





TEST REPORT

Issued: March 13, 2015

Name and Address of the Customer:	KYOCERA Document Solutions Inc. 2-28, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, 540-8585, Japan
Test Item:	RFID Module
Identification:	2R6A0881
Serial No.:	1, 2
Sample No.:	1
Sample Receipt Date:	February 20, 2015
Test Specification:	EN 302 291-2 V1.1.1 (2005-07) EN 302 291-1 V1.1.1 (2005-07)
Period of Testing:	February 23, 2015 - February 25, 2015
Test Result:	PASS

Representative Test Personnel:	 (2015-03-13)	T. Nakai (EMC Dept.)
Reviewed by:	 (2015-03-13)	H. Onishi (EMC Dept.) iNARTE : EMC-003318-NT

Other Aspects:

Abbreviations: PASS = passed
 FAIL = failed
 N/A = not applicable

Note:

This Test Report should not be reproduced except in full, without the written approval of Cosmos Corporation.
The test result of this Test Report is based on the tests made for sample provided, and it is not applicable to individual product identical to the sample or similar product.
The judgment of this test report validates the test item only specified in "4. Summary of Test Results".



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1. General Information

1.1 Test Methodology

All measurement subject to the present report was carried out according to the procedures in EN 302 291-2 V1.1.1 (2005-07), EN 302 291-1 V1.1.1 (2005-07).

The present report is to demonstrate that EUT complies with the provisions of Directive 1999/5/EC (R&TTE Directive) article 3.2, which states that "radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

1.2 Test Facility

The measurement was carried out at the following facility.

Cosmos Corporation EMC Lab. Oonoki
3571-2 Oonoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan

- ☒ Semi anechoic Chamber 3 m (COAC3M-01)
- ☐ Shielded Room (COSR-01)
- ☒ Measurement Room

Cosmos Corporation EMC Lab. Oonoki is accredited in accordance with the International Standard ISO/IEC 17025 by the following accreditation bodies and the test facility is registered by the following bodies.

Accreditation: A2LA Accredited Laboratory No. 2900.01
VLAC Accredited Laboratory No. VLAC-039-2
FCC Designation No. JP5182

Registration: Industry Canada Registration No. 3958B
Nemko Laboratory Authorisation. No. ELA 621

1.3 Traceability

The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.



2. Description of the Tested Sample

2.1 Product Description

Manufacturer	KYOCERA Document Solutions Inc.
Model (referred to as the EUT)	2R6A0881
Type of the Equipment	<input type="checkbox"/> Stand-alone <input type="checkbox"/> Combined Equipment <input checked="" type="checkbox"/> Plug-in Radio Device <input type="checkbox"/> Other ()
Transmitter Type	<input type="checkbox"/> WLAN <input type="checkbox"/> Bluetooth () <input type="checkbox"/> Zigbee <input checked="" type="checkbox"/> RFID <input type="checkbox"/> Other ()
Type of Modulation	ASK
Receiver Class	Class 3
Antenna Type	<input checked="" type="checkbox"/> Integral Antenna <input type="checkbox"/> Dedicated External Antenna
Operating Frequency	13.56 MHz
Type of Power Source	<input type="checkbox"/> AC Mains <input type="checkbox"/> Dedicated AC Adaptor <input checked="" type="checkbox"/> DC Voltage <input type="checkbox"/> Battery
Type of Battery (if applicable)	N/A
Duty Cycle Class	Class 3
Thermal Limitation	-20°C to 50°C

2.2 Antenna Description

Model	Gain	Antenna Type	Remarks
Un-specified *	-53 dBi	Loop antenna	Integral

Note:

*: The antenna does not have model name, because the antenna is part of RF Module PCB.

2.3 EUT Description

Equipment under test is as follow:

Instrument	Model	Serial No.	Rating
RFID Module (EUT1)	2R6A0881	1	DC 3.3/5 V
RFID Module (EUT2)	2R6A0881	2	DC 3.3/5 V



3. Test Condition (Manufacturer's Specification)

3.1 Mode of Operation

Mode of operation: RFID Operating

Note:

The EUT makes communication emission with the maximum RF power by a special test program. The module has 4 antennas. This module outputs the power by switching 4 antennas. However, we measured the only 1 antenna which was selected by manufacturer as worst case.

“Transmitter carrier output levels” is performed with the following extreme condition:

Temperature: 0°C to +40°C

Voltage: DC 3.3/5 V $\pm 15\%$ *

Note:

*: This Voltage was $\pm 15\%$ by the Manufacturer's Specification.

3.2 Additional Equipment

The equipment was tested together with additional peripherals.

The following peripherals were used during the tests:

Instrument	Model	Serial No.	Manufacturer
Multi-Function Printer *	TASKalfa 405ci	E150220	KYOCERA Document Solutions
Jig	Un-specified	Un-specified	Un-specified

Note:

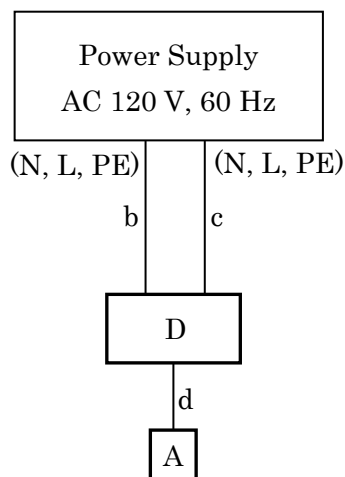
*: Input power condition during the test was AC 120 V, 60Hz. (Manufacturer's Specification)

3.3 Configuration

	Instrument	Model		Cable	Length	Shield
A	EUT1 (RFID Module)	2R6A0881	a	AC Power Cord	2.5 m	×
B	EUT2 (RFID Module)	2R6A0881	b	AC Power Cord	2.0 m	×
C	Multi-Function Printer	TASKalfa 405ci	c	AC Power Cord	2.0 m	×
D	Jig	Un-specified	d	Jig Cable	0.5 m	×

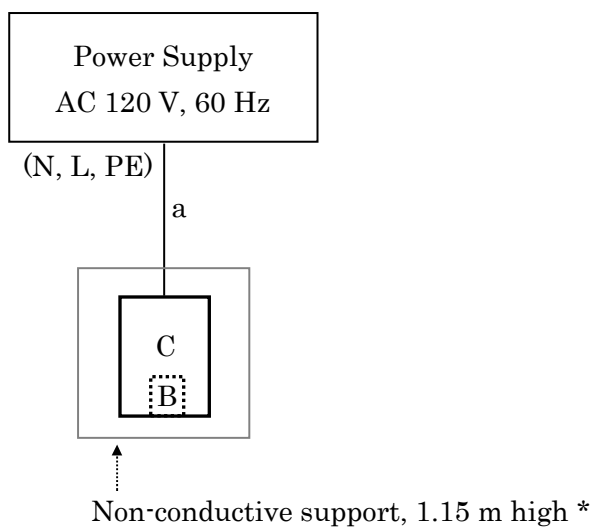
3.3 Configuration (Continued)

Effective Radiated Fieldstrength / Transmission Spectrum Mask



Effective Radiated Fieldstrength / Transmission Spectrum Mask

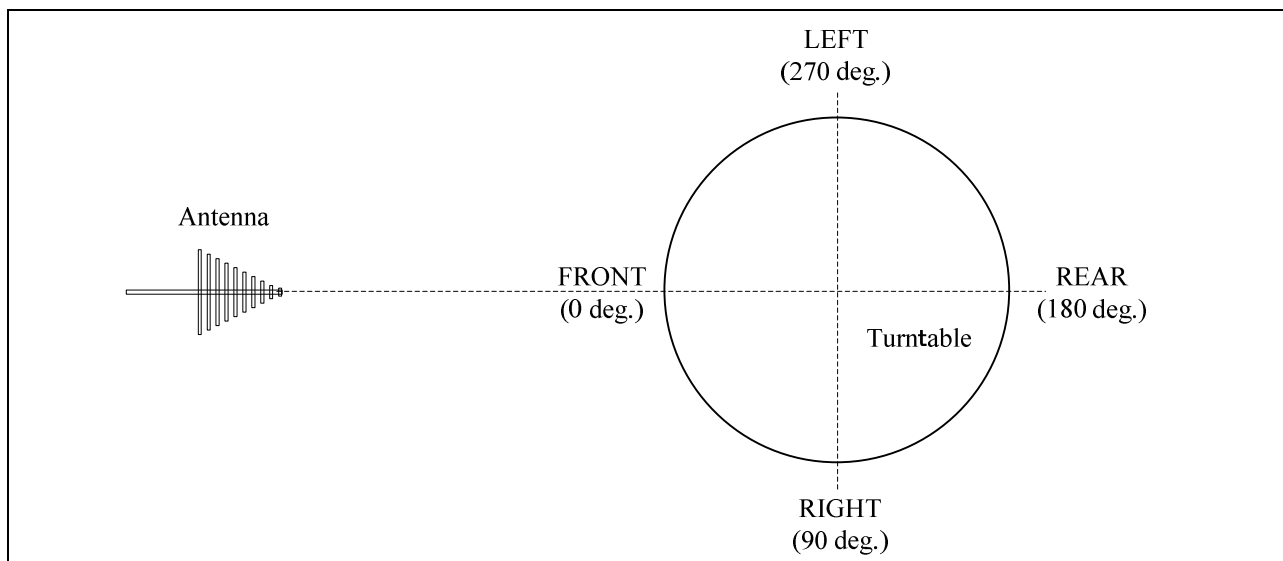
Transmitter Spurious Emissions



Note:

*: In order to set the module at 1.5 m high.

