Nemko Korea Co., Ltd.

300-2, Osan-Ri, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyeonggi-Do, KOREA
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FCC/IC EVALUATION REPORT FOR CLASS II PERMISSIVE CHANGE

Applicant :

Telit Communications S.p.A.
Viale Stazione di Prosecco 5/B, 34010 Sgonico
Trieste, Italy

Dates of Issue : January 28, 2011
Test Report No. : NK-11-R-006
Test Site : Nemko Korea Co., Ltd.

FCC ID **IC ID**	RI7CC864-DUAL 5131A-CC864DUAL
Brand Name	**Telit**
CONTACT PERSON	**Telit Communications S.p.A.** **Viale Stazione di Prosecco 5/B, 34010** **Sgonico, Trieste, Itay** **Dong Woo Ku** **Telephone No. : +82-2-368-4648**

Applied Standard:	FCC 47 CFR Part 2, 22, 24
Classification:	Licensed Potable Transmitter(PCB)
EUT Type:	DUAL BAND CDMA/GPS Module

The device bearing the brand name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Jan. 28, 2011
Tested By : Minchul Shin
Engineer

Jan. 28. 2011
Reviewed By : H.H.Kim
Manager & Chief Engineer

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1. Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC Part 2 & Part 22 & 24 and Industrie Canada under RSS-Gen & 132 & 133.

Responsible Party :	Telit Communications S.p.A.
Contact Person :	Dong Woo Ku Tel No. : +82 2 368 4648
Manufacturer :	Telit Communications S.p.A. Viale Stazione di Prosecco 5/B, 34010 Sgonico, Trieste, Italy

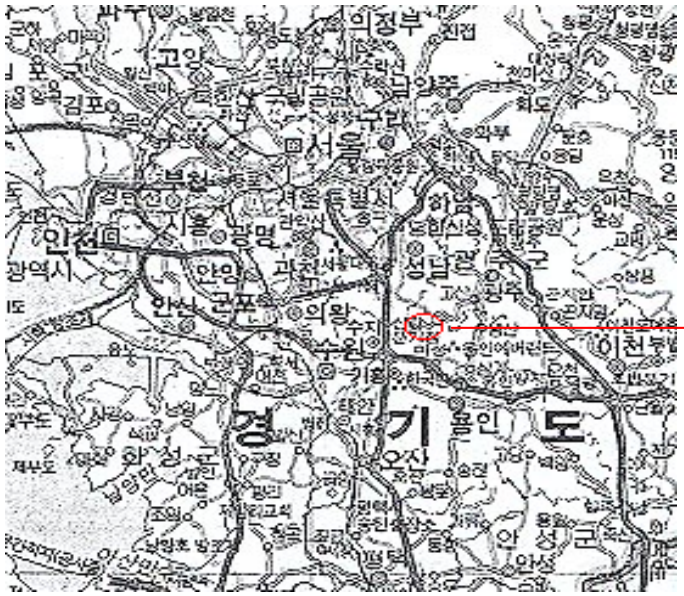
- FCC ID: RI7CC864-DUAL
- IC 5131A-CC864DUAL
- Model: CC864-DUAL
- Brand Name: Telit
- EUT Type: DUAL BAND CDMA/GPS Module
- Classification: Licensed Potable Transmitter(PCB)
- Applied Standard: FCC 47 CFR Part & 2, 22, 24
RSS-Gen, 132,133
- Test Procedure(s): ANSI C63.4 (2003)
- Dates of Test: January 14, 2011 ~ January 21, 2011
- Place of Tests: Nemko Korea Co., Ltd.

2. Introduction (Site Description)

2.1 Test facility

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003) was used in determining radiated and conducted emissions emanating from **Telit Communications S.p.A.**
FCC ID : RI7CC864-DUAL and **IC: 5131A-CC864DUAL**

These measurement tests were conducted at ***Nemko Korea Co., Ltd.***
The site address is 300-2, Osan-Ri, Mohyeon-Myeon, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, KOREA
The area of Nemko Korea Corporation Ltd. Test site is located in a mountain area at 80 kilometers (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 kilometers (18miles) south-southeast from central Seoul.
It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures.
The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4 2003.



