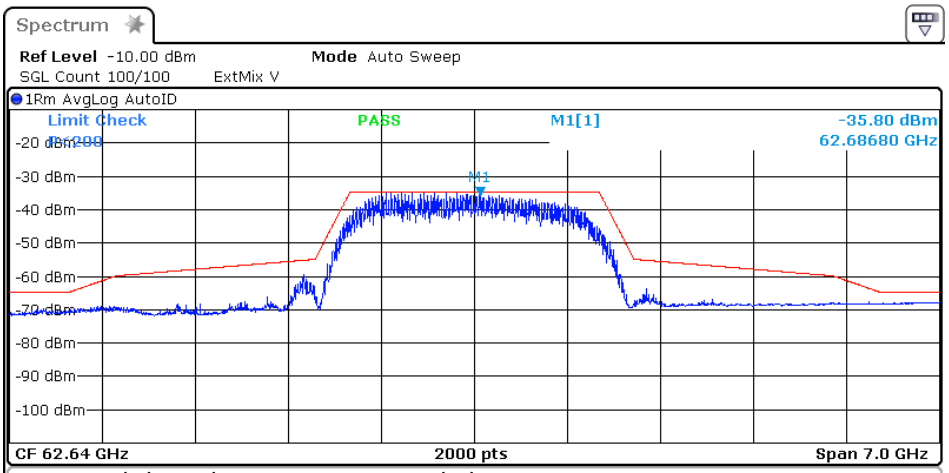


Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	57.34784 GHz	-63.38 dBm	-33.52 dB	-3.52 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	57.42882 GHz	-63.97 dBm	-34.11 dB	-4.24 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	57.89390 GHz	-65.73 dBm	-35.87 dB	-11.25 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	59.49959 GHz	-46.48 dBm	-16.63 dB	-13.52 dB
940.000 MHz	1.200 GHz	1.000 MHz	61.49554 GHz	-47.55 dBm	-17.70 dB	-11.89 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.03105 GHz	-64.45 dBm	-34.60 dB	-10.09 dB
2.700 GHz	3.060 GHz	1.000 MHz	63.41118 GHz	-66.78 dBm	-36.92 dB	-8.71 dB
3.060 GHz	3.500 GHz	1.000 MHz	63.91136 GHz	-66.34 dBm	-36.48 dB	-6.48 dB

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

Test Frequency (GHz): 62.64

Test Conditions: NTNV



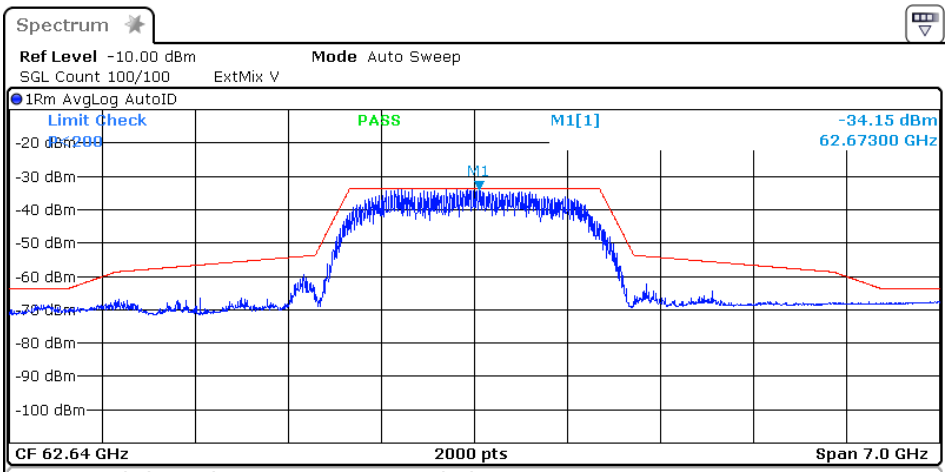
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -34.89 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	59.39872 GHz	-69.69 dBm	-34.80 dB	-4.80 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	59.59941 GHz	-70.13 dBm	-35.25 dB	-5.51 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	61.35414 GHz	-59.62 dBm	-24.73 dB	-4.44 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	61.64554 GHz	-45.29 dBm	-10.40 dB	-6.21 dB
940.000 MHz	1.200 GHz	1.000 MHz	63.65554 GHz	-49.72 dBm	-14.83 dB	-9.02 dB
1.200 GHz	2.700 GHz	1.000 MHz	65.33474 GHz	-68.02 dBm	-33.14 dB	-8.15 dB
2.700 GHz	3.060 GHz	1.000 MHz	65.69824 GHz	-68.21 dBm	-33.32 dB	-3.35 dB
3.060 GHz	3.500 GHz	1.000 MHz	66.13824 GHz	-67.77 dBm	-32.89 dB	-2.89 dB

Date: 29.DEC.2015 14:53:19

Test Conditions: HTHV



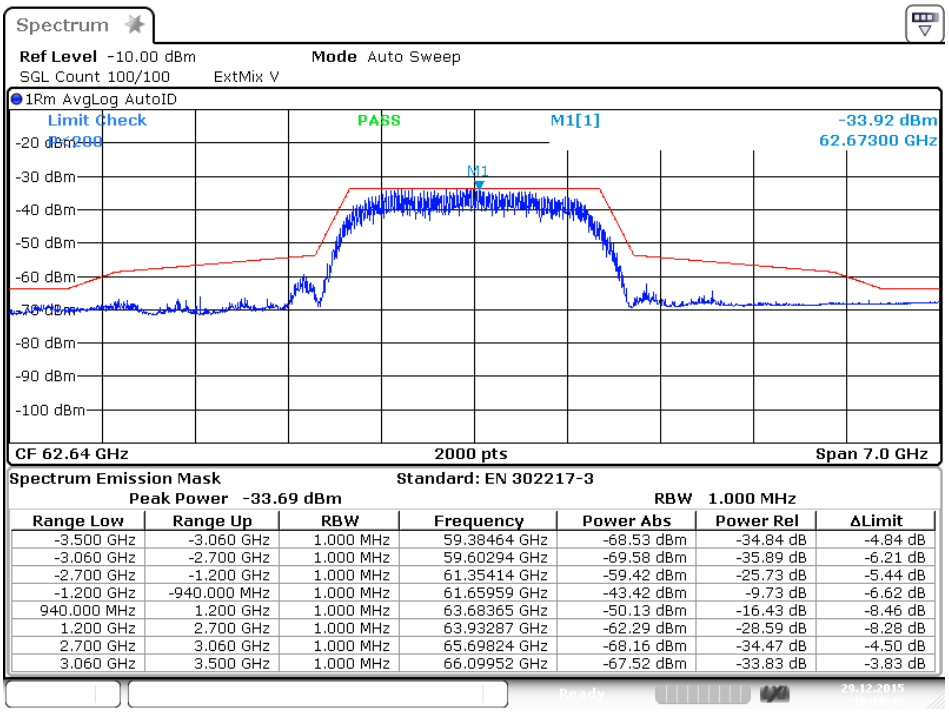
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -33.70 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	59.38464 GHz	-68.57 dBm	-34.87 dB	-4.87 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	59.59588 GHz	-69.68 dBm	-35.98 dB	-6.20 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	61.35414 GHz	-59.46 dBm	-25.76 dB	-5.48 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	61.65959 GHz	-43.46 dBm	-9.76 dB	-6.65 dB
940.000 MHz	1.200 GHz	1.000 MHz	63.68365 GHz	-50.18 dBm	-16.49 dB	-8.51 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.93287 GHz	-62.19 dBm	-28.50 dB	-8.19 dB
2.700 GHz	3.060 GHz	1.000 MHz	65.69824 GHz	-68.11 dBm	-34.41 dB	-4.44 dB
3.060 GHz	3.500 GHz	1.000 MHz	66.09952 GHz	-67.54 dBm	-33.85 dB	-3.85 dB