3.4 EUT Angle

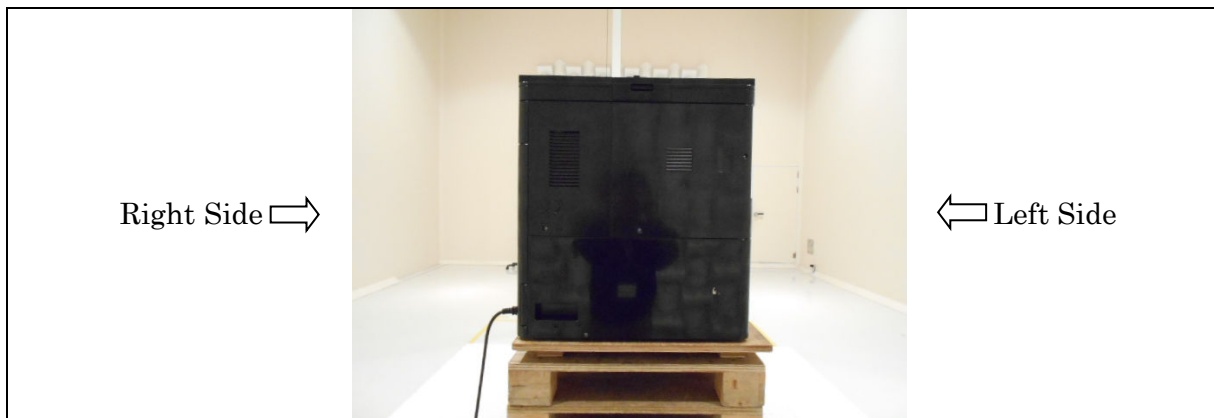


3.5 Photograph of EUT

Front View

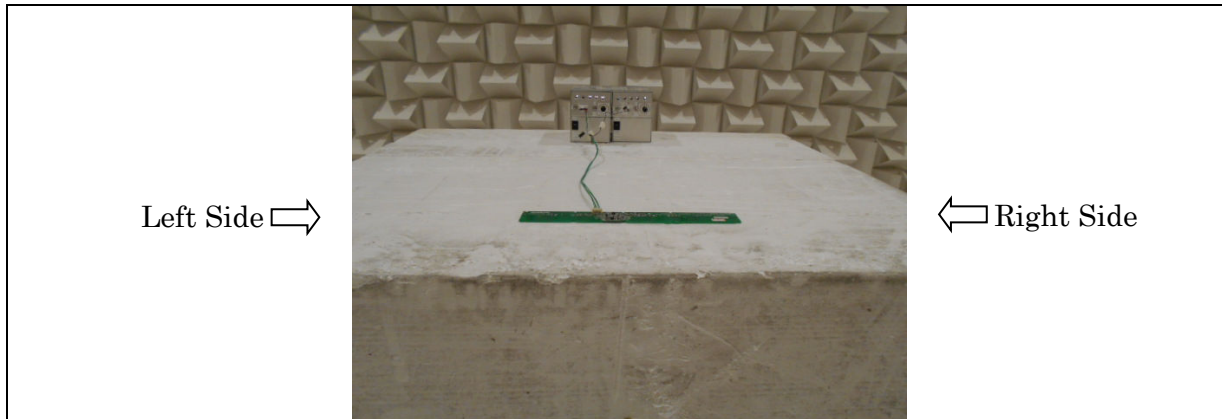


Rear View

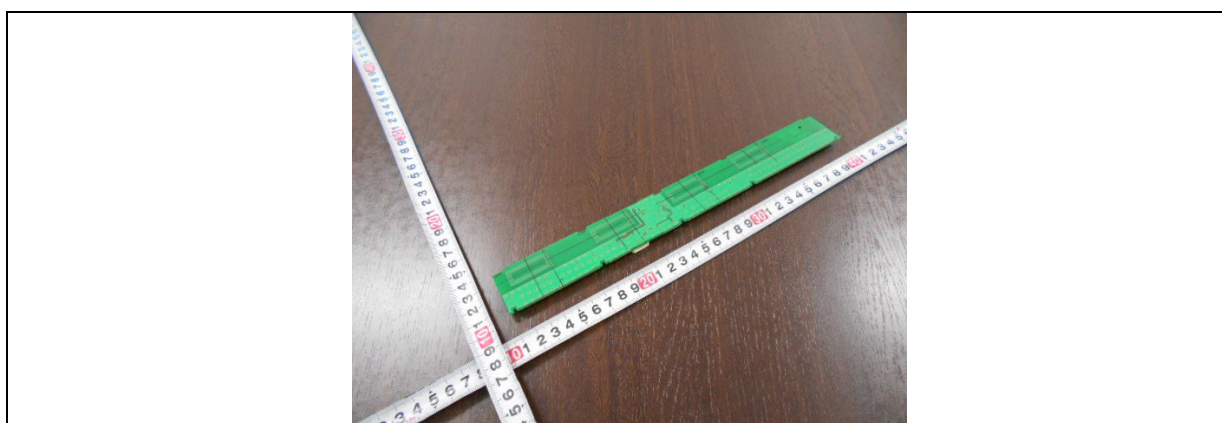


3.5 Photograph of EUT (Continued)

Front View



Module Photographs





4. Summary of Test Results

These test results are the test results of the condition specified with “3. Test Condition”.

Sub clause of the Standard	Test Item	Result
4.2.1.1	Effective Radiated Fieldstrength	PASS
4.2.1.1	Transmission Spectrum Mask	PASS
4.2.2.2	Transmitter Spurious Emissions below 30 MHz	PASS
4.2.2.3	Transmitter Spurious Emissions above 30 MHz	PASS
4.2.3	Transmitter Duty Cycle	Class 3
4.3.1.1	Receiver Spurious Emissions below 30 MHz	N/A *
4.3.1.2	Receiver Spurious Emissions above 30 MHz	N/A *

Note:

*: This item does not apply because this device receives some data only while the radio waves are transmitted.



5. Test Result

5.1 Effective Radiated Fieldstrength, Transmission Spectrum Mask

Result: **PASS**

5.1.1 Setting Remarks

The test setup was made according to EN 302 291-1 V1.1.1 (2005-07) on the turntable installed in a semi-anechoic chamber. The non-conductive support was placed on the turntable, and the EUT was put on the non-conductive support. The turntable was fully rotated. The highest radiation from the equipment was recorded. The measurement was carried out with the measuring distance of 3 m. Then the final result was converted to the result in 10 m based on Annex F Figure F.2 in EN 300 330-1 V1.7.1 (2010-02).

The bandwidth and detector type of the measuring receiver are given in the following table.

Frequency (f)	Detector type	Bandwidth
$9 \text{ kHz} \leq f < 150 \text{ kHz}$	Quasi Peak	200 Hz to 300 Hz
$150 \text{ kHz} \leq f < 30 \text{ MHz}$	Quasi Peak	9 kHz to 10 kHz
$30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$	Quasi Peak	100 kHz to 120 kHz

5.1.2 Limit

Transmitter carrier output levels shall not exceed the generated H-field dB μ A/m given in the following table.

