FCC EVALUATION REPORT FOR CERTIFICATION

Manufacturer: OHSUNG ELECTRONICS CO., LTD.
#181 Gongdan-dong, Gumi-si, Gyeongbuk,
Republic of Korea
Attn: Mr. Hak-Ki Kim / General Manager

Date of Issue: February 19, 2013
Order Number: GETEC-C1-12-377
Test Report Number: GETEC-E3-12-138
Test Site: GUMI COLLEGE EMC CENTER
FCC Registration Number: (100749, 443957)

FCC ID. : OZ5URCTRFGE1

Applicant : OHSUNG ELECTRONICS CO., LTD.

Rule Part(s)	**: FCC Part 15 Subpart C-Intentional Radiator § 15.247**
Test Method	**: ANSI C63.10 (2009)**
Equipment Class	**: Digital Transmission System(DTS)**
EUT Type	**: Base Station**
Type of Authority	**: Certification**
Model Name	**: TRF-GE1**
Trade Name	**: UNIVERSAL Remote Control**

This equipment has been shown to be in compliance 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 (2009)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the vest 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.

Tested by,

Seung-Chul Lee, Associate Engineer
GUMI COLLEGE EMC CENTER

Reviewed by,

Jae-Hoon Jeong, Technical Manager
GUMI COLLEGE EMC CENTER

CONTENTS

Scope: *Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and / or unintentional radiators for compliance with technical rules and regulations of the Federal Communications Commission.*

1. General Information

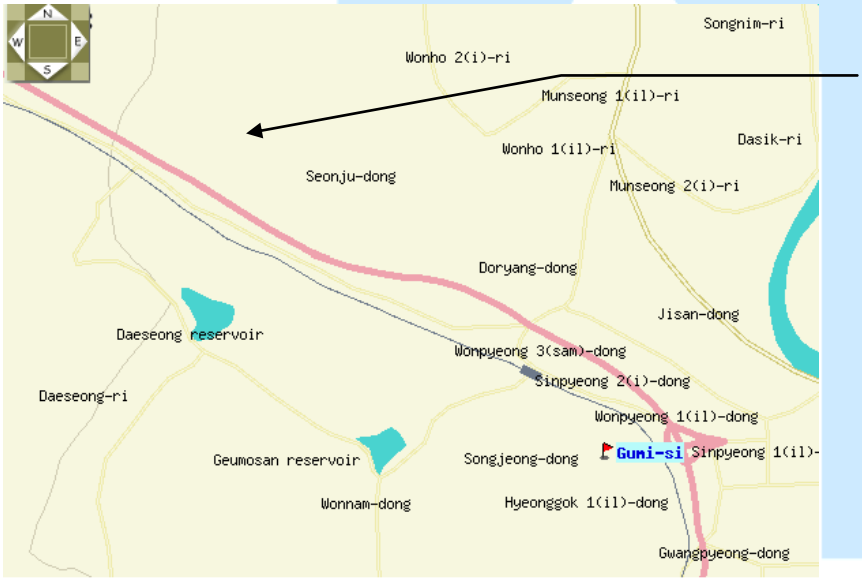
Applicant: OHSUNG ELECTRONICS CO., LTD.
Applicant Address: #181 Gongdan-dong, Gumi-si, Gyeongbuk, Republic of Korea
Manufacturer: OHSUNG ELECTRONICS CO., LTD.
Manufacturer Address: #181 Gongdan-dong, Gumi-si, Gyeongbuk, Republic of Korea
Contact Person: Mr. Hak-Ki Kim / General Manager
Tel. Number: +82-54-468- 0831 Fax Number: +82-54- 461- 8368