Nemko Korea Co., Ltd.
300-2,Osan-Ri,Mohyeon-Myeon,
Cheoin-Gu, Yongin-Si, Gyunggi-Do,
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Fig. 1. The map above shows the Seoul in Korea vicinity area.
The map also shows Nemko Korea Corporation Ltd. and Incheon Airport.

2.2 Accreditation and listing

Accreditation type		Accreditation number
FC	FCC part 15/18 Filing site	Registration No. 97992
	CAB Accreditation for DOC	Designation No. KR0026
KOLAS	KOLAS Accredited Lab. (Korea Laboratory Accreditation Scheme)	Registration No. 155
Industry Canada	Canada IC Registered site	Site No. 2040E-1
VCCI	VCCI registration site(RE/CE/Telecom CE)	Member No. 2118
IECEE CB SCHEME	EMC CBTL	-
방송통신위원회	KCC(RRL)Designated Lab.	Registration No. KR0026
	SASO registered Lab and Certification Body	Registration No. 2008-15

3. Test Conditions & EUT Information

3.1 Operating During Test

The EUT was tested at the lowest channel, middle channel and the highest channel with maximum RF power and all data were recorded in the report.

3.2 Environmental Conditions

Temperature	20℃ ~ 25℃
Relative Humidity	35% ~ 55%

3.3 Description of EUT

Frequency Band	Tx	824.70 MHz ~ 848.31 MHz 1851.25 MHz ~ 1908.75 MHz
	Rx	869.70 MHz ~ 893.31 MHz 1931.25 MHz ~ 1988.75 MHz
Output Power (Conducted power)	Cellular CDMA : 0.298 W(24.74 dBm) PCS CDMA : 0.284 W(24.54 dBm)	
Emission Designator	1M25F9W	
Antenna Type	Magnet Mount Antennas	
Antenna Gain	5.12 dBi for Cellular, 6.12 dBi for PCS	
Dimensions	30.0 mm(W) x 36.3 mm(D) x 4.8 mm(H)	
Weight	Approx. 9 g	
Operating Temperature	-30°C ~ +80 °C	

4. Measuring Instrument Calibration

All measurements were made with instruments calibrated according to the recommendation by manufacturer. Measurement of radiated emissions and conducted emissions were made with instruments conforming to American National Standards Institute, ANSI C63.4-2003.
The calibration of measuring instrument, including any accessories that may affect test results, were performed according to the recommendation by manufacturer.

- End of page -

5. Summary of Test Results

The EUT has been tested according to the following specification:

Description of Test	FCC Rule	IC Rule	Result
ERP / EIRP Measurement	§22.913(a)(2) §24.232(c)	RSS-132(4.4) [SRSP503(5.1.3)] RSS-133(6.4)	Complies
Conducted Output Power	§2.1046	RSS-132(4.4) RSS-133(4.1)	Complies
Occupied Bandwidth / 26dB Emission Bandwidth	§2.1049 §22.917(a) §24.238(a)	RSS-Gen(4.6.1) RSS-133(2.3)	Not applicable
Conducted Spurious Emission / Band Edge	§2.1051 §22.917(a) §24.238(a)	RSS-132(4.5.1) RSS-133(6.5.1)	Not applicable
Peak-Average Ratio	§24.232(d)	RSS-133(6.4)	Not applicable
Radiated Spurious & Harmonic Emission	§2.1053 §22.917(a) §24.238(a)	RSS-132(4.5.1) RSS-133(6.5.1)	Complies
Frequency Stability / Temperature Variation	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Not applicable
Receiver Spurious Emissions	-	RSS-Gen(6.1) RSS-132(4.6) RSS-133(6.6)	Complies

6. Recommendation / Conclusion

The data collected shows that the **Telit Communications S.p.A. DUAL BAND CDMA/GPS Module FCC ID: RI7CC864-DUAL/ IC: 5131A-CC864DUAL** is in compliance with Part 2, 22, 24 of the FCC Rules and RSS-Gen, 132, 133 of the IC Rules.