Date: 29.DEC.2015 16:12:07

Test Conditions: HTLV



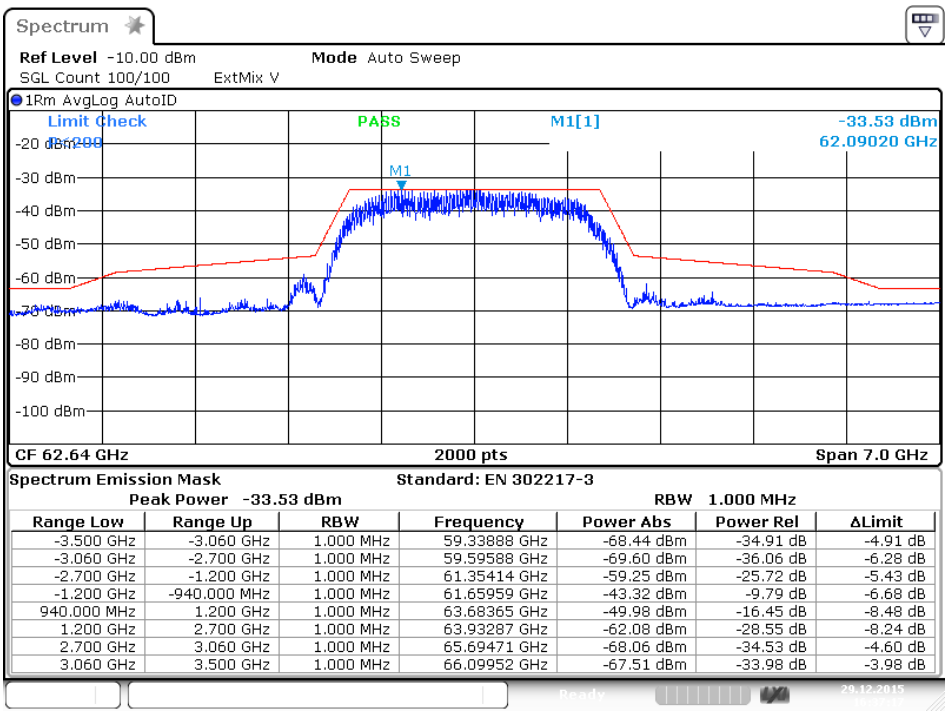
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -33.69 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	59.38464 GHz	-68.53 dBm	-34.84 dB	-4.84 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	59.60294 GHz	-69.58 dBm	-35.89 dB	-6.21 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	61.35414 GHz	-59.42 dBm	-25.73 dB	-5.44 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	61.65959 GHz	-43.42 dBm	-9.73 dB	-6.62 dB
940.000 MHz	1.200 GHz	1.000 MHz	63.68365 GHz	-50.13 dBm	-16.43 dB	-8.46 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.93287 GHz	-62.29 dBm	-28.59 dB	-8.28 dB
2.700 GHz	3.060 GHz	1.000 MHz	65.69824 GHz	-68.16 dBm	-34.47 dB	-4.50 dB
3.060 GHz	3.500 GHz	1.000 MHz	66.09952 GHz	-67.52 dBm	-33.83 dB	-3.83 dB

Date: 29.DEC.2015 16:10:43

Test Conditions: LTHV



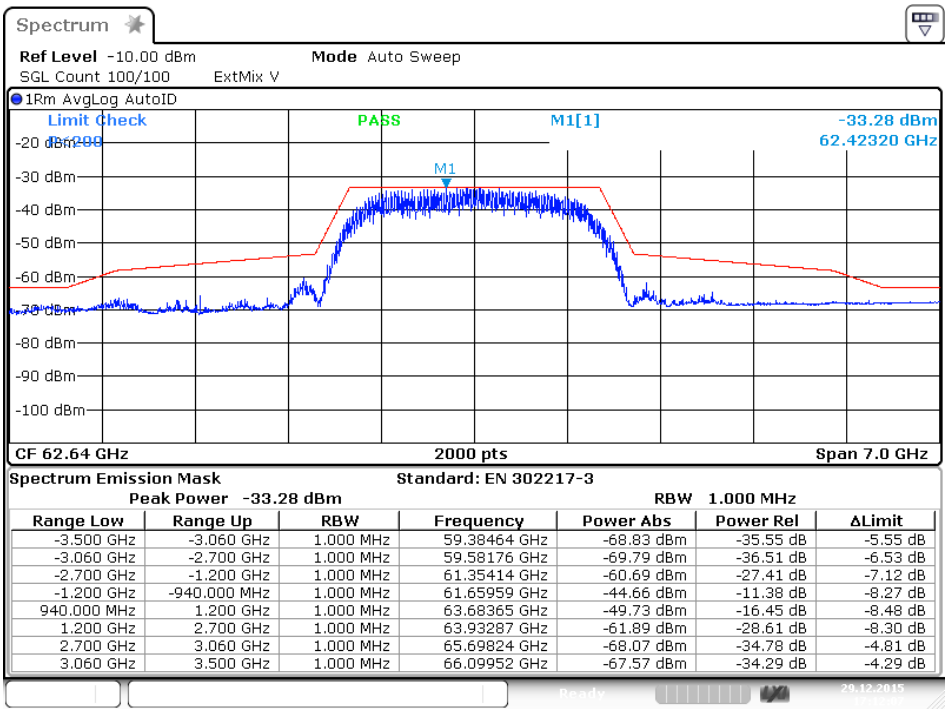
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -33.53 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	59.33888 GHz	-68.44 dBm	-34.91 dB	-4.91 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	59.59588 GHz	-69.60 dBm	-36.06 dB	-6.28 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	61.35414 GHz	-59.25 dBm	-25.72 dB	-5.43 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	61.65959 GHz	-43.32 dBm	-9.79 dB	-6.68 dB
940.000 MHz	1.200 GHz	1.000 MHz	63.68365 GHz	-49.98 dBm	-16.45 dB	-8.48 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.93287 GHz	-62.08 dBm	-28.55 dB	-8.24 dB
2.700 GHz	3.060 GHz	1.000 MHz	65.69471 GHz	-68.06 dBm	-34.53 dB	-4.60 dB
3.060 GHz	3.500 GHz	1.000 MHz	66.09952 GHz	-67.51 dBm	-33.98 dB	-3.98 dB

Date: 29.DEC.2015 16:37:18

Test Conditions: LTLV



Spectrum Emission Mask Standard: EN 302217-3

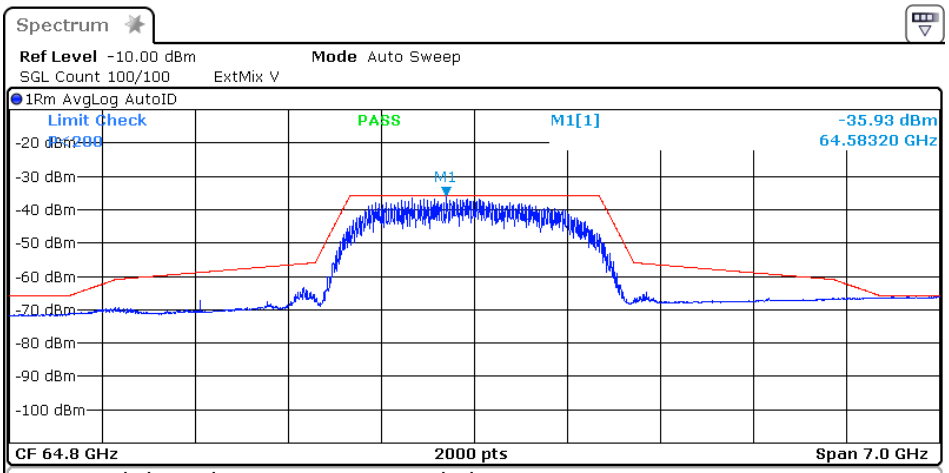
Peak Power -33.28 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	59.38464 GHz	-68.83 dBm	-35.55 dB	-5.55 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	59.58176 GHz	-69.79 dBm	-36.51 dB	-6.53 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	61.35414 GHz	-60.69 dBm	-27.41 dB	-7.12 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	61.65959 GHz	-44.66 dBm	-11.38 dB	-8.27 dB
940.000 MHz	1.200 GHz	1.000 MHz	63.68365 GHz	-49.73 dBm	-16.45 dB	-8.48 dB
1.200 GHz	2.700 GHz	1.000 MHz	63.93287 GHz	-61.89 dBm	-28.61 dB	-8.30 dB
2.700 GHz	3.060 GHz	1.000 MHz	65.69824 GHz	-68.07 dBm	-34.78 dB	-4.81 dB
3.060 GHz	3.500 GHz	1.000 MHz	66.09952 GHz	-67.57 dBm	-34.29 dB	-4.29 dB

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

Test Frequency (GHz): 64.80

Test Conditions: NTNV



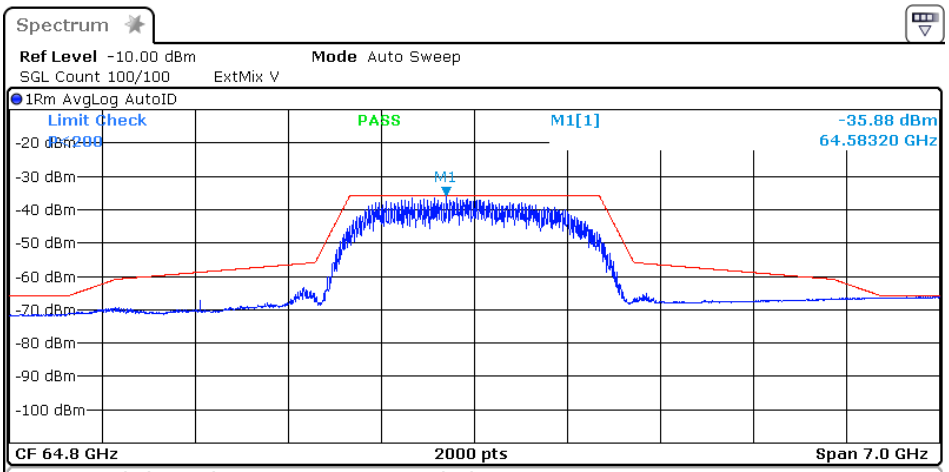
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -35.93 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	61.54464 GHz	-71.38 dBm	-35.45 dB	-5.45 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	61.74176 GHz	-71.21 dBm	-35.28 dB	-5.30 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	63.51414 GHz	-63.38 dBm	-27.45 dB	-7.16 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	63.81959 GHz	-47.49 dBm	-11.56 dB	-8.45 dB
940.000 MHz	1.200 GHz	1.000 MHz	65.99824 GHz	-67.17 dBm	-31.24 dB	-11.37 dB
1.200 GHz	2.700 GHz	1.000 MHz	67.49474 GHz	-66.67 dBm	-30.74 dB	-5.76 dB
2.700 GHz	3.060 GHz	1.000 MHz	67.85824 GHz	-66.56 dBm	-30.63 dB	-0.65 dB
3.060 GHz	3.500 GHz	1.000 MHz	67.93920 GHz	-66.27 dBm	-30.34 dB	-0.34 dB