Frequency	H-field strength limit dB μ A/m at 10 m
13.560 MHz to ± 7 kHz	+25
13.410 MHz to 13.553 MHz 13.567 MHz to 13.710 MHz	+9
13.110 MHz to 13.410 MHz 13.710 MHz to 14.010 MHz	-3.5
12.660 MHz to 13.110 MHz 14.010 MHz to 14.460 MHz	-10
Outside 12.660 MHz to 14.460 MHz	-16



5.1.3 Test Detail

Uncertainty of measurement result : ± 4.64 dB
Date of testing : February 24 and 25, 2015
Room temperature : Refer to Test Data

Calculation

Result = Reading + c.f
= $4.6 + (-29.2)$
= -24.6

Margin = Limit - Result
= $7.1 - (-24.6)$
= 31.7

Result (3 m) = Reading + c.f
= $40.7 + (-28.8)$
= 11.9

Result (10 m) = Result (3 m) - Conversion Factor
= $11.9 - 22.0$
= -10.1

Margin = Limit - Result (10 m)
= $25.0 - (-10.1)$
= 35.1

Note:

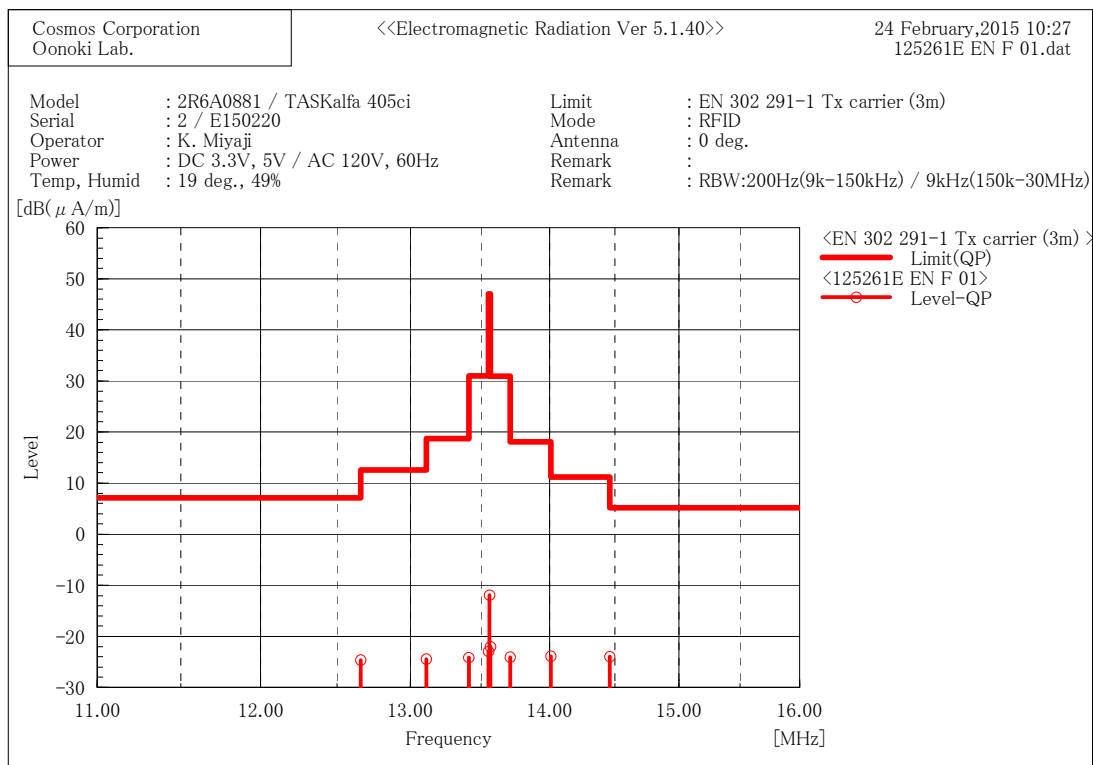
c.f (Correction Factor) = Cable Attenuation Factor + Antenna Factor + Amplifier Gain



5.1.3 Test Detail (Continued)

[Test data of the module with the printer]

Test Data (Antenna: 0°)



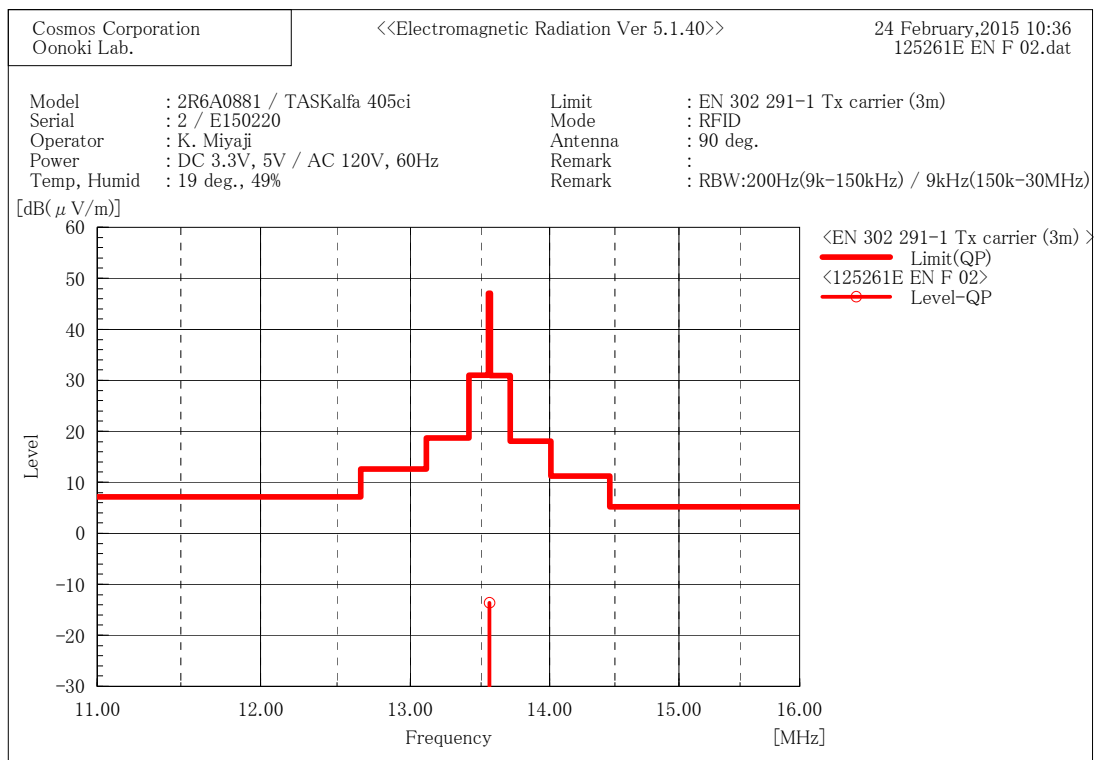
Final Result

No.	Frequency	Reading	c. f	Result	Limit	Margin	Angle
	[MHz]	[dB(μV)]	[dB(1/Ωm)]	[dB(μA/m)]	[dB(μA/m)]	[dB]	[°]
1	12.660	4.6	-29.2	-24.6	7.1	31.7	326.0
2	13.110	4.6	-29.0	-24.4	12.6	37.0	326.0
3	13.410	4.6	-28.8	-24.2	18.7	42.9	326.0
4	13.553	5.8	-28.8	-23.0	31.0	54.0	326.0
5	13.5602	16.9	-28.8	-11.9	47.0	58.9	326.0
6	13.567	6.7	-28.7	-22.0	30.9	52.9	326.0
7	13.710	4.6	-28.7	-24.1	18.1	42.2	326.0
8	14.010	4.6	-28.5	-23.9	11.2	35.1	326.0
9	14.460	4.3	-28.3	-24.0	5.2	29.2	326.0



5.1.3 Test Detail (Continued)

Test Data (Antenna: 90°)



Final Result

No.	Frequency	Reading	c. f	Result	Limit	Margin	Angle
	[MHz]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[°]
1	13.5602	15.2	-28.8	-13.6	47.0	60.6	243.0



5.1.3 Test Detail (Continued)

[Test data of the module only]

<Temp.: 19°C>

Test Data (Frequency: 13.553 MHz to 13.567 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.553 - 13.567	19	13.560	2.805	4.25	90	40.7	-28.8	11.9	22.0	-10.1	25.0	35.1
		13.560		5.00	90	43.2	-28.8	14.4	22.0	-7.6	25.0	32.6
		13.560		5.75	90	43.8	-28.8	15.0	22.0	-7.0	25.0	32.0
		13.560	3.300	4.25	90	41.0	-28.8	12.2	22.0	-9.8	25.0	34.8
		13.560		5.00	90	43.3	-28.8	14.5	22.0	-7.5	25.0	32.5
		13.560		5.75	90	44.0	-28.8	15.2	22.0	-6.8	25.0	31.8
		13.560	3.795	4.25	90	40.7	-28.8	11.9	22.0	-10.1	25.0	35.1
		13.560		5.00	90	43.4	-28.8	14.6	22.0	-7.4	25.0	32.4
		13.560		5.75	90	44.3	-28.8	15.5	22.0	-6.5	25.0	31.5