7. Description of Tests

7.1 Effective Radiated Power / Equivalent Isotropic Radiated Power

Test Set-up:

Effective Radiated Power Output and Equivalent Isotropic Radiated Power output Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2003.

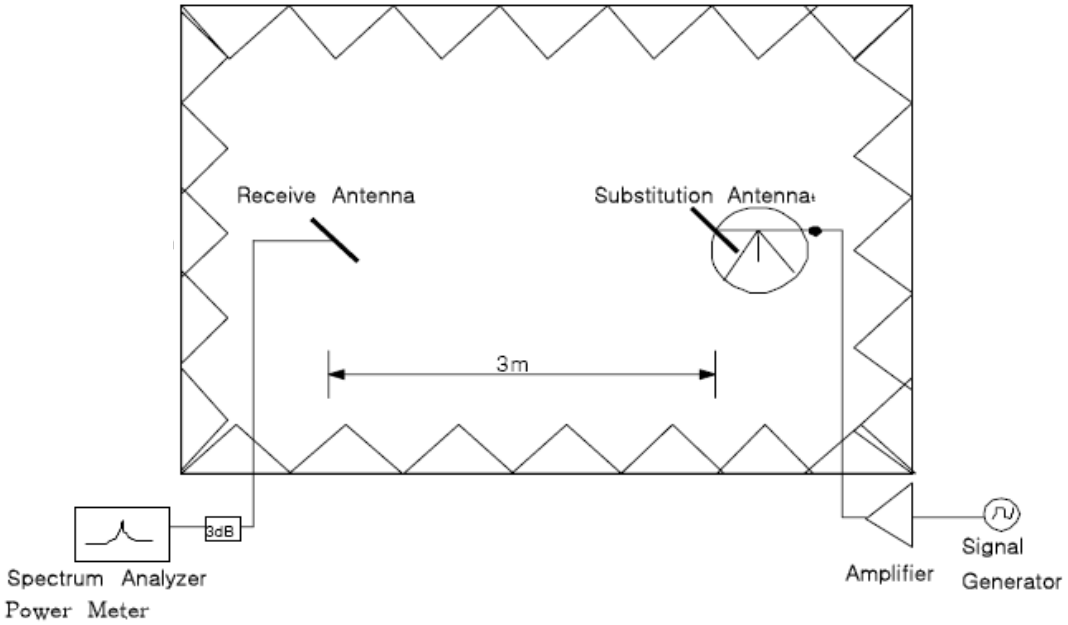

Diagram of ERP/EIRP test Set-up

The EUT was set on a non-conductive turntable in a semi anechoic chamber.
In the corner of the chamber there was a communication antenna, which was connected to the BS simulator located outside the chamber. The radiated power from the EUT was measured with an antenna fixed to a antenna tower.
The tower and turn table were remotely controlled to turn the EUT and change the antenna polarization. The measured signal was routed from the measuring antenna to the spectrum analyzer. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.

Test Method:

1. The maximum power level was searched by moving the turn table and measuring antenna and manipulating the EUT. This level (P_{EUT}) was recorded.
2. Spectrum analyzer was set to RBW 3 MHz, VBW 3 MHz, peak detection mode.
3. Replce the EUT with a substituting antenna and feed the substitution antenna at the EUT end with a signal generator connected to the antenna.
4. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained(P_{EUT}).
5. Calculate the EIRP, in dBm, by the power loss in the cable between the generator and antenna, corrected fo rthe gain of the substitution antenna.