Date: 29.DEC.2015 15:01:37

Test Conditions: HTHV



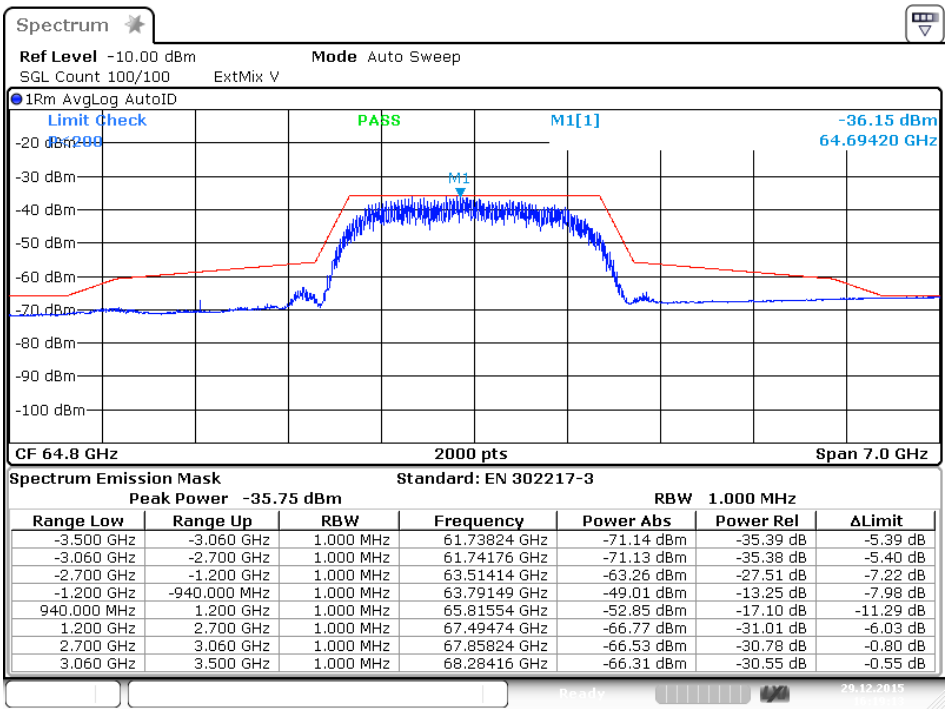
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -35.88 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	61.71008 GHz	-71.35 dBm	-35.47 dB	-5.47 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	61.74176 GHz	-71.21 dBm	-35.33 dB	-5.35 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	63.51414 GHz	-63.20 dBm	-27.32 dB	-7.03 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	63.81959 GHz	-47.40 dBm	-11.52 dB	-8.41 dB
940.000 MHz	1.200 GHz	1.000 MHz	65.99824 GHz	-67.04 dBm	-31.16 dB	-11.30 dB
1.200 GHz	2.700 GHz	1.000 MHz	67.48773 GHz	-66.70 dBm	-30.82 dB	-5.86 dB
2.700 GHz	3.060 GHz	1.000 MHz	67.85824 GHz	-66.57 dBm	-30.68 dB	-0.71 dB
3.060 GHz	3.500 GHz	1.000 MHz	68.29472 GHz	-66.30 dBm	-30.42 dB	-0.42 dB

Date: 29.DEC.2015 15:13:17

Test Conditions: HTLV



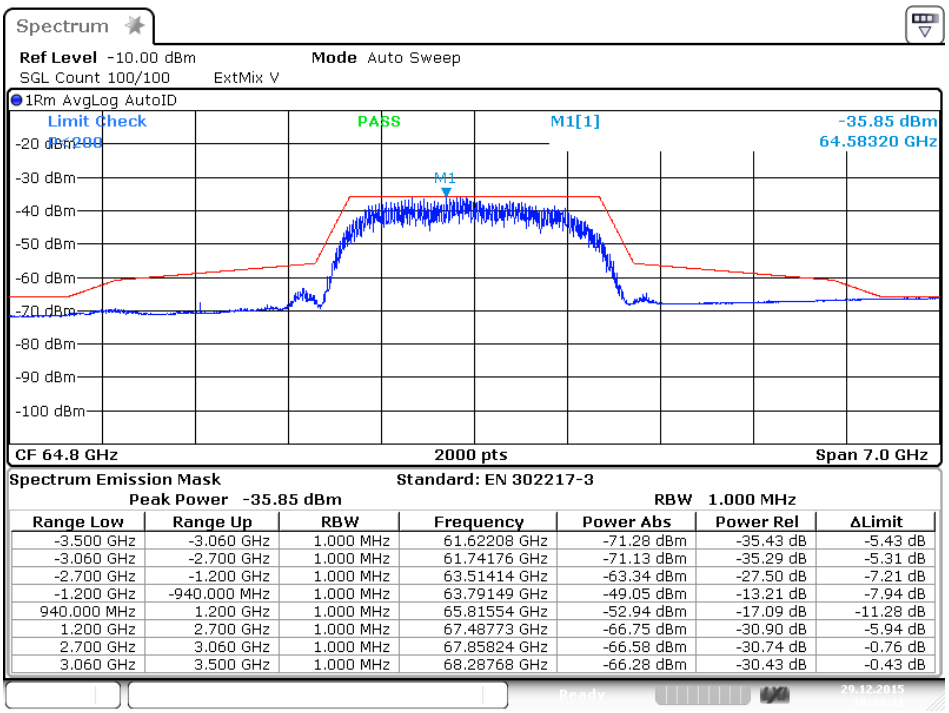
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -35.75 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	61.73824 GHz	-71.14 dBm	-35.39 dB	-5.39 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	61.74176 GHz	-71.13 dBm	-35.38 dB	-5.40 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	63.51414 GHz	-63.26 dBm	-27.51 dB	-7.22 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	63.79149 GHz	-49.01 dBm	-13.25 dB	-7.98 dB
940.000 MHz	1.200 GHz	1.000 MHz	65.81554 GHz	-52.85 dBm	-17.10 dB	-11.29 dB
1.200 GHz	2.700 GHz	1.000 MHz	67.49474 GHz	-66.77 dBm	-31.01 dB	-6.03 dB
2.700 GHz	3.060 GHz	1.000 MHz	67.85824 GHz	-66.53 dBm	-30.78 dB	-0.80 dB
3.060 GHz	3.500 GHz	1.000 MHz	68.28416 GHz	-66.31 dBm	-30.55 dB	-0.55 dB

Date: 29.DEC.2015 16:19:13

Test Conditions: LTHV



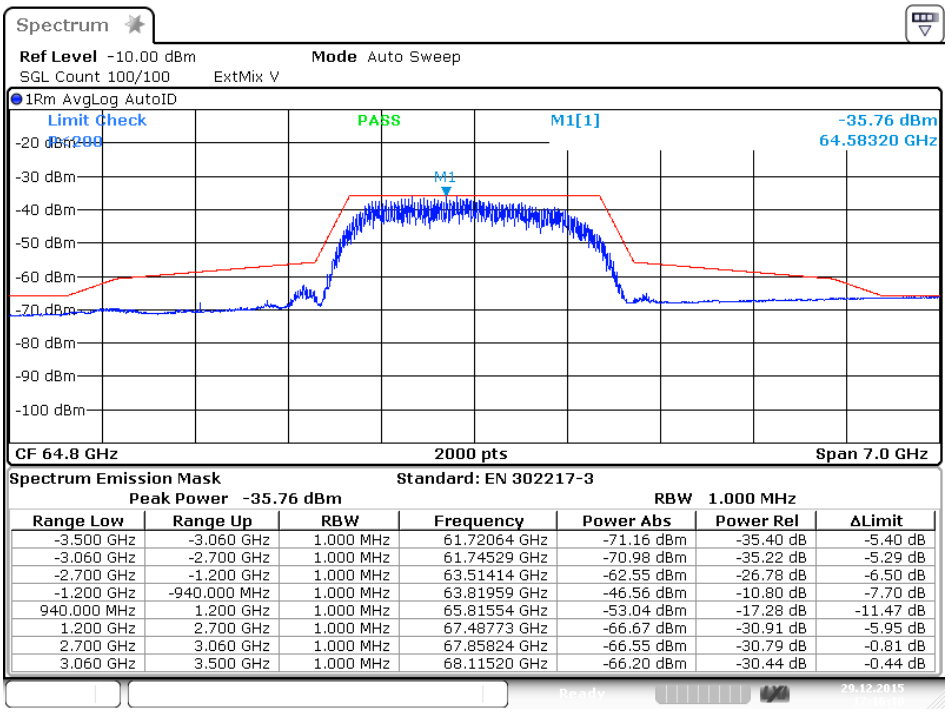
Spectrum Emission Mask Standard: EN 302217-3