- **FCC ID.** OZ5URCTRFGE1
- **Equipment Class** Digital Transmission System (DTS)
- **EUT Type** Base Station
- **Model Name** TRF-GE1
- **Rule Part(s)** FCC Part 15, Subpart C-Intentional Radiator § 15.247
- **Test Method** ANSI C63.10 (2009)
- **Type of Authority** Certification
- **Test Procedure(s)** ANSI C63.4 (2009)
- **Dates of Test** January 2 ~ February 19, 2013
- **Place of Test** **GUMI COLLEGE EMC CENTER** (FCC Registration No.: 100749, 443957)
  37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 730-711, Republic of Korea
- **Test Report Number** GETEC-E3-12-138
- **Dates of Issue** February 19, 2013

2. Introduction

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Nose Emissions From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2009) was used in determining radiated and conducted emissions emanating from **OHSUNG ELECTRONICS CO., LTD. Base Station (Model name: TRF-GE1)**

These measurement tests were conducted at **GUMI COLLEGE EMC CENTER**.
The site address is 37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 730-711, Republic of Korea
This test site is one of the highest point of Gumi 1 college at about 200 kilometers away from Seoul city and 40 kilometers away from Daege city. 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 (2009)



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37 Yaeun-ro, Gumi-si,
Gyeongsangbuk-do, 730-711,
Republic of Korea
Tel: +82-54-440-1195
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Fig 1. The map above shows the Gumi College in vicinity area.

3. Product Information

3.1 Description of EUT

The Equipment under Test (EUT) is the **OHSUNG ELECTRONICS CO., LTD.**
Base Station (Model Name: TRF-GE1) FCC ID.: OZ5URCTRFGE1

Microprocessor: ARM32-bit Cortex- M3(120MHz)

Power Supply: 12V DC 1A

RAM: 128Mbyte Mobile DDR

RF Range(radio frequency): 50 to 100 feet, depending upon the environment

RF Freqency: 2.425~2.475 GHz

NAND: 128Mbyte

FLASH: 768Kbytes

SRAM: 128 + 4 Kbyte

Weight: 3.058 oz

Size: 3.74" X 2.7" X 1.1"

Power: 12V DC 1A

-. Crystal & Clock Frequency : RF module: 32 MHz
Main board: 50 MHz (Oscillator), 25 MHz, 32.768 kHz

3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID.
None.	-	-	S/N: - FCC ID.: -

See "Appendix E – Test Setup Photographs" for actual system test set-up

3.2.2 System configuration

Description	Manufacturer	Model Name	S/N & FCC ID.
Adapter[1)]	HONKWANG ELECTRIC CO., LTD.	HK-R112-A12	S/N: None. FCC ID.: N/A

1) Input ratings: AC (100 – 240) V, (50/60) Hz / Output ratings: DC 12 V, 1.0 A

3.2.3 Used Cable(s)

Cable Name	Condition	Description
Adapter cable	Connected to the EUT and adapter	1.80 m unshielded

3.3 Modification Item(s)

-. None

4. Description of tests

4.1 Test Condition

The EUT was installed, arranged and operated in a manner that is most representative of equipment as typically used.

The measurements were carried out while varying operating modes and cable positions within typically arrangement to determine maximum emission level.

The representative and worst test mode(s) were noted in the test report.

- Test Voltage / Frequency: AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)

- Test Mode(s):
  Executed "SmartRF Studio 7 (Copyright by Texas Instruments Incorporated)" to control the EUT continuously transmit RF signal

Test Software Version	SmartRF Studio 7 V1.10.3		
Frequency	2 425 MHz	2 450 MHz	2 475 MHz
Transmit power level	4.5 dBm	4.5 dBm	4.5 dBm

5. Antenna Requirement - §15.203

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the applicant can be used with the device. The use of permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with this requirement.

5.1 Description of Antenna

The **OHSUNG ELECTRONICS CO., LTD. RF Transmitter Universal Remote Control** comply with the requirement of §15.203 with a PCB pattern antenna permanently attached to the transmitter.