7.2 Radiated Spurious & Harmonic Emission

Test Set-up:

Effective Radiated Power Output and Equivalent Isotropic Radiated Power output Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2003.

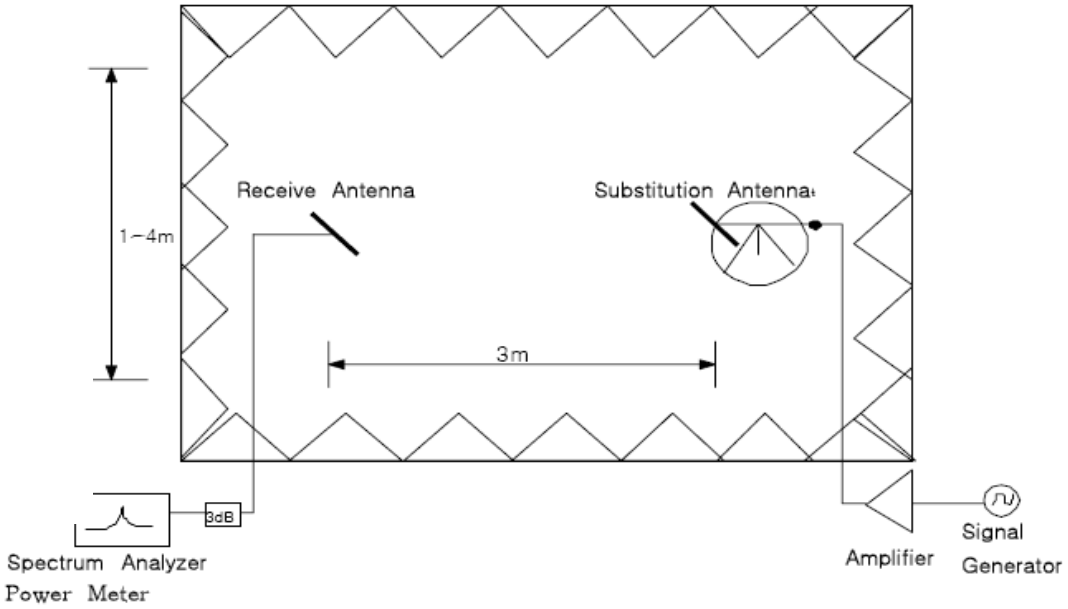

Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was set on a non-conductive turntable in a semi anechoic chamber.
In the corner of the chamber there was a communication antenna, which was connected to the BS simulator located outside the chamber. The radiated power from the EUT was measured with an antenna fixed to a antenna tower.
The tower and turn table were remotely controlled to turn the EUT and change the antenna polarization. The measured signal was routed from the measuring antenna to the spectrum analyzer. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.
The radiated spurious and harmonic emission were measured up to 10th harmonic of the fundamental frequency of operation.

Test Method:

1. The maximum power level was searched by moving the turn table and measuring antenna and manipulating the EUT. This level (P_{EUT}) was recorded.
2. For measurements the resolution bandwidth and video bandwidth were set to 100 kHz for emissions below 1GHz and 1 MHz for emissions over 1GHz.
3. Replce the EUT with a substituting antenna and feed the substitution antenna at the EUT end with a signal generator connected to the antenna.
4. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained(P_{EUT}).
5. Calculate the ERP, in dBm, by the power loss in the cable between the generator and antenna, corrected fo rthe gain of the substitution antenna.

7.3 Conducted Output Power

Test Set-up:

Test Method :

For conducted power measurement, connected the EUT to Communications Test Set (E5515C) directly. Set the EUT transmit the maximum power at the wanted channel by controlled E5515C. The test was performed using the average power measure under all configurations and the highest power was recorded.