Peak Power -35.85 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	61.62208 GHz	-71.28 dBm	-35.43 dB	-5.43 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	61.74176 GHz	-71.13 dBm	-35.29 dB	-5.31 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	63.51414 GHz	-63.34 dBm	-27.50 dB	-7.21 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	63.79149 GHz	-49.05 dBm	-13.21 dB	-7.94 dB
940.000 MHz	1.200 GHz	1.000 MHz	65.81554 GHz	-52.94 dBm	-17.09 dB	-11.28 dB
1.200 GHz	2.700 GHz	1.000 MHz	67.48773 GHz	-66.75 dBm	-30.90 dB	-5.94 dB
2.700 GHz	3.060 GHz	1.000 MHz	67.85824 GHz	-66.58 dBm	-30.74 dB	-0.76 dB
3.060 GHz	3.500 GHz	1.000 MHz	68.28768 GHz	-66.28 dBm	-30.43 dB	-0.43 dB

Date: 29.DEC.2015 16:33:12

Test Conditions: LTLV



Spectrum Emission Mask Standard: EN 302217-3

Peak Power -35.76 dBm RBW 1.000 MHz

Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-3.500 GHz	-3.060 GHz	1.000 MHz	61.72064 GHz	-71.16 dBm	-35.40 dB	-5.40 dB
-3.060 GHz	-2.700 GHz	1.000 MHz	61.74529 GHz	-70.98 dBm	-35.22 dB	-5.29 dB
-2.700 GHz	-1.200 GHz	1.000 MHz	63.51414 GHz	-62.55 dBm	-26.78 dB	-6.50 dB
-1.200 GHz	-940.000 MHz	1.000 MHz	63.81959 GHz	-46.56 dBm	-10.80 dB	-7.70 dB
940.000 MHz	1.200 GHz	1.000 MHz	65.81554 GHz	-53.04 dBm	-17.28 dB	-11.47 dB
1.200 GHz	2.700 GHz	1.000 MHz	67.48773 GHz	-66.67 dBm	-30.91 dB	-5.95 dB
2.700 GHz	3.060 GHz	1.000 MHz	67.85824 GHz	-66.55 dBm	-30.79 dB	-0.81 dB
3.060 GHz	3.500 GHz	1.000 MHz	68.11520 GHz	-66.20 dBm	-30.44 dB	-0.44 dB

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

3.4 Transmitter Spurious emissions

3.4.1 Transmitter Spurious emissions Limit

Transmitter Spurious emissions Limit
For 9 kHz < f <21.2 GHz , < -50 dBm For 21.2 GHz < f < 132GHz , < -30 dBm

3.4.2 Measuring Instruments

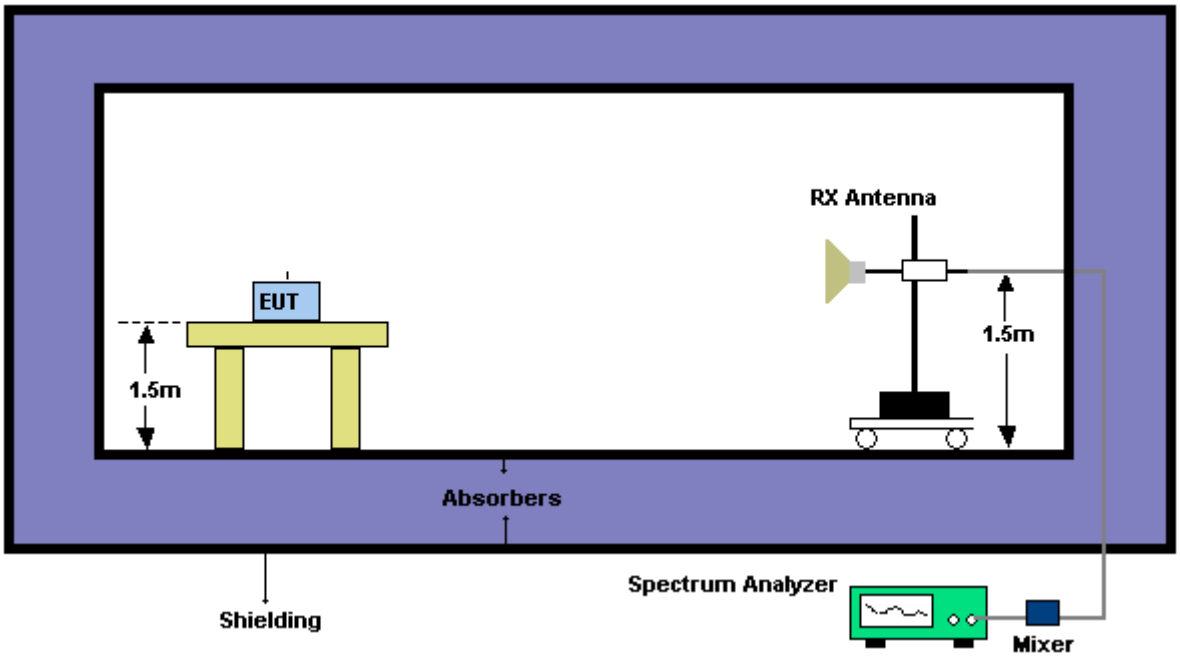
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Method of measurement: Refer as clause 5.2.9 of EN 301 126-1 [6].

3.4.4 Test Setup

Transmitter Spurious emissions Limit



3.4.5 Test Result of Transmitter Spurious emissions

Test Frequency (GHz)	58.32	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	93.01	-72.62	-50.00	-22.62	-60.08	-12.54	HORIZONTAL
2	336.01	-73.34	-50.00	-23.34	-67.98	-5.36	HORIZONTAL
3	375.01	-69.81	-50.00	-19.81	-65.16	-4.65	HORIZONTAL
4	580.00	-61.50	-50.00	-11.50	-60.88	-0.62	HORIZONTAL
5	609.00	-68.57	-50.00	-18.57	-68.41	-0.16	HORIZONTAL
6	620.00	-67.96	-50.00	-17.96	-67.66	-0.30	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	89.01	-75.01	-50.00	-25.01	-65.51	-9.50	VERTICAL
2	217.01	-75.27	-50.00	-25.27	-64.88	-10.39	VERTICAL
3	375.01	-66.71	-50.00	-16.71	-61.67	-5.04	VERTICAL
4	400.01	-69.87	-50.00	-19.87	-65.25	-4.62	VERTICAL
5	486.00	-73.55	-50.00	-23.55	-70.81	-2.74	VERTICAL
6	580.00	-60.13	-50.00	-10.13	-58.39	-1.74	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	89.01	-71.93	-50.00	-21.93	-58.90	-13.03	HORIZONTAL
2	322.01	-65.15	-50.00	-15.15	-59.52	-5.63	HORIZONTAL
3	346.01	-69.26	-50.00	-19.26	-64.09	-5.17	HORIZONTAL
4	375.01	-69.45	-50.00	-19.45	-64.80	-4.65	HORIZONTAL
5	580.00	-61.25	-50.00	-11.25	-60.63	-0.62	HORIZONTAL
6	613.00	-66.00	-50.00	-16.00	-65.79	-0.21	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	87.01	-75.55	-50.00	-25.55	-65.34	-10.21	VERTICAL
2	218.01	-77.33	-50.00	-27.33	-67.02	-10.31	VERTICAL
3	375.01	-66.83	-50.00	-16.83	-61.79	-5.04	VERTICAL
4	400.01	-70.74	-50.00	-20.74	-66.12	-4.62	VERTICAL
5	577.00	-68.00	-50.00	-18.00	-66.23	-1.77	VERTICAL
6	580.00	-60.83	-50.00	-10.83	-59.09	-1.74	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	89.17	-71.86	-50.00	-21.86	-58.83	-13.03	HORIZONTAL
2	321.97	-71.53	-50.00	-21.53	-65.90	-5.63	HORIZONTAL
3	375.32	-71.03	-50.00	-21.03	-66.39	-4.64	HORIZONTAL
4	579.99	-60.67	-50.00	-10.67	-60.05	-0.62	HORIZONTAL
5	601.33	-69.42	-50.00	-19.42	-69.35	-0.07	HORIZONTAL
6	612.00	-65.48	-50.00	-15.48	-65.28	-0.20	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	326.82	-72.09	-50.00	-22.09	-66.17	-5.92	VERTICAL
2	375.32	-67.59	-50.00	-17.59	-62.56	-5.03	VERTICAL
3	399.57	-71.10	-50.00	-21.10	-66.47	-4.63	VERTICAL
4	484.93	-73.35	-50.00	-23.35	-70.59	-2.76	VERTICAL
5	579.99	-55.99	-50.00	-5.99	-54.25	-1.74	VERTICAL
6	710.94	-72.96	-50.00	-22.96	-71.80	-1.16	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	88.20	-71.22	-50.00	-21.22	-58.17	-13.05	HORIZONTAL
2	321.97	-71.54	-50.00	-21.54	-65.91	-5.63	HORIZONTAL
3	345.25	-69.95	-50.00	-19.95	-64.77	-5.18	HORIZONTAL
4	375.32	-70.91	-50.00	-20.91	-66.27	-4.64	HORIZONTAL
5	579.99	-60.90	-50.00	-10.90	-60.28	-0.62	HORIZONTAL
6	604.24	-69.70	-50.00	-19.70	-69.59	-0.11	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	323.91	-70.84	-50.00	-20.84	-64.86	-5.98	VERTICAL
2	375.32	-68.22	-50.00	-18.22	-63.19	-5.03	VERTICAL
3	399.57	-71.64	-50.00	-21.64	-67.01	-4.63	VERTICAL
4	579.99	-60.17	-50.00	-10.17	-58.43	-1.74	VERTICAL
5	616.85	-70.95	-50.00	-20.95	-69.40	-1.55	VERTICAL
6	707.06	-70.96	-50.00	-20.96	-69.72	-1.24	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	58.32	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.29	-50.00	-15.29	-66.44	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-64.49	-50.00	-14.49	-65.15	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-64.80	-50.00	-14.80	-65.95	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.60	-50.00	-15.60	-66.26	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-64.88	-50.00	-14.88	-66.03	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.69	-50.00	-15.69	-66.35	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-64.86	-50.00	-14.86	-66.01	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.97	-50.00	-15.97	-66.63	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	58.32	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36345.600	-48.76	-18.76	-30.00	-58.38	9.62	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36924.700	-48.98	-18.98	-30.00	-58.86	9.89	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36242.900	-48.90	-18.90	-30.00	-58.31	9.41	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36888.000	-48.74	-18.74	-30.00	-58.59	9.85	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36272.200	-49.10	-19.10	-30.00	-58.60	9.50	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36360.200	-49.80	-19.80	-30.00	-58.90	9.10	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36272.200	-49.02	-19.02	-30.00	-58.52	9.50	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	36301.600	-49.82	-19.82	-30.00	-58.83	9.01	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)		58.32		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.42	23.00	-33.15	-30.00	Complied