5.2 Conducted Emission

The Line conducted emission test facility is inside a 4 m × 8 m × 2.5 m shielded enclosure. (FCC Registration No.: 100749)
The EUT was placed on a non-conducting 1.0 m by 1.5 m table, which is 0.8 m in height and 0.4 m away from the vertical wall of the shielded enclosure.
The EUT is powered from the Rohde & Schwarz LISN (ESH2-Z5) and the support equipment is powered from the Rohde & Schwarz LISN (ESH3-Z5). Powers to the LISN are filtered by high-current high insertion loss power line filter.
Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.
The RF output of the LISN was connected to the EMI test receiver (Rohde & Schwarz, ESCS30).
Exploratory measurements were conducted to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.
Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Exploratory measurements were scanned using Peak mode of EMI Test receiver from 150 kHz to 30 MHz with 20 ms sweep time. The final measurements were measured with Quasi-Peak and Average mode.
The bandwidth of EMI Test Receiver was set to 9 kHz. Interface cables were connected to the available interface ports of the test unit. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

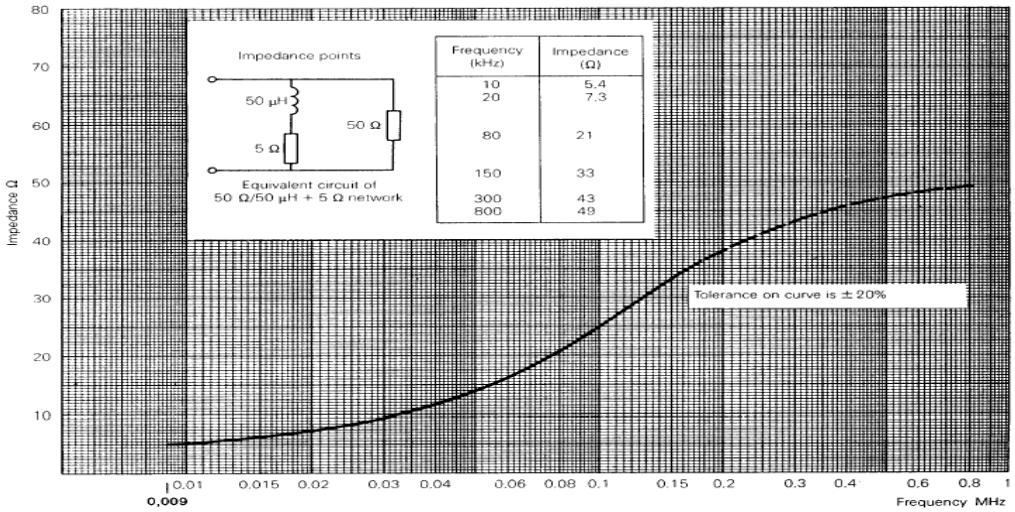


Fig 2. Impedance of LISN

5.3 Radiated Emission

Exploratory Radiated measurements were conducted at the 3m semi anechoic chamber in order to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.
Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Final measurements of below 1GHz were made at 3m Chamber (FCC Registration No.: 443957) or Open area test site (FCC Registration No.: 100749) that complies with CISPR 16/ANSI C63.4.
Above 1GHz final measurements were conducted at the 3m Chamber (FCC Registration No.: 443957) only.

For measurements above 1GHz, the bottom side of 3m chamber was installed with absorbers in order to meet SVSWR Limit.
Exploratory measurements were scanned using Peak mode of EMI Test receiver and final measurements were measured with Quasi-Peak mode (Below 1GHz) and Peak & Average mode (Above 1GHz).

The measurements were performed by rotating the EUT 360° and adjusting the receive antenna height from 1.0 m to 4.0 m. All frequencies were investigated in both horizontal and vertical antenna polarity.