Test Data (Frequency: 13.410 MHz to 13.553 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.410 - 13.553	19	13.553	2.805	4.25	90	27.5	-28.8	-1.3	22.0	-23.3	9.0	32.3
		13.553		5.00	90	29.9	-28.8	1.1	22.0	-20.9	9.0	29.9
		13.553		5.75	90	30.5	-28.8	1.7	22.0	-20.3	9.0	29.3
		13.553	3.300	4.25	90	27.7	-28.8	-1.1	22.0	-23.1	9.0	32.1
		13.553		5.00	90	29.8	-28.8	1.0	22.0	-21.0	9.0	30.0
		13.553		5.75	90	30.6	-28.8	1.8	22.0	-20.2	9.0	29.2
		13.553	3.795	4.25	90	27.3	-28.8	-1.5	22.0	-23.5	9.0	32.5
		13.553		5.00	90	30.0	-28.8	1.2	22.0	-20.8	9.0	29.8
		13.553		5.75	90	30.8	-28.8	2.0	22.0	-20.0	9.0	29.0

Test Data (Frequency: 13.567 MHz to 13.710 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.567 - 13.710	19	13.567	2.805	4.25	90	28.2	-28.7	-0.5	22.0	-22.5	9.0	31.5
		13.567		5.00	90	30.7	-28.7	2.0	22.0	-20.0	9.0	29.0
		13.567		5.75	90	31.3	-28.7	2.6	22.0	-19.4	9.0	28.4
		13.567	3.300	4.25	90	28.7	-28.7	0.0	22.0	-22.0	9.0	31.0
		13.567		5.00	90	30.8	-28.7	2.1	22.0	-19.9	9.0	28.9
		13.567		5.75	90	31.6	-28.7	2.9	22.0	-19.1	9.0	28.1
		13.567	3.795	4.25	90	28.5	-28.7	-0.1	22.0	-22.1	9.0	31.1
		13.567		5.00	90	31.2	-28.7	2.5	22.0	-19.5	9.0	28.5
		13.567		5.75	90	32.0	-28.7	3.3	22.0	-18.7	9.0	27.7

Test Data (Frequency: 13.110 MHz to 13.410 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.110 - 13.410	19	13.410	2.805	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.300	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.795	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9



5.1.3 Test Detail (Continued)

Test Data (Frequency: 13.710 MHz to 14.010 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.710 - 14.010	19	13.710	2.805	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.300	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.795	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5

Test Data (Frequency: 12.660 MHz to 13.110 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
12.660 - 13.110	19	13.110	2.805	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.300	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.795	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0

Test Data (Frequency: 14.010 MHz to 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
14.010 - 14.460	19	14.010	2.805	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.300	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.795	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5

Test Data (Frequency: Outside 12.660 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 12.660	19	12.660	2.805	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.300	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.795	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7

Test Data (Frequency: Outside 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 14.460	19	14.460	2.805	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.300	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.795	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2



5.1.3 Test Detail (Continued)

<Temp.: 40°C>

Test Data (Frequency: 13.553 MHz to 13.567 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.553 - 13.567	40	13.560	2.805	4.25	90	41.6	-28.8	12.8	22.0	-9.2	25.0	34.2
		13.560		5.00	90	43.2	-28.8	14.4	22.0	-7.6	25.0	32.6
		13.560		5.75	90	43.7	-28.8	14.9	22.0	-7.1	25.0	32.1
		13.560	3.300	4.25	90	41.7	-28.8	12.9	22.0	-9.1	25.0	34.1
		13.560		5.00	90	42.9	-28.8	14.1	22.0	-7.9	25.0	32.9
		13.560		5.75	90	43.9	-28.8	15.1	22.0	-6.9	25.0	31.9
		13.560	3.795	4.25	90	41.7	-28.8	12.9	22.0	-9.1	25.0	34.1
		13.560		5.00	90	43.1	-28.8	14.3	22.0	-7.7	25.0	32.7
		13.560		5.75	90	44.0	-28.8	15.2	22.0	-6.8	25.0	31.8

Test Data (Frequency: 13.410 MHz to 13.553 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.410 - 13.553	40	13.553	2.805	4.25	90	28.5	-28.8	-0.3	22.0	-22.3	9.0	31.3
		13.553		5.00	90	29.7	-28.8	0.9	22.0	-21.1	9.0	30.1
		13.553		5.75	90	30.6	-28.8	1.8	22.0	-20.2	9.0	29.2
		13.553	3.300	4.25	90	28.4	-28.8	-0.4	22.0	-22.4	9.0	31.4
		13.553		5.00	90	29.7	-28.8	0.9	22.0	-21.1	9.0	30.1
		13.553		5.75	90	30.7	-28.8	1.9	22.0	-20.1	9.0	29.1
		13.553	3.795	4.25	90	28.3	-28.8	-0.5	22.0	-22.5	9.0	31.5
		13.553		5.00	90	29.7	-28.8	0.9	22.0	-21.1	9.0	30.1
		13.553		5.75	90	30.6	-28.8	1.8	22.0	-20.2	9.0	29.2

Test Data (Frequency: 13.567 MHz to 13.710 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.567 - 13.710	40	13.567	2.805	4.25	90	28.8	-28.7	0.2	22.0	-21.8	9.0	30.8
		13.567		5.00	90	30.2	-28.7	1.5	22.0	-20.5	9.0	29.5
		13.567		5.75	90	30.8	-28.7	2.1	22.0	-19.9	9.0	28.9
		13.567	3.300	4.25	90	29.0	-28.7	0.4	22.0	-21.6	9.0	30.6
		13.567		5.00	90	30.2	-28.7	1.5	22.0	-20.5	9.0	29.5
		13.567		5.75	90	31.2	-28.7	2.5	22.0	-19.5	9.0	28.5
		13.567	3.795	4.25	90	29.1	-28.7	0.5	22.0	-21.5	9.0	30.5
		13.567		5.00	90	30.5	-28.7	1.8	22.0	-20.2	9.0	29.2
		13.567		5.75	90	31.4	-28.7	2.7	22.0	-19.3	9.0	28.3

Test Data (Frequency: 13.110 MHz to 13.410 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.110 - 13.410	40	13.410	2.805	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.300	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.795	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9



5.1.3 Test Detail (Continued)

Test Data (Frequency: 13.710 MHz to 14.010 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.710 - 14.010	40	13.710	2.805	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.300	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.795	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5

Test Data (Frequency: 12.660 MHz to 13.110 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
12.660 - 13.110	40	13.110	2.805	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.300	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.795	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0

Test Data (Frequency: 14.010 MHz to 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
14.010 - 14.460	40	14.010	2.805	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.300	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.795	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5

Test Data (Frequency: Outside 12.660 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 12.660	40	12.660	2.805	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.300	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.795	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7

Test Data (Frequency: Outside 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 14.460	40	14.460	2.805	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.300	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.795	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2



5.1.3 Test Detail (Continued)

<Temp.: 0°C>

Test Data (Frequency: 13.553 MHz to 13.567 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.553 - 13.567	0	13.560	2.805	4.25	90	42.2	-28.8	13.4	22.0	-8.6	25.0	33.6
		13.560		5.00	90	43.4	-28.8	14.6	22.0	-7.4	25.0	32.4
		13.560		5.75	90	44.5	-28.8	15.7	22.0	-6.3	25.0	31.3
		13.560	3.300	4.25	90	42.2	-28.8	13.4	22.0	-8.6	25.0	33.6
		13.560		5.00	90	43.5	-28.8	14.7	22.0	-7.3	25.0	32.3
		13.560		5.75	90	44.6	-28.8	15.8	22.0	-6.2	25.0	31.2
		13.560	3.795	4.25	90	42.3	-28.8	13.5	22.0	-8.5	25.0	33.5
		13.560		5.00	90	43.7	-28.8	14.9	22.0	-7.1	25.0	32.1
		13.560		5.75	90	44.8	-28.8	16.0	22.0	-6.0	25.0	31.0