Test Frequency (GHz)		60.48		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.05	23.10	-32.88	-30.00	Complied

Test Frequency (GHz)		62.64		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.16	23.20	-33.09	-30.00	Complied

Test Frequency (GHz)		64.80		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.23	23.30	-33.26	-30.00	Complied

3.5 Radio frequency tolerance

3.5.1 Radio frequency tolerance Limit

Radio frequency tolerance Limit
≤ 150 ppm

3.5.2 Measuring Instruments

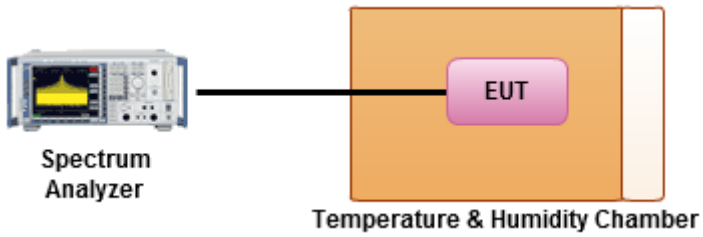
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Method of measurement: Refer as clause 5.2.5 of EN 301 126-1 [6].

3.5.4 Test Setup

Radio frequency tolerance



3.5.5 Test Result of Radio frequency tolerance

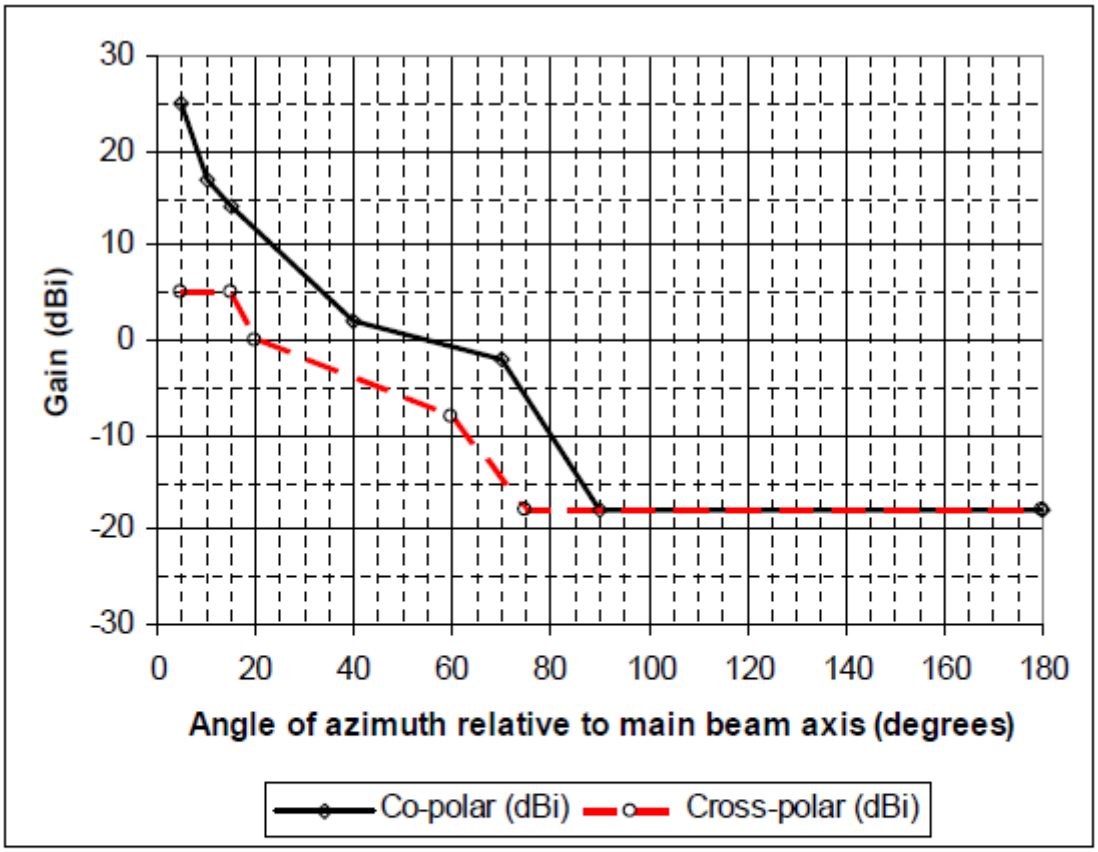
Test Conditions	Measured Frequency (MHz)			
	58320	60480	62640	64800
NTNV	58320.9276	60480.9653	62640.8003	64800.8213
HTHV	58320.0299	60480.0289	62640.0158	64800.1248
HTLV	58320.0287	60480.0287	62640.0157	64800.1247
LTHV	58324.8974	60484.9935	62644.9885	64804.7853
LTLV	58324.8969	60484.9935	62644.9966	64804.7853
Max. Deviation Frequency	4.8974	4.9935	4.9966	4.7853
Max. Frequency Error (ppm)	83.97462277	82.56448413	79.76692209	73.84722222
Limit (ppm)	150	150	150	150
Result	**Complied**			

Note: NTNV : Normal Temperature Normal Voltage
HTHV: High Temperature High Voltage
HTLV: High Temperature Low Voltage
LTHV: Low Temperature High Voltage
LTLV: Low Temperature Low Voltage

3.6 Off-axis EIRP density - Radiation Pattern Envelope (RPE)

3.6.1 Off-axis EIRP density - Radiation Pattern Envelope (RPE) Limit

Off-axis EIRP density - Radiation Pattern Envelope (RPE) Limit



Angle (°)	Co-polar (dBi)	Angle (°)	Cross-polar (dBi)
5	25	5	5
10	17	15	5
15	14	20	0
40	2	60	-8
70	-2	75	-18
90	-18	180	-18
180	-18		