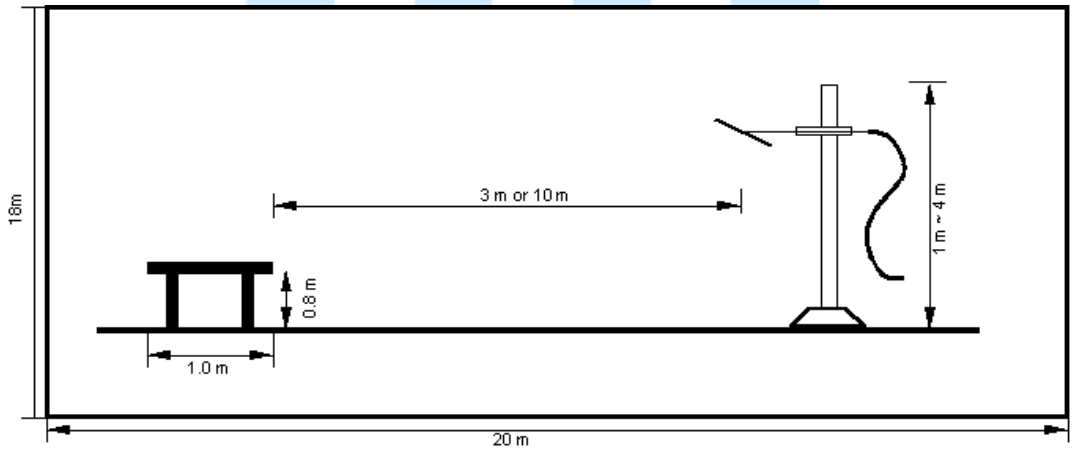


Fig 3. Dimensions of test site (Below 1GHz)

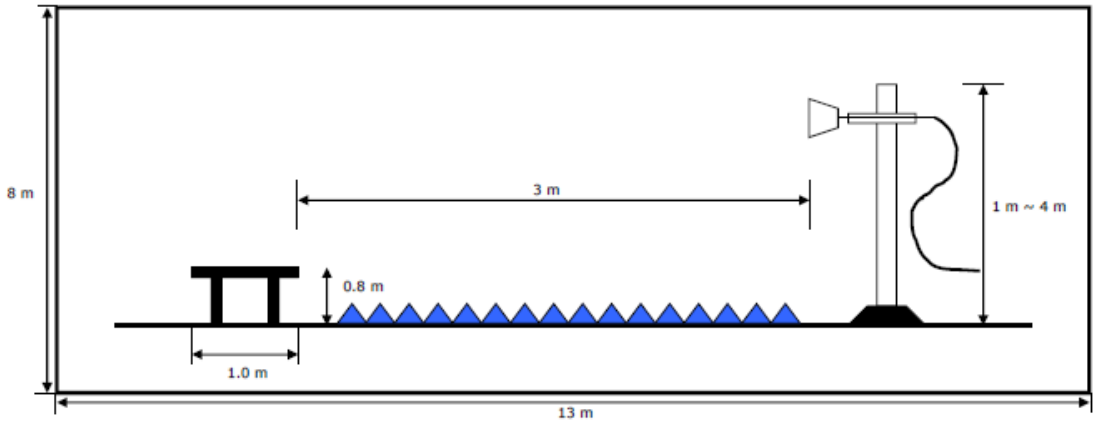


Fig 4. Dimensions of test site (Above 1GHz)

6. Conducted Emission

6.1 Operating Environment

Temperature : 23.0 °C
Relative Humidity : 43.0 % R.H.

6.2 Test Set-up

The conducted emission measurements were performed in the shielded room.
The EUT was placed on wooden table, 0.8 m heights above the floor, 0.4 m from the reference ground plane (GRP) wall and 0.8 m from AMN & ISN.
AMN is bonded on horizontal reference ground plane.
The ground plane, which was electrically bonded to the shield room, ground system and all power lines entering the shield room, were filtered.

6.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement.”
The measurement uncertainty was given with a confidence of 95 %.