Test Data (Frequency: 13.410 MHz to 13.553 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.410 - 13.553	0	13.553	2.805	4.25	90	28.7	-28.8	-0.1	22.0	-22.1	9.0	31.1
		13.553		5.00	90	29.9	-28.8	1.1	22.0	-20.9	9.0	29.9
		13.553		5.75	90	30.9	-28.8	2.1	22.0	-19.9	9.0	28.9
		13.553	3.300	4.25	90	28.6	-28.8	-0.1	22.0	-22.1	9.0	31.1
		13.553		5.00	90	29.8	-28.8	1.0	22.0	-21.0	9.0	30.0
		13.553		5.75	90	30.8	-28.8	2.0	22.0	-20.0	9.0	29.0
		13.553	3.795	4.25	90	28.5	-28.8	-0.3	22.0	-22.3	9.0	31.3
		13.553		5.00	90	29.9	-28.8	1.1	22.0	-20.9	9.0	29.9
		13.553		5.75	90	30.9	-28.8	2.1	22.0	-19.9	9.0	28.9

Test Data (Frequency: 13.567 MHz to 13.710 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.567 - 13.710	0	13.567	2.805	4.25	90	29.7	-28.7	1.0	22.0	-21.0	9.0	30.0
		13.567		5.00	90	31.0	-28.7	2.3	22.0	-19.7	9.0	28.7
		13.567		5.75	90	32.0	-28.7	3.3	22.0	-18.7	9.0	27.7
		13.567	3.300	4.25	90	29.9	-28.7	1.2	22.0	-20.8	9.0	29.8
		13.567		5.00	90	31.2	-28.7	2.5	22.0	-19.5	9.0	28.5
		13.567		5.75	90	32.2	-28.7	3.5	22.0	-18.5	9.0	27.5
		13.567	3.795	4.25	90	30.0	-28.7	1.3	22.0	-20.7	9.0	29.7
		13.567		5.00	90	31.4	-28.7	2.7	22.0	-19.3	9.0	28.3
		13.567		5.75	90	32.4	-28.7	3.7	22.0	-18.3	9.0	27.3

Test Data (Frequency: 13.110 MHz to 13.410 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.110 - 13.410	0	13.410	2.805	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.300	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410	3.795	4.25	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.00	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9
		13.410		5.75	90	4.6	-28.8	-24.2	22.2	-46.4	-3.5	42.9



5.1.3 Test Detail (Continued)

Test Data (Frequency: 13.710 MHz to 14.010 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
13.710 - 14.010	0	13.710	2.805	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.300	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710	3.795	4.25	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.00	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5
		13.710		5.75	90	4.6	-28.7	-24.1	21.9	-46.0	-3.5	42.5

Test Data (Frequency: 12.660 MHz to 13.110 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
12.660 - 13.110	0	13.110	2.805	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.300	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110	3.795	4.25	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.00	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0
		13.110		5.75	90	4.6	-29.0	-24.4	22.6	-47.0	-10.0	37.0

Test Data (Frequency: 14.010 MHz to 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
14.010 - 14.460	0	14.010	2.805	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.300	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010	3.795	4.25	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.00	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5
		14.010		5.75	90	4.6	-28.5	-23.9	21.6	-45.5	-10.0	35.5

Test Data (Frequency: Outside 12.660 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 12.66	0	12.660	2.805	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.300	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660	3.795	4.25	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.00	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7
		12.660		5.75	90	4.6	-29.2	-24.6	23.1	-47.7	-16.0	31.7

Test Data (Frequency: Outside 14.460 MHz)

Frequency Range [MHz]	Temp. [deg.]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Power Supply Voltage [V]	Antenna Polarization [deg.]	Reading [dBμV]	c.f. [dBBS/m]	Result [dBμA/m] (3m)	Conversion Factor [dB]	Result [dBμA/m] (10m)	Limit [dBμA/m]	Margin [dB]
Outside 14.46	0	14.460	2.805	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.300	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460	3.795	4.25	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.00	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2
		14.460		5.75	90	4.3	-28.3	-24.0	21.2	-45.2	-16.0	29.2



5.2 Transmitter Spurious Emissions below 30 MHz

Result: **PASS**

5.2.1 Setting Remarks

The electric field strength was measured according to EN 302 291-1 V1.1.1 (2005-07), in the frequency range from 9 kHz to 30 MHz except for the frequency band on which the transmitter is intended to operate.

The test setup was made according to EN 302 291-1 V1.1.1 (2005-07) on the turntable installed in a semi-anechoic chamber. The non-conductive support was placed on the turntable, and the EUT was put on the non-conductive support. The turntable was fully rotated. The highest radiation from the equipment was recorded. The measurement was carried out with the measuring distance of 3 m. Then the final result was converted to the result in 10 m based on Annex F Figure F.2 in EN 300 330-1 V1.7.1 (2010-02).

5.2.2 Limit

The transmitter output levels with the normal modulation shall not exceed the levels given in the following table.

State	Frequency $9\text{ kHz} \leq f < 10\text{ MHz}$	Frequency $10\text{ MHz} \leq f < 30\text{ MHz}$
Transmit	27 dB μ A/m descending 3 dB/Oct	-3.5 dB μ A/m
Standby	6 dB μ A/m descending 3 dB/Oct	-24.5 dB μ A/m

5.2.3 Test Detail

Uncertainty of measurement result : $\pm 4.64\text{ dB}$
Date of testing : February 24, 2015
Room temperature : 19°C
Relative humidity : 49%



5.2.3 Test Detail (Continued)

Calculation

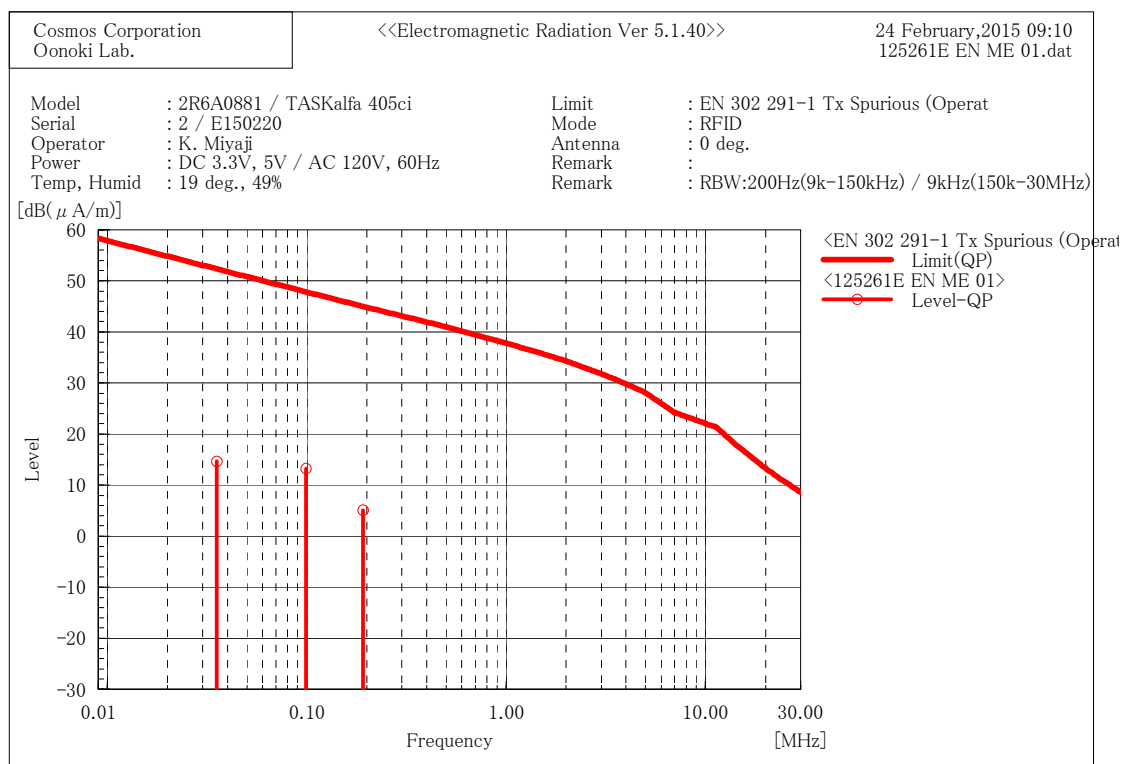
Result = Reading + Correction Factor
= 45.4 + (-30.8)
= 14.6

Margin = Limit - Result
= 52.3 - 14.6
= 37.7

Note:

c.f (Correction Factor) = Cable Attenuation Factor + Antenna Factor + Amplifier Gain

Test Data (Antenna: 0°)