3.6.2 Measuring Instruments

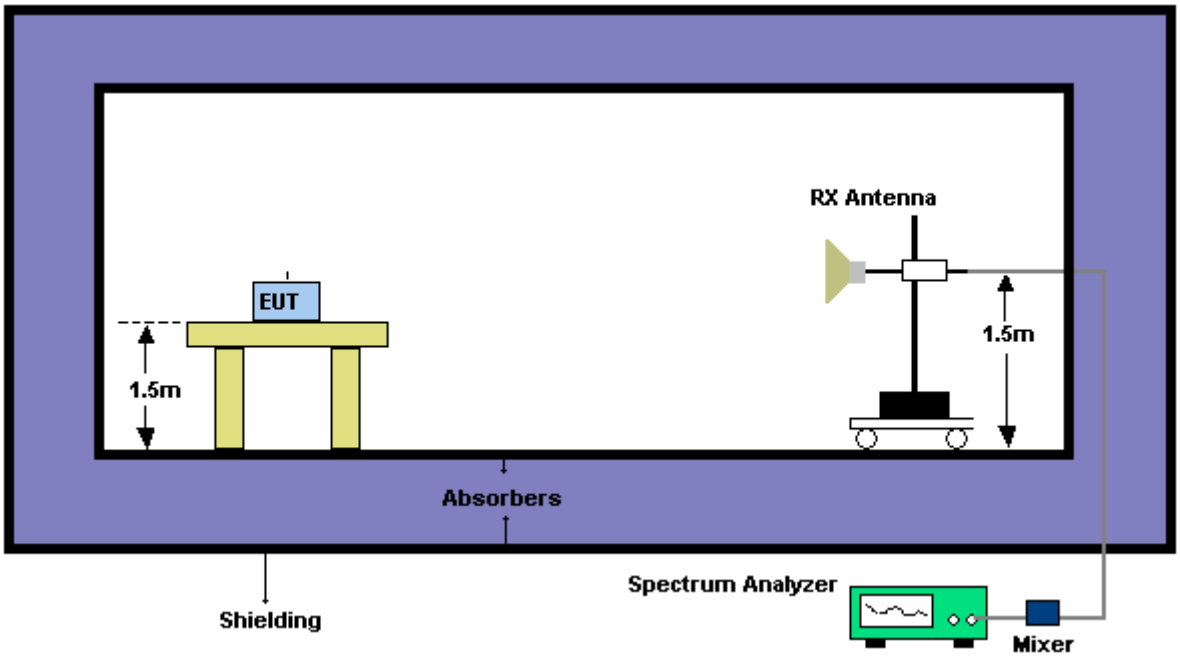
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

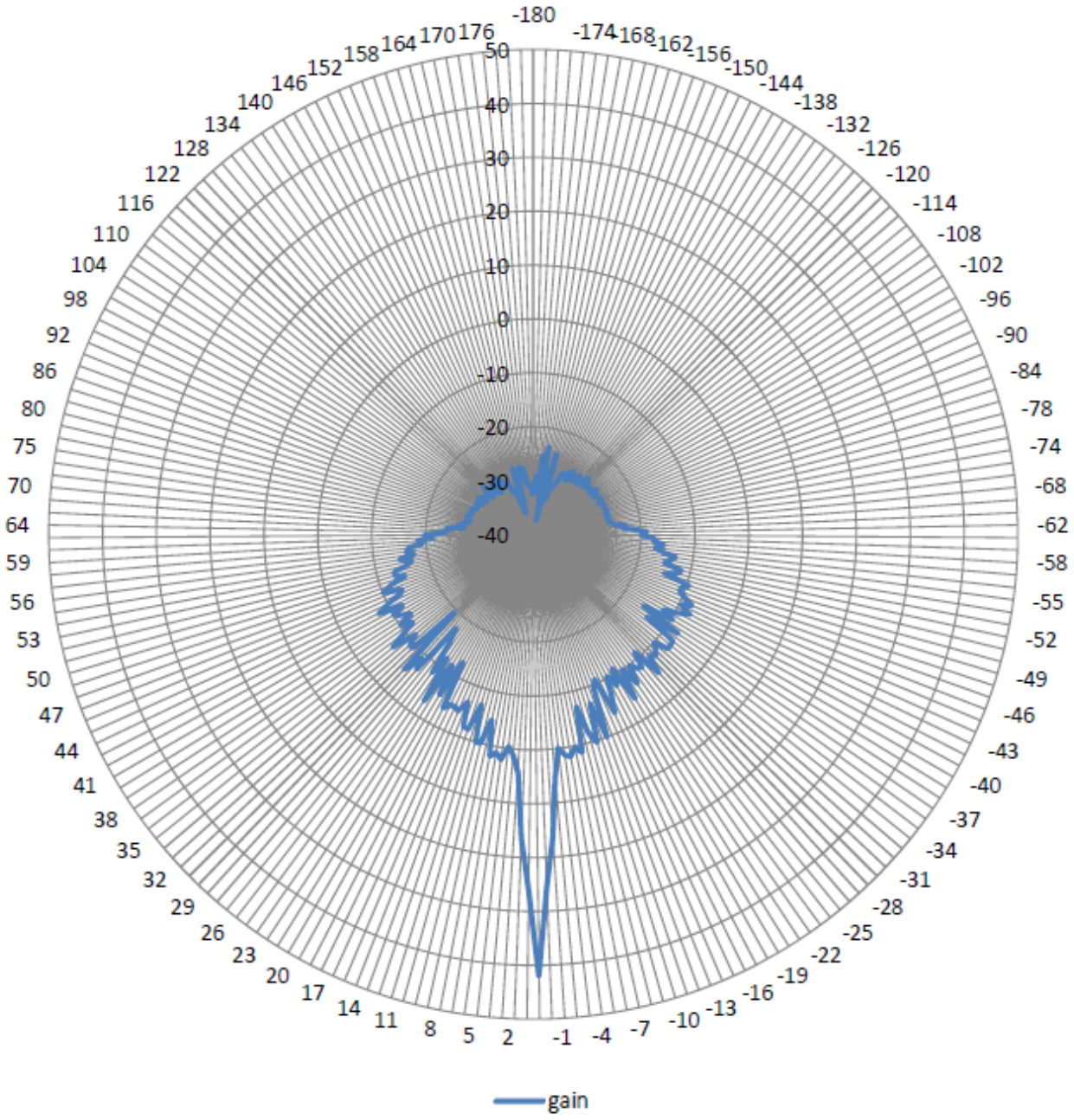
Method of measurement: Refer as clause 6.1 of EN 301 126-3-1 [7].

3.6.4 Test Setup

Off-axis EIRP density - Radiation Pattern Envelope (RPE)



3.6.5 Test Result of Off-axis EIRP density - Radiation Pattern Envelope (RPE)



Note: Information provided by the Applicant.

3.7 Antenna gain

3.7.1 Antenna gain Limit

Antenna gain Limit
Antenna gain > 30 dBi

3.7.2 Measuring Instruments

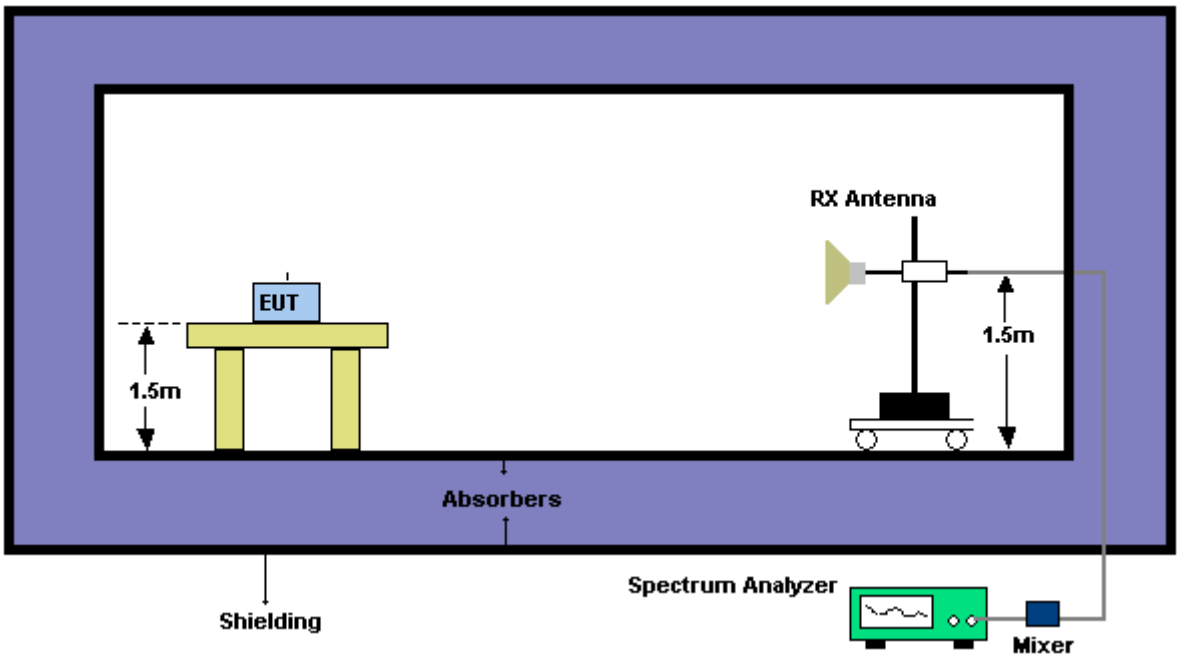
Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Method of measurement: Refer as clause 6.3 of EN 301 126-3-1 [7].