8. Test Data

8.1 Conducted Output Power

FCC §2.1046, RSS-132(4.4), RSS-133(4.1)

Measurement Results : Cellular and PCS

Band	Channel	SO2	SO2	SO55	SO55	TDSO (SO32) F+Sch	TDSO (SO32) F-Sch
		RC1/1	RC3/3	RC1/1	RC3/3	RC3/3	RC3/3
CDMA	1013	24.61	24.70	24.63	**24.74**	24.69	24.71
	363	24.50	24.52	24.52	24.54	24.52	24.54
	777	24.56	24.68	24.62	24.68	24.65	24.67
PCS	25	24.43	24.52	24.45	**24.54**	24.46	24.51
	600	24.29	24.31	24.28	24.24	24.23	24.27
	1175	24.44	24.43	24.42	24.44	24.43	24.51

8.2 Effective Radiated Power (ERP)

FCC §22.913(a)(2), RSS-132(4.4)/SRSP503(5.1.3)

Measurement Results : Cellular

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
824.70	V	-10.4	24.7	0	24.7	38.45	13.8
836.52	V	-11.7	23.6	0	23.6	38.45	14.9
848.31	V	-9.9	25.4	0	**25.4**	38.45	13.1

Radiated Measurements at 3meters

Note: Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2..4, Aug. 17, 2004.

This device was tested under all R.C.s and S.O.s. The worst case is reported with RC3/SO55 with 'All Up'power control bits.

ERP(dB) =Level at Antenna Terminal(dBm) + Antenna Gain(dBd)

8.3 Equivalent Isotropic Radiated Power (EIRP)

FCC §24.232(c), RSS-133(6.4)

Measurement Results : PCS

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1851.25	V	-18.8	11.2	9.58	20.8	33	12.2
1880.00	V	-18.6	14.6	9.73	24.3	33	8.7
1908.75	V	-18.5	15.1	9.89	**25.0**	33	8.0

Radiated Measurements at 3meters

Note: Effective Isotropic Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2..4, Aug. 17, 2004.

This device was tested under all R.C.s and S.O.s. The worst case is reported with RC3/SO55 with 'All Up'power control bits.

EIRP(dB) = Level at Antenna Terminal(dBm) + Antenna Gain(dBi)

8.4 Radiated Spurious & Harmonic Emission (Cellular)

FCC §2.1053, §22.917(a), RSS-132(4.5.1)

CH 1013 (824.70 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1648.20	V	-65.2	-63.5	4.17	-59.3	-13	46.3
2474.40	V	-65.5	-61.0	6.34	-54.7	-13	41.7
3297.00	V	-64.6	-59.8	6.99	-52.8	-13	39.8
3461.25	V	-63.8	-58.4	7.20	-51.2	-13	38.2
3478.50	V	-59.6	-54.1	7.22	-46.9	-13	33.9

Radiated Measurements at 3meters

CH 384 (836.52 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1669.35	H	-64.3	-65.0	6.32	-58.7	-13	45.7
2194.95	H	-65.1	-60.8	8.49	-52.3	-13	39.3
2509.95	V	-66.0	-64.1	9.14	-55.0	-13	42.0
3345.75	V	-64.0	-61.9	9.35	-52.5	-13	39.5

Radiated Measurements at 3meters

CH 777 (848.31 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1380.90	H	-63.0	-60.7	4.85	-55.8	-13	42.8
1698.60	H	-64.6	-65.5	6.59	-58.9	-13	45.9
2543.25	V	-65.2	-63.0	8.52	-54.5	-13	41.5
3393.00	V	-64.0	-61.6	9.26	-52.3	-13	39.3

Radiated Measurements at 3meters

Note: Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2..4, Aug. 17, 2004.

This device was tested under all R.C.s and S.O.s. The worst case is reported with RC3/SO55 with 'All Up'power control bits.