Test Items	Uncertainty	Remark
Conducted emission (9 kHz ~ 150 kHz)	± 2.74 dB	Confidence levels of 95 % (k = 2)
Conducted emission (150 kHz ~ 30 MHz)	± 4.25 dB	Confidence levels of 95 % (k = 2)

6.4 Limit

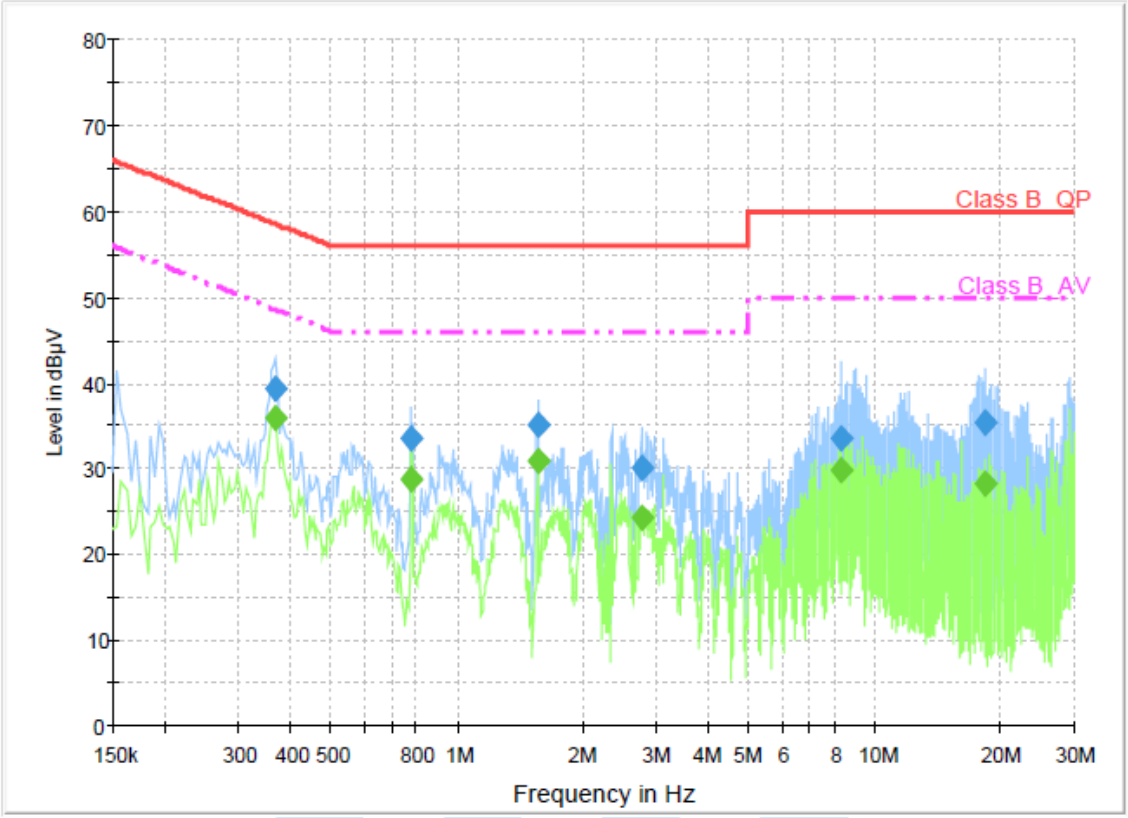
RFI Conducted	FCC Limit(dBμV/m) Class B	
Freq. Range	Quasi-Peak	Average
150 kHz ~ 0.5 MHz	66 ~ 56*	56 ~ 46*
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50
*Limits decreases linearly with the logarithm of frequency.		

6.5 Test Equipment used

	Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ -	ESCS30	Rohde & Schwarz	EMI test receiver	839809/003	05. 22. 2013
☐-	ESH3-Z5	Rohde & Schwarz	LISN	838979/020	05. 23. 2013
■ -	ESH2-Z5	Rohde & Schwarz	LISN	829991/009	05. 23. 2013
☐ -	ISN T8	TESEQ. GmbH	ISN	24568	07. 04. 2013

6.6 Test data for Conducted Emission

-. Test Date : January 14, 2013
-. Reference Standard : Part 15 Subpart C, Sec. 15.207
-. Operating Condition (Worst Case) : RF transmitting mode (Low: 2 425 MHz)
-. Frequency rage : 0.15MHz ~ 30 MHz