3.7.4 Test Setup

Antenna gain



3.7.5 Test Result of Antenna gain

Antenna gain	42dBi
Result	**Complied**

4 Receiver Test Result

4.1 Receiver Spurious emissions

4.1.1 Receiver Spurious emissions Limit

Receiver Spurious emissions Limit
For 9 kHz < f <21.2 GHz , < -50 dBm For 21.2 GHz < f < 132GHz , < -30 dBm

4.1.2 Measuring Instruments

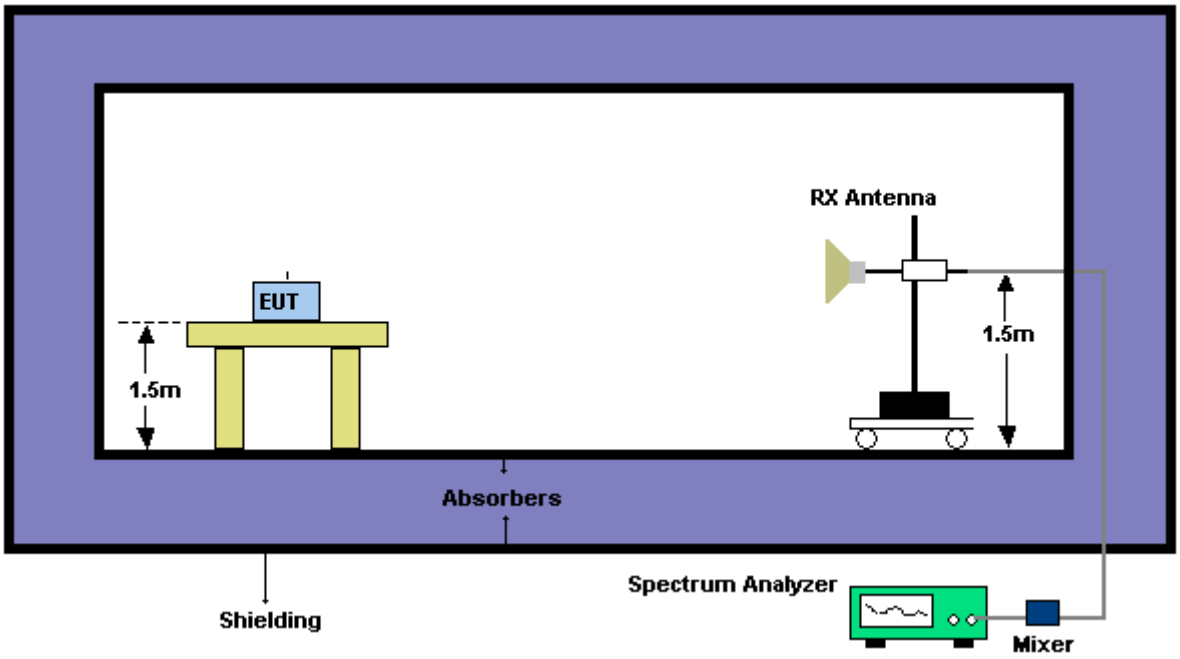
Refer a test equipment and calibration data table in this test report.

4.1.3 Test Procedures

Method of measurement: Refer as clause 5.3.2 of EN 301 126-1 [6].

4.1.4 Test Setup

Receiver Spurious emissions



4.1.5 Test Result of Receiver Spurious emissions

Test Frequency (GHz)	58.32	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	87.23	-71.59	-50.00	-21.59	-58.52	-13.07	HORIZONTAL
2	322.94	-71.42	-50.00	-21.42	-65.80	-5.62	HORIZONTAL
3	345.25	-70.30	-50.00	-20.30	-65.12	-5.18	HORIZONTAL
4	375.32	-70.87	-50.00	-20.87	-66.23	-4.64	HORIZONTAL
5	579.99	-60.87	-50.00	-10.87	-60.25	-0.62	HORIZONTAL
6	611.03	-70.22	-50.00	-20.22	-70.03	-0.19	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	325.85	-70.48	-50.00	-20.48	-64.54	-5.94	VERTICAL
2	375.32	-68.00	-50.00	-18.00	-62.97	-5.03	VERTICAL
3	399.57	-71.60	-50.00	-21.60	-66.97	-4.63	VERTICAL
4	579.99	-58.05	-50.00	-8.05	-56.31	-1.74	VERTICAL
5	611.03	-66.85	-50.00	-16.85	-65.29	-1.56	VERTICAL
6	708.03	-69.71	-50.00	-19.71	-68.49	-1.22	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	88.20	-71.80	-50.00	-21.80	-58.75	-13.05	HORIZONTAL
2	347.19	-70.64	-50.00	-20.64	-65.49	-5.15	HORIZONTAL
3	355.92	-70.36	-50.00	-20.36	-65.38	-4.98	HORIZONTAL
4	375.32	-71.39	-50.00	-21.39	-66.75	-4.64	HORIZONTAL
5	579.99	-60.88	-50.00	-10.88	-60.26	-0.62	HORIZONTAL
6	611.03	-68.81	-50.00	-18.81	-68.62	-0.19	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	326.82	-74.85	-50.00	-24.85	-68.93	-5.92	VERTICAL
2	375.32	-68.01	-50.00	-18.01	-62.98	-5.03	VERTICAL
3	399.57	-71.07	-50.00	-21.07	-66.44	-4.63	VERTICAL
4	486.87	-73.87	-50.00	-23.87	-71.15	-2.72	VERTICAL
5	579.99	-60.09	-50.00	-10.09	-58.35	-1.74	VERTICAL
6	604.24	-68.10	-50.00	-18.10	-66.53	-1.57	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	87.23	-72.53	-50.00	-22.53	-59.46	-13.07	HORIZONTAL
2	344.28	-71.07	-50.00	-21.07	-65.87	-5.20	HORIZONTAL
3	375.32	-71.13	-50.00	-21.13	-66.49	-4.64	HORIZONTAL
4	399.57	-74.42	-50.00	-24.42	-70.19	-4.23	HORIZONTAL
5	579.99	-60.79	-50.00	-10.79	-60.17	-0.62	HORIZONTAL
6	613.94	-70.30	-50.00	-20.30	-70.08	-0.22	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	327.79	-73.84	-50.00	-23.84	-67.94	-5.90	VERTICAL
2	375.32	-68.52	-50.00	-18.52	-63.49	-5.03	VERTICAL
3	399.57	-71.82	-50.00	-21.82	-67.19	-4.63	VERTICAL
4	483.96	-72.63	-50.00	-22.63	-69.85	-2.78	VERTICAL
5	579.99	-60.43	-50.00	-10.43	-58.69	-1.74	VERTICAL
6	607.15	-69.60	-50.00	-19.60	-68.03	-1.57	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	9kHz~1GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	84.32	-72.04	-50.00	-22.04	-58.90	-13.14	HORIZONTAL
2	375.32	-70.97	-50.00	-20.97	-66.33	-4.64	HORIZONTAL
3	399.57	-73.69	-50.00	-23.69	-69.46	-4.23	HORIZONTAL
4	579.99	-60.54	-50.00	-10.54	-59.92	-0.62	HORIZONTAL
5	607.15	-69.38	-50.00	-19.38	-69.24	-0.14	HORIZONTAL
6	622.67	-70.10	-50.00	-20.10	-69.77	-0.33	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	321.97	-70.07	-50.00	-20.07	-64.06	-6.01	VERTICAL
2	375.32	-68.26	-50.00	-18.26	-63.23	-5.03	VERTICAL
3	399.57	-71.23	-50.00	-21.23	-66.60	-4.63	VERTICAL
4	579.99	-59.33	-50.00	-9.33	-57.59	-1.74	VERTICAL
5	615.88	-71.84	-50.00	-21.84	-70.29	-1.55	VERTICAL
6	648.86	-72.32	-50.00	-22.32	-70.84	-1.48	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	58.32	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-64.99	-50.00	-14.99	-66.14	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.84	-50.00	-15.84	-66.50	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1352.75	-61.40	-50.00	-11.40	-60.55	-0.85	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-66.31	-50.00	-16.31	-66.97	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1119.00	-67.23	-50.00	-17.23	-64.82	-2.41	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.66	-50.00	-15.66	-66.32	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	1GHz~21.2GHz

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-65.41	-50.00	-15.41	-66.56	1.15	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	
1	1739.50	-63.28	-50.00	-13.28	-63.94	0.66	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	58.32	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30590.800	-54.21	-24.21	-30.00	-65.81	11.60	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30598.100	-54.69	-24.69	-30.00	-65.46	10.78	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	60.48	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30700.800	-54.73	-24.73	-30.00	-66.29	11.57	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30664.100	-55.97	-25.97	-30.00	-66.78	10.81	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	62.64	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30950.000	-55.18	-25.18	-30.00	-66.67	11.49	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	30986.700	-54.49	-24.49	-30.00	-65.44	10.95	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)	64.80	Test Range	21.2GHz~40GHz

Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	31360.500	-53.32	-23.32	-30.00	-64.69	11.36	HORIZONTAL

Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	31323.900	-52.49	-22.49	-30.00	-63.60	11.11	VERTICAL

Note:

Note 1: “>6dB” means spurious emission levels that exceed the level of 6 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: Factor: Transmit Antenna Gain + Signal Generator Level - SA reading - Transmit Cable Loss.
Level= Read Level + Factor.