ERP(dB) =Level at Antenna Terminal(dBm) + Antenna Gain(dBd)

1. **Ant Pol. H =Horizontal V=Vertical*
2. *For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz with peak measurements*
3. *The spectrum is measured to 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.*

8.5 Radiated Spurious & Harmonic Emission (PCS)

FCC §2.1053, §24.238(a), RSS-133(6.5.1)

CH25 (1851.25 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
2282.00	H	-62.6	-57.7	8.39	-49.3	-13	36.3
2663.00	H	-63.2	-58.8	8.58	-50.2	-13	37.2
3703.13	V	-62.5	-58.6	9.65	-48.9	-13	35.9
5065.63	H	-65.1	-56.2	10.02	-46.2	-13	33.2
5553.75	V	-65.2	-57.1	10.57	-46.5	-13	33.5
7401.88	V	-65.0	-48.8	9.36	-39.4	-13	26.4

Radiated Measurements at 3meters

CH 600 (1880.00 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
2957.00	V	-62.9	-57.9	8.52	-49.4	-13	36.4
3760.00	V	-63.6	-59.1	9.73	-49.4	-13	36.4
5639.38	V	-66.4	-58.5	10.67	-47.8	-13	34.8
7006.88	V	-64.4	-50.4	9.69	-40.7	-13	27.7
7425.00	V	-65.3	-49.0	9.34	-39.7	-13	26.7
7572.50	H	-65.0	-49.1	9.21	-39.9	-13	26.9

Radiated Measurements at 3meters

CH 1175 (1908.75 MHz)

Frequency (MHz)	Ant*. Pol.	Reading (dBm)	Level at Antenna Terminal (dBm)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
3816.25	V	-52.6	-48.1	9.80	-38.3	-13	25.3
3977.50	V	-52.9	-48.3	10.00	-38.3	-13	25.3
4000.00	H	-63.7	-58.9	10.03	-48.9	-13	35.9
5498.13	V	-65.0	-56.9	10.51	-46.4	-13	33.4

Radiated Measurements at 3meters

Note: Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2..4, Aug. 17, 2004.

This device was tested under all R.C.s and S.O.s. The worst case is reported with RC3/SO55 with 'All Up'power control bits.

ERP(dB) =Level at Antenna Terminal(dBm) + Antenna Gain(dBd)

1. **Ant Pol. H =Horizontal V=Vertical*
2. *For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz with peak measurements*
3. *The spectrum is measured to 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.*

8.6 Receiver Spurious Emissions

RSS-Gen(6.1), RSS-132(4.6), RSS-133(6.6)

Frequency (MHz)	Reading (dBμV/m)	Pol* (H/V)	Antenna Height (cm)	Turntable Angles (°)	AF+CL+Amp (dB)**	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
50.79	43.4	V	107	220	-16.6	26.8	40.0	13.2
64.64	51.2	V	102	33	-17.1	34.1	40.0	5.9
96.51	48.1	H	358	277	-20.7	27.4	40.0	12.6
657.73	39.9	H	377	240	-6.5	33.4	46.0	12.6
732.56	36.0	H	351	110	-5.1	30.9	46.0	15.1
792.14	38.0	H	385	172	-5.1	32.9	46.0	13.1

Radiated Measurements at 3 meters

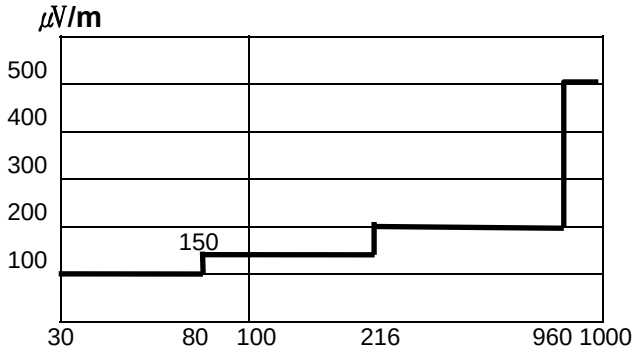

Fig. 5. Limits at 3 meters

Notes:

1. All modes were measured and the worst-case emission was reported.

2 The radiated limits are shown on Figure 5. Above 1 GHz the limit is 500 μV/m.

Notes:

*1. *Pol. H = Horizontal, V = Vertical*

*2. **AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.*

3. Measurements using CISPR quasi-peak mode.

4. The limit is on the IC RSS GEN Clause 6.1.

9. ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of measurement uncertainty contained in CISPR 16-4-2 with the confidence level of 95%

1. Conducted Uncertainty Calculation

Source of Uncertainty	*Xi*	Uncertainty of *Xi*		Coverage factor *k*	*u(Xi)* (dB)	*Ci*	*Ci u(Xi)* (dB)
		Value (dB)	Probability Distribution				
Receiver reading	***RI***	± 0.1	normal 1	1.000	0.1	1	0.1
Attenuation AMN-Receiver	***LC***	± 0.08	normal 2	2.000	0.04	1	0.04
AMN Voltage division factor	***LAMN***	± 0.8	normal 2	2.000	0.4	1	0.4
Sine wave voltage	***dVSW***	± 2.00	normal 2	2.000	1.00	1	1.00
Pulse amplitude response	***dVPA***	± 1.50	rectangular	1.732	0.87	1	0.87
Pulse repetition rate response	***dVPR***	± 1.50	rectangular	1.732	0.87	1	0.87
Noise floor proximity	***dVNF***	± 0.00	-	-	0.00	1	0.00
AMN Impedance	***dZ***	± 1.80	triangular	2.449	0.73	1	0.73
ⓐ Mismatch	***M***	+ 0.70	U-Shaped	1.414	0.49	1	0.49
ⓑ Mismatch	***M***	- 0.80	U-Shaped	1.414	- 0.56	1	- 0.56
Measurement System Repeatability	***RS***	0.05	normal 1	1.000	0.05	1	0.05
Remark	ⓐ: AMN-Receiver Mismatch : + ⓑ: AMN-Receiver Mismatch : -						
Combined Standard Uncertainty	Normal			± 1.88			
Expended Uncertainty U	Normal (k = 2)			± 3.76			

2. Radiation Uncertainty Calculation

Source of Uncertainty	*Xi*	Uncertainty of *Xi*		Coverage factor *k*	*u(Xi)* (dB)	*Ci*	*Ci u(Xi)* (dB)
		Value (dB)	Probability Distribution				
Receiver reading	***RI***	± 0.10	normal 1	1.000	0.10	1	0.10
Sine wave voltage	***dVsw***	± 2.00	normal 2	2.000	1.00	1	1.00
Pulse amplitude response	***dVpa***	± 1.50	rectangular	1.732	0.87	1	0.87
Pulse repetition rate response	***dVpr***	± 1.50	rectangular	1.732	0.87	1	0.87
Noise floor proximity	***dVnf***	± 0.50	normal 2	2.000	0.25	1	0.25
Antenna Factor Calibration	***AF***	± 1.50	normal 2	2.000	0.75	1	0.75
Attenuation Antenna-receiver	***CL***	± 0.52	normal 2	2.000	0.26	1	0.26
Antenna Directivity	***AD***	± 1.00	rectangular	1.732	0.58	1	0.58
Antenna Factor Height Dependence	***AH***	± 0.50	rectangular	1.732	0.29	1	0.29
Antenna Phase Centre Variation	***AP***	± 0.30	rectangular	1.732	0.17	1	0.17
Antenna Factor Frequency Interpolation	***AI***	± 0.30	rectangular	1.732	0.17	1	0.17
Site Imperfections	***SI***	± 4.00	triangular	2.449	1.63	1	1.63
Measurement Distance Variation	***DV***	± 0.10	rectangular	1.732	0.06	1	0.06
Antenna Balance	***Dbal***	± 0.90	rectangular	1.732	0.52	1	0.52
Cross Polarisation	***DCross***	± 0.90	rectangular	1.732	0.52	1	0.52
ⓐ Mismatch	***M***	+ 0.25	U-Shaped	1.414	0.18	1	0.18
ⓑ Mismatch	***M***	- 0.26	U-Shaped	1.414	- 0.18	1	- 0.18
ⓒ Mismatch	***M***	+ 0.98	U-Shaped	1.414	0.69	1	0.69
ⓓ Mismatch	***M***	- 1.11	U-Shaped	1.414	- 0.79	1	- 0.79
Measurement System Repeatability	***RS***	0.09	normal 1	1.000	0.09	1	0.09
Remark	ⓐ: Biconical Antenna-receiver Mismatch : + (< 200 MHz) ⓑ: Biconical Antenna-receiver Mismatch : - (< 200 MHz) ⓒ: Log Periodic Antenna-receiver Mismatch : + (≧ 200 MHz) ⓓ: Log Periodic Antenna-receiver Mismatch : - (≧ 200 MHz)						
Combined Standard Uncertainty	Normal			± 2.63 (< 200 MHz) ± 2.74 (≧200 MHz)			
Expended Uncertainty U	Normal (*k* = 2)			± 5.26 (< 200 MHz) ± 5.48 (≧200 MHz)			