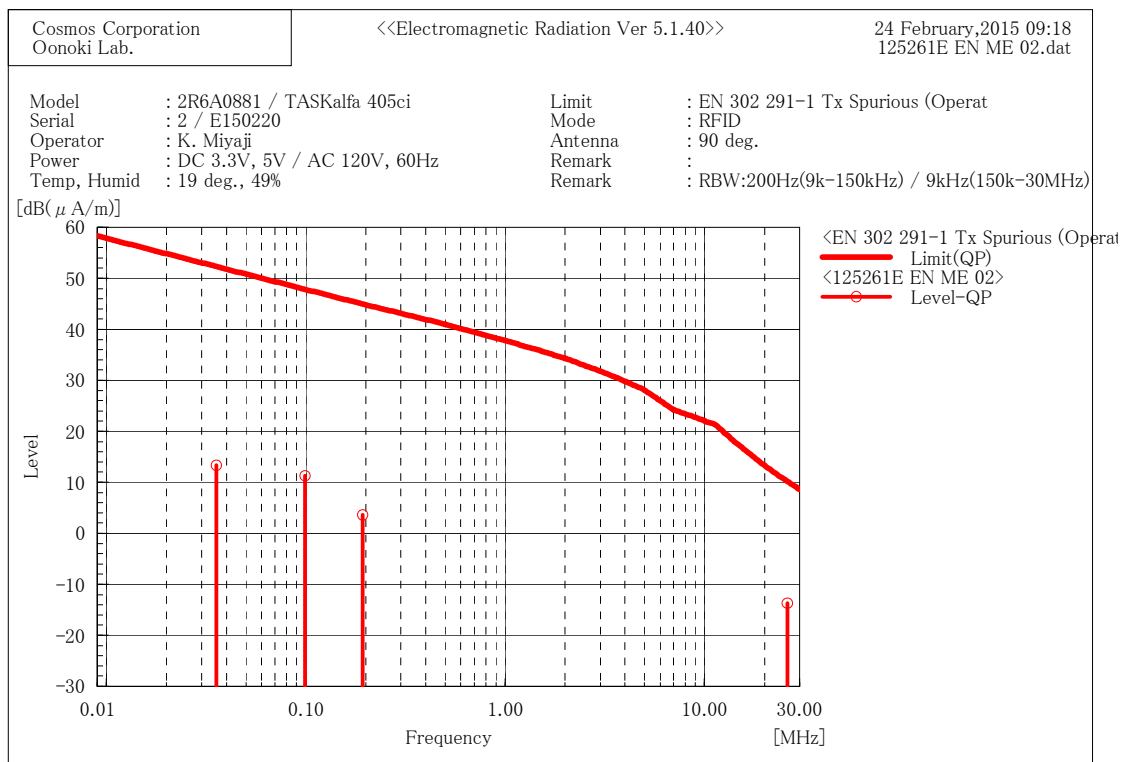
Final Result

No.	Frequency	Reading	c. f	Result	Limit	Margin	Angle
	[MHz]	[dB(μV)]	[dB(1/Ωm)]	[dB(μA/m)]	[dB(μA/m)]	[dB]	[°]
1	0.035396	45.4	-30.8	14.6	52.3	37.7	264.0
2	0.099064	44.1	-30.9	13.2	47.8	34.6	251.0
3	0.191102	36.1	-31.0	5.1	45.0	39.9	246.0



5.2.3 Test Detail (Continued)

Test Data (Antenna: 90°)



Final Result

No.	Frequency [MHz]	Reading [dB(μV)]	c. f [dB(1/Ωm)]	Result [dB(μA/m)]	Limit [dB(μA/m)]	Margin [dB]	Angle [°]
1	0.035489	44.1	-30.8	13.3	52.3	39.0	185.0
2	0.099029	42.2	-30.9	11.3	47.8	36.5	179.0
3	0.192233	34.6	-31.0	3.6	45.0	41.4	178.0
4	26.03503	14.5	-28.2	-13.7	10.2	23.9	113.0



5.3 Transmitter Spurious Emissions above 30 MHz

Result: **PASS**

5.3.1 Setting Remarks

In the frequency range from 30 MHz to 1 GHz, the electric field strength and effective radiated power were measured according to EN 302 291-1 V1.1.1 (2005-07).

The test setup was made according to EN 302 291-1 V1.1.1 (2005-07) on the turntable installed in a semi-anechoic chamber. The non-conductive support was placed on the turntable, and the EUT was put on the non-conductive support. The EUT was measured at 1 m to 4 m height of the antenna. The turntable was fully rotated. The highest radiation from the equipment was recorded. The substitution antenna and the signal generator were set. The input signal to the substitution antenna was adjusted until an equal to that detected from the transmitter is obtained on the measuring receiver.

5.3.2 Limit

The radiated field strength of the spurious domain emissions below 30 MHz shall not exceed the generated H-field dB μ A/m at 10 m given in the following table.

Transmitter State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies between 30 MHz to 1 GHz
Operating	4 nW e.r.p.	250 nW e.r.p.
Standby	2 nW e.r.p.	2 nW e.r.p.



5.3.3 Test Detail

Uncertainty of measurement result : ± 5.08 dB
Date of testing : February 23, 2015
Room temperature : 21°C
Relative humidity : 47%

Calculation

$$\begin{aligned}\text{e.i.r.p.} &= \text{SG Reading} - \text{Cable Factor} + \text{Ant. Gain} \\ &= -56.2 - 6.53 + (-7.99) \\ &= -70.72\end{aligned}$$

$$\begin{aligned}\text{e.r.p.} &= \text{e.i.r.p.} - 2.15 \\ &= -70.72 - 2.15 \\ &\div -72.8\end{aligned}$$

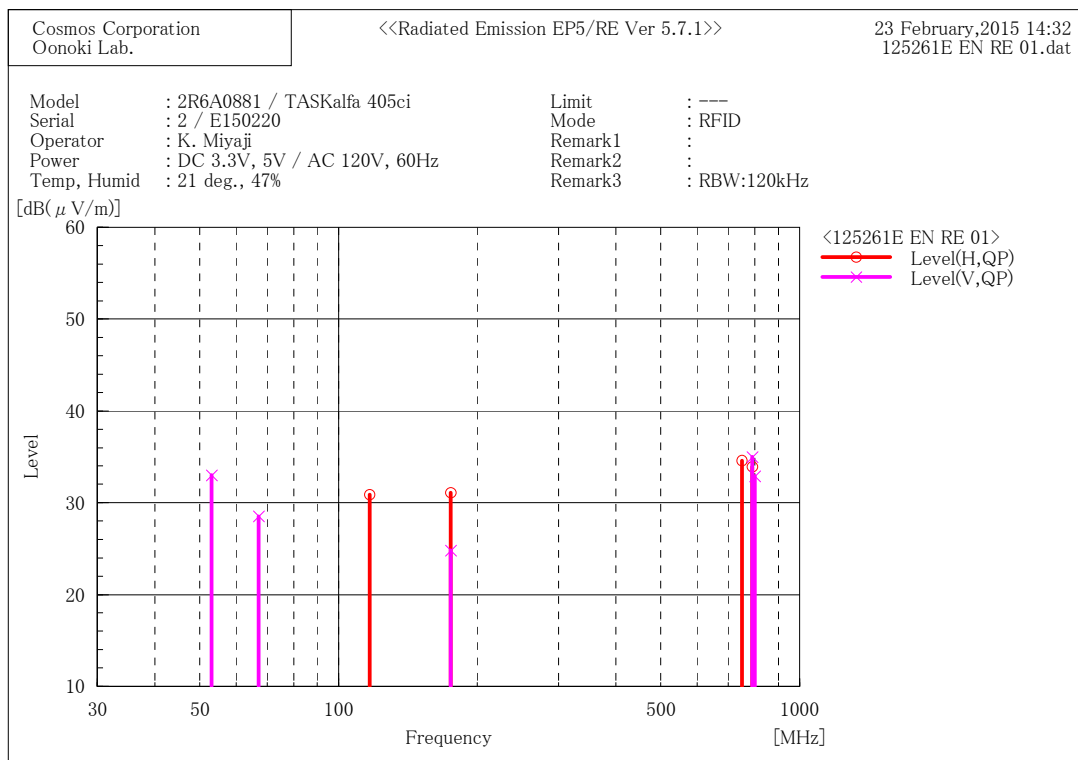
$$\begin{aligned}\text{Margin} &= \text{Limit} - \text{e.r.p.} \\ &= -54 - (-72.8) \\ &= 18.8\end{aligned}$$