Test Frequency (GHz)		58.32		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.15	23.00	-32.88	-30.00	Complied

Test Frequency (GHz)		60.48		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.53	23.10	-33.36	-30.00	Complied

Test Frequency (GHz)		62.64		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.69	23.20	-33.62	-30.00	Complied

Test Frequency (GHz)		64.80		Test Range	40GHz~132GHz	
Test Results						
Frequency (GHz)	Test Distance (m)	Rx Power (dBm)	Rx Ant. Gain (dBi)	EIRP Power (dBm)	Limit (dBm)	Result
41.16	3.00	-84.96	23.30	-33.99	-30.00	Complied

5 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)
Test Software	Agilent	N/A	Ver :1.141209	N/A	N.C.R	Conducted (TH01-CB)
Mixer	OML	M19HW/A	U91113-1	40 ~ 60 GHz	Sep. 09, 2015*	Conducted (TH01-CB)
Mixer	OML	M15HW/A	V91113-1	50 ~ 75 GHz	Sep. 14, 2015*	Conducted (TH01-CB)
Mixer	OML	M12HW/A	E91113-1	60 ~ 90 GHz	Sep. 17, 2015*	Conducted (TH01-CB)
Mixer	OML	M08HW/A	F91113-1	90 ~ 140 GHz	Sep. 21, 2015*	Conducted (TH01-CB)
Standard Horn Antenna	Custom Microwave	HO19R	U91113-A	40 ~ 60 GHz	Sep. 09, 2015*	Conducted (TH01-CB)
Standard Horn Antenna	Custom Microwave	HO15R	V91113-A	50 ~ 75 GHz	Sep. 14, 2015*	Conducted (TH01-CB)
Standard Horn Antenna	Custom Microwave	HO12R	E91113-A	60 ~ 90 GHz	Sep. 17, 2015*	Conducted (TH01-CB)
Standard Horn Antenna	Custom Microwave	HO08R	F91113-A	90 ~ 140 GHz	Sep. 21, 2015*	Conducted (TH01-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Mar. 23, 2015	Radiation (05CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02121	1GHz ~ 26.5GHz	Jul. 20, 2015	Radiation (05CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Pre-Amplifier	Schaffner	CPA9231A	3566	0.1MHz ~ 2GHz	Mar. 24, 2015	Radiation (05CH01-CB)
Bilog Antenna	Schaffner	CBL6112B	2894	30MHz ~ 1GHz	Mar. 13, 2015	Radiation (05CH01-CB)
Horn Antenna	COM-POWER	AH-118	071028	1GHz ~ 18GHz	Jun. 05, 2015	Radiation (05CH01CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (05CH01CB)
RF Cable-low	Woken	RG402	Low Cable-6	30MHz ~ 1GHz	Nov. 02, 2015	Radiation (05CH01-CB)
RF Cable-high	Woken	RG402	High Cable-25	1GHz ~ 26.5GHz	Nov. 02, 2015	Radiation (05CH01-CB)
RF Cable-high	Woken	RG402	High Cable-26	1GHz ~ 26.5GHz	Nov. 02, 2015	Radiation (05CH01-CB)
Test Software	Audix	E3	5.04.1019f	N/A	N/A	Radiation (05CH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

NCR means Non-Calibration required.

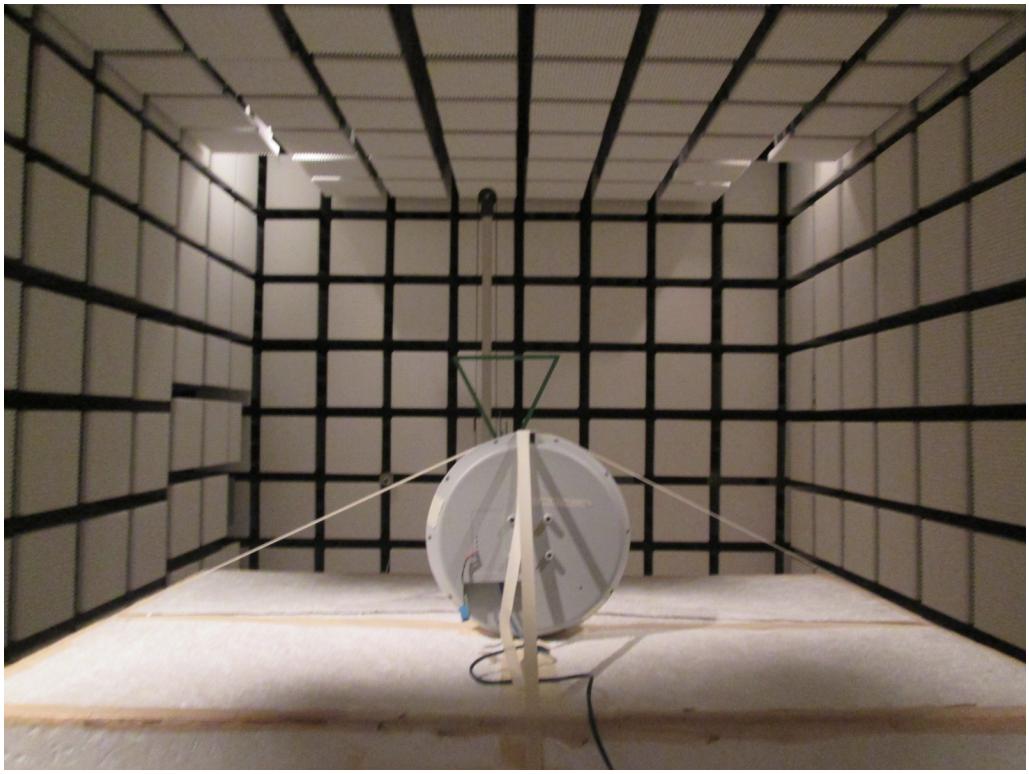
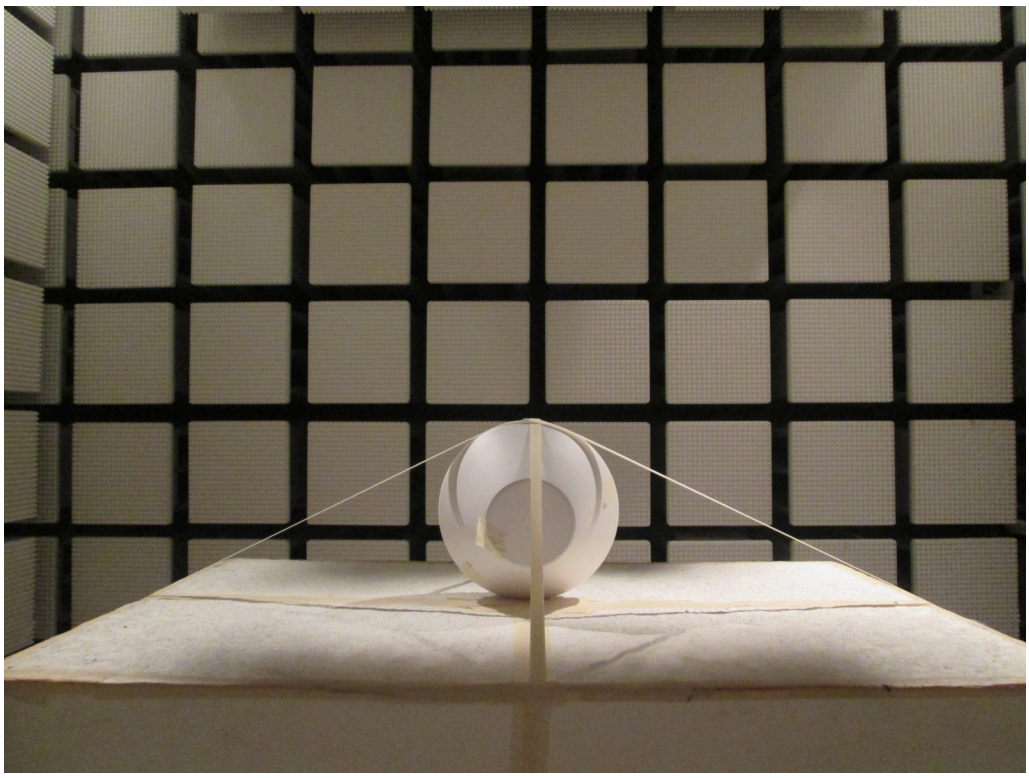
6 Measurement Uncertainty

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Radiated Emission (40GHz ~ 220GHz)	4.7 dB	Confidence levels of 95%

Appendix A. Test Photos

1. Photographs of Test Configuration

FRONT VIEW



REAR VIEW