10. Test Equipment List

No.	Instrument	Manufacturer	Model	Serial No.	Calibration Date	Calibration Interval
1	*Test Receiver	R & S	ESCS 30	833364/020	Mar. 24 2010	1 year
2	Test Receiver	R & S	ESCS 30	100302	Nov. 10 2010	1 year
3	*Amplifier	HP	8447F	2805A03427	Jul. 20 2010	1 year
4	*Amplifier	Sonoma Instrument	310N	291916	Jul. 20 2010	1 year
5	*Amplifier	R & S	SCU-26	10011	Jun. 11 2010	1 year
6	*Pre Amplifier	HP	8449B	3008A00107	Feb. 03 2010	1 year
7	*Pre Amplifier	HP	8447F	2805A03351	Oct. 06 2010	1 year
8	*Wireless Communcation Test Set	Agilent	E5515C	MY48360948	Feb. 05 2010	1 year
9	*Signal Generator	R & S	SMP02	833286/003	Jul. 20 2010	1 year
10	*Spectrum Analyzer	Agilent	E4440A	MY44303257	Jul. 20 2010	1 year
11	*Spectrum Analyzer	R & S	FSP40	100361	Sep. 02 2010	1 year
12	*Loop Antenna	EMCO	6502	8911-2436	Jan. 19 2010	2 year
13	*Biconical Log Antenna	ARA	LPB-2520/A	1180	Apr. 14 2010	2 year
14	*Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-508	Dec. 24 2010	2 year
15	*Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-474	Jul. 14 2010	2 year
16	*Horn Antenna	Q-par Angus	QSH20S20	8179	Apr. 12 2010	2 year
17	*Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-257	Apr. 14 2010	2 year
18	*Directional Coupler	HP	778D	15550	Feb. 03 2010	1 year
19	LISN	R & S	ESH3-Z5	833874/006	Nov. 10 2010	1 year
20	LISN	R & S	ESH2-Z5	100227	Feb. 03 2010	1 year
21	*Position Controller	DAEIL EMC	N/A	N/A	N/A	N/A
22	*Turn Table	DAEIL EMC	N/A	N/A	N/A	N/A
23	*Antenna Mast	DAEIL EMC	N/A	N/A	N/A	N/A
24	*Anechoic Chamber	EM Eng.	N/A	N/A	N/A	N/A
25	*Shielded Room	EM Eng.	N/A	N/A	N/A	N/A
26	*Position Controller	Seo-Young EMC	N/A	N/A	N/A	N/A
27	*Turn Table	Seo-Young EMC	N/A	N/A	N/A	N/A
28	*Antenna Mast	Seo-Young EMC	N/A	N/A	N/A	N/A
29	*Anechoic Chamber	Seo-Young EMC	N/A	N/A	N/A	N/A
30	*Shielded Room	Seo-Young EMC	N/A	N/A	N/A	N/A