Antenna Pola.	Frequency [MHz]	Receiver Reading [dBμV]	SG Reading [dBm]	Cable Factor (with ATT) [dB]	Ant. Gain [dBi]	Antenna Height [m]	e.i.r.p. [dBm]	e.r.p. [dBm] (Result)	Limit [dBm]	Margin [dB]
H	116.895	43.3	-56.2	6.53	-7.99	1.54	-70.72	-72.8	-54	18.8
H	175.358	40.3	-54.2	6.55	-7.64	1.00	-68.39	-70.5	-54	16.5
H	749.988	33.2	-50.8	7.16	-8.18	1.15	-66.14	-68.2	-54	14.2
V	53.091	46.4	-37.1	6.31	-18.27	1.00	-61.68	-63.8	-54	9.8
V	67.184	42.8	-52.3	6.40	-10.65	1.00	-69.35	-71.5	-54	17.5
V	175.358	34.0	-55.8	6.55	-7.64	1.95	-69.99	-72.1	-54	18.1
V	789.625	32.9	-45.3	7.16	-8.43	1.29	-60.89	-63.0	-54	9.0



5.3.3 Test Detail (Continued)

Test Data

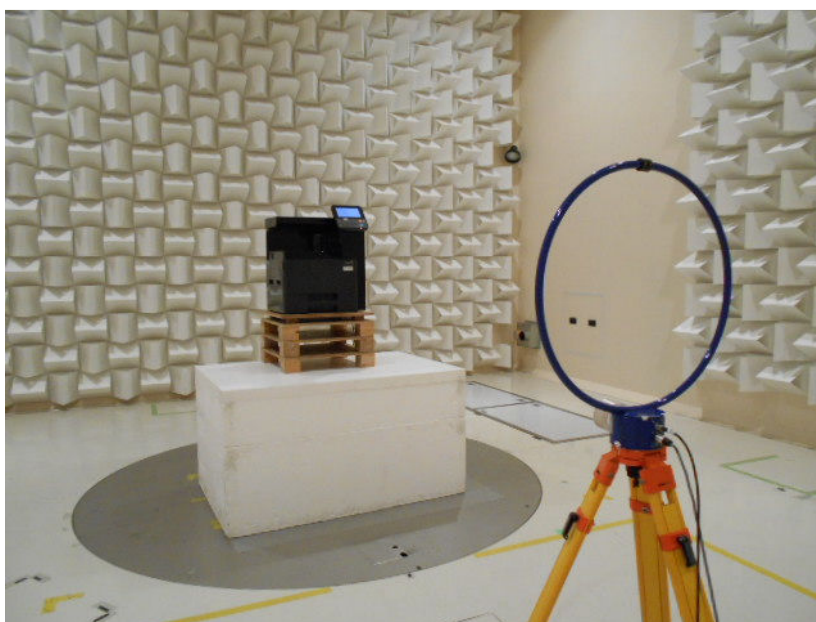
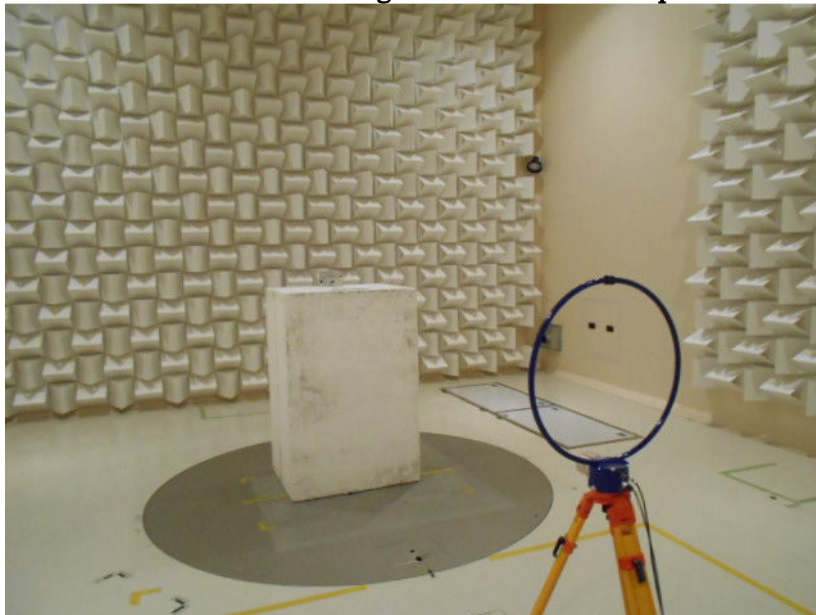


Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μ V)]	c. f [dB(1/m)]	Result QP [dB(μ V/m)]	Height [cm]	Angle [°]
1	116.895	H	43.3	-12.4	30.9	161.0	13.0
2	175.358	H	40.3	-9.2	31.1	100.0	354.0
3	749.988	H	33.2	1.4	34.6	150.0	112.0
4	789.625	H	31.8	2.1	33.9	197.0	127.0
5	53.091	V	46.4	-13.4	33.0	100.0	25.0
6	67.184	V	42.8	-14.3	28.5	100.0	199.0
7	175.358	V	34.0	-9.2	24.8	183.0	183.0
8	789.625	V	32.9	2.1	35.0	192.0	197.0
9	799.991	V	30.6	2.3	32.9	207.0	134.0

Appendix A: Photographs of the Test Setup

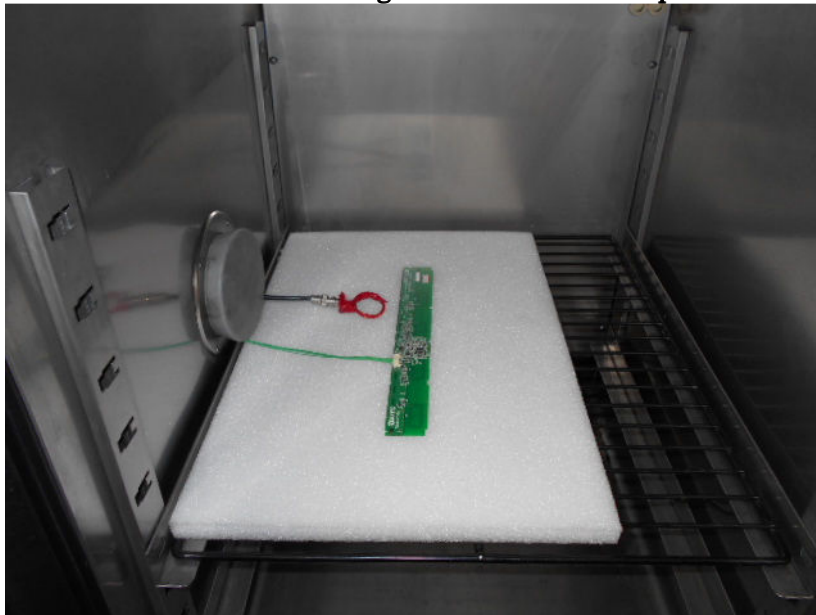
Effective Radiated Fieldstrength / Transmission Spectrum Mask





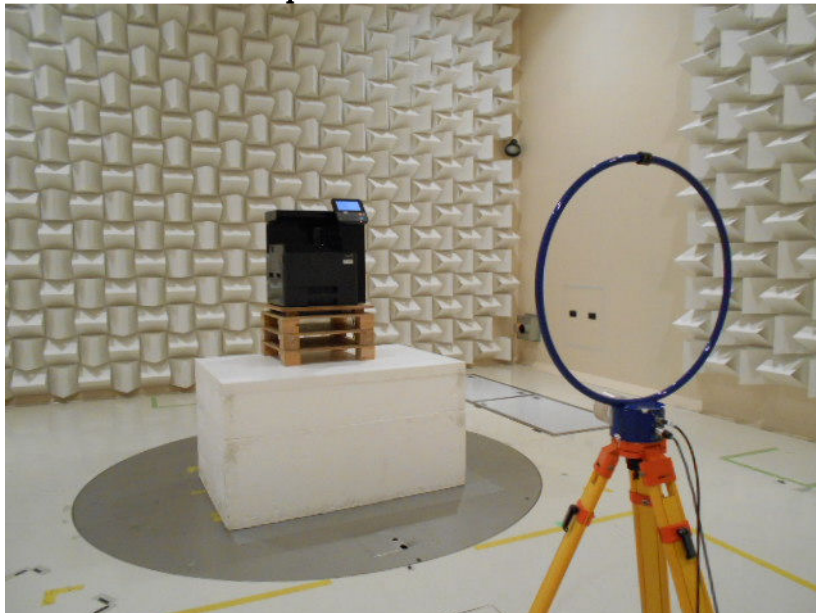
Appendix A: Photographs of the Test Setup (Continued)

Effective Radiated Fieldstrength / Transmission Spectrum Mask



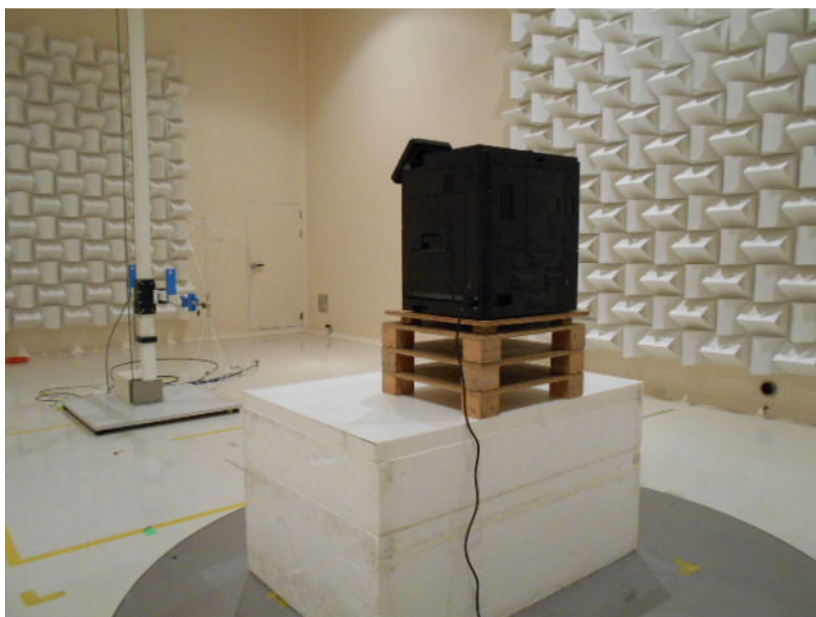
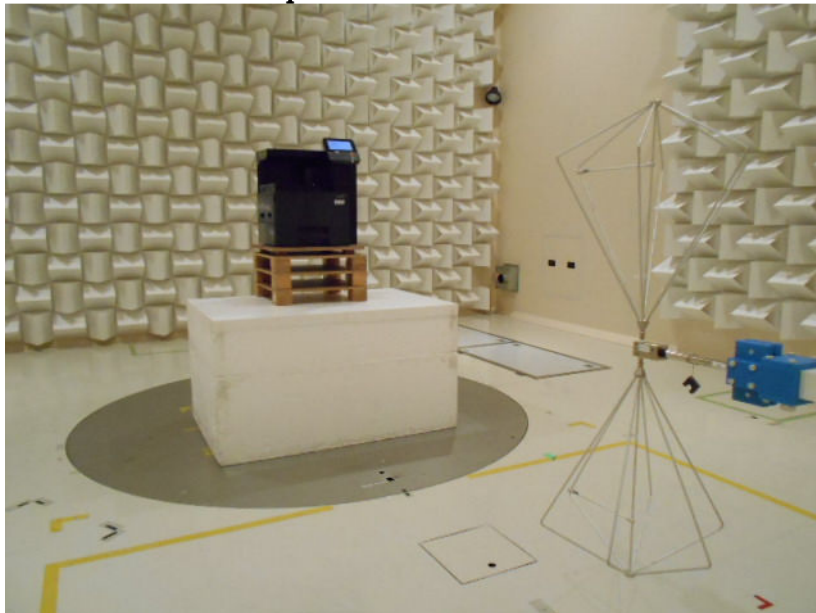
Appendix A: Photographs of the Test Setup (Continued)

Transmitter Spurious Emissions below 30 MHz



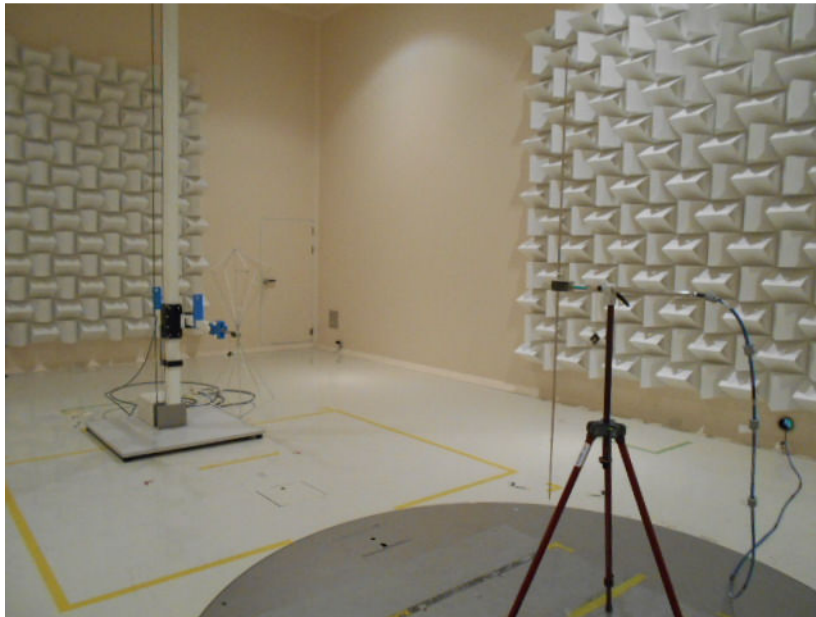
Appendix A: Photographs of the Test Setup (Continued)

Transmitter Spurious Emissions above 30 MHz



Appendix A: Photographs of the Test Setup (Continued)

Substitution Measurement





Appendix B: List of Test and Measurement Instruments

Effective Radiated Fieldstrength / Transmission Spectrum Mask

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	2014/03/24 2015/03/23
EMI Test Receiver	Agilent Technologies	N9038A	MY54130015	2014/06/13 2015/06/12
Loop Antenna (9 kHz to 30 MHz)	SCHAFFNER	HLA6120	1137	2014/10/05 2015/10/04
Anechoic Chamber 3 m	JSE	COAC3M-01	---	2014/05/19 2015/05/18
RF Cable (9 kHz to 30 MHz)	Fujikura	5D-2W	OC09	2014/10/08 2015/10/07
	SUHNER	RG223/U	OC10 OC11 OC12	
RF Selector	TSJ	RFM-E121	03149	2014/10/08 2015/10/07
Thermostatic Chamber	ESPEC	PU-2KP	14010409	2014/08/21 2015/08/20
Software	TOYO	EP5/ME (ver 5.1.40)	---	---

Transmitter Spurious Emissions below 30 MHz

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	2014/03/24 2015/03/23
Loop Antenna (9 kHz to 30 MHz)	SCHAFFNER	HLA6120	1137	2014/10/05 2015/10/04
Anechoic Chamber 3 m	JSE	COAC3M-01	---	2014/05/19 2015/05/18
RF Cable (9 kHz to 30 MHz)	Fujikura	5D-2W	OC09	2014/10/08 2015/10/07
	SUHNER	RG223/U	OC10 OC11 OC12	
RF Selector	TSJ	RFM-E121	03149	2014/10/08 2015/10/07
Software	TOYO	EP5/ME (ver 5.1.40)	---	---



Appendix B: List of Test and Measurement Instruments (Continued)

Transmitter Spurious Emissions above 30 MHz

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE & SCHWARZ	ESIB40	100211	2014/03/24 2015/03/23
Pre-Amplifier (30 MHz to 1 GHz)	HEWLETT PACKARD	8447D OPT 010	2944A 07891	2014/04/14 2015/04/13
Biconical Antenna (30 MHz to 300 MHz)	SCHWARZBECK	VHBB9124 / BBA9106	9124-311	2014/08/30 2015/08/29
Log-Periodic Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHALP9108-A	0645	2014/08/30 2015/08/29
Dipole Antenna (30 MHz to 300 MHz)	SCHWARZBECK	VHAP	762	2015/01/24 2016/01/23
Dipole Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHAP-10dB	745	2014/11/22 2015/11/21
Anechoic Chamber 3 m	JSE	COAC3M-01	---	2014/05/19 2015/05/18
Attenuator 3 dB	JFW	50FP-003-H2	---	2014/04/14 2015/04/13
RF Cable (30 MHz to 1 GHz)	Fujikura	8D-2W	OC14	2014/05/22 2015/05/21
	SUHNER	RG223/U	OC11	
		RG214/U	OC15 OC16	
		RG400/U	OC17	
RF Cable (30 MHz to 1 GHz)	STORM	TRUE BLUE 290	OC18	2014/05/12 2015/05/11
RF Selector	TSJ	RFM-E121	03149	2014/05/22 2015/05/21
Attenuator 6 dB	TAMAGAWA	CFA-01	---	2014/06/06 2015/06/05
Signal Generator	ROHDE & SCHWARZ	SML01	102769	2014/11/06 2015/11/05
Software	TOYO	EP5/RE (ver 5.7.1)	---	---