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.368000	39.3	1000.0	9.000	GND	N	10.1	19.2	58.5	
0.776000	33.6	1000.0	9.000	GND	N	10.1	22.4	56.0	
1.560000	35.2	1000.0	9.000	GND	N	10.1	20.8	56.0	
2.772000	30.0	1000.0	9.000	GND	N	10.1	26.0	56.0	
8.324000	33.5	1000.0	9.000	GND	L1	10.1	26.5	60.0	
18.304000	35.4	1000.0	9.000	GND	L1	10.4	24.6	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.368000	36.0	1000.0	9.000	GND	N	10.1	12.6	48.5	
0.776000	28.7	1000.0	9.000	GND	N	10.1	17.3	46.0	
1.560000	31.0	1000.0	9.000	GND	N	10.1	15.0	46.0	
2.772000	24.2	1000.0	9.000	GND	N	10.1	21.8	46.0	
8.324000	29.7	1000.0	9.000	GND	L1	10.1	20.3	50.0	
18.304000	28.2	1000.0	9.000	GND	L1	10.4	21.8	50.0	

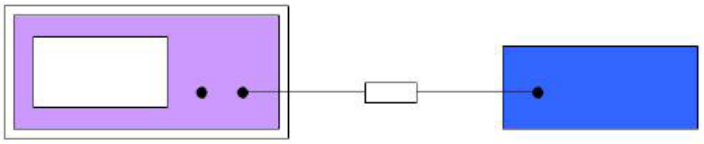
< Fig 5. Conducted emission result >

7. Maximum Peak Output Power Measurement

7.1 Operating environment

Temperature : 22.0 °C
Relative Humidity : 43.0 % R.H.

7.2 Test Set-up (Layout)



7.3 Limit

For systems using digital modulation in the (2 400~2 483.5) MHz, the limit for peak output power is 30 dBm The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

7.4 Test Equipment used

	Model Number	Manufacturer	Description	Serial Number	Due to Calibration
■ -	FSP	Rohde & Schwarz	Spectrum Analyzer	101431	04. 26. 2013

7.5 Test Result

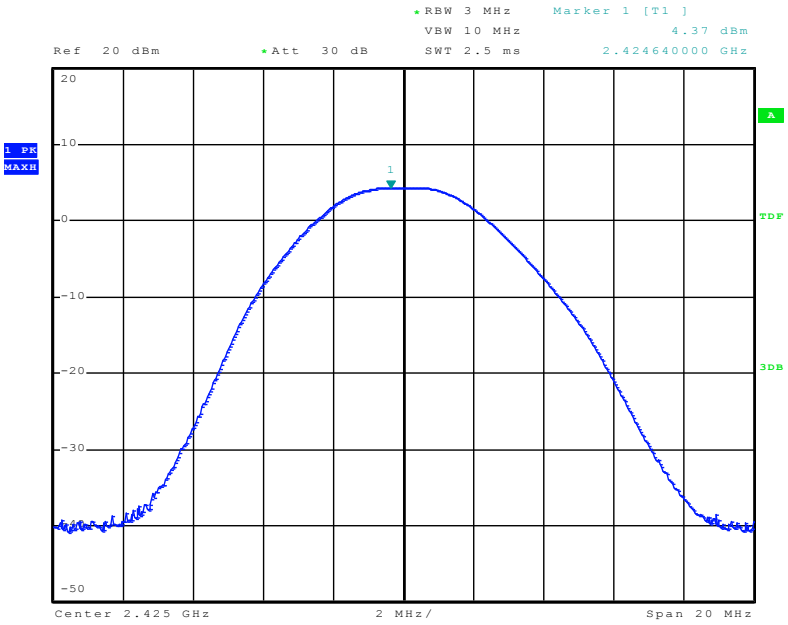
-. Test Date : February 18, 2013
-. Reference Standard : Part 15 Subpart C, Sec. 15.247(b)(3) / ANSI C63.10 Clause 6.10.2.1 (a)
-. Operating Condition : RF transmitting mode (Low: 2 425 MHz, Middle: 2 450 MHz, High: 2 475 MHz)
-. Power Source : AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)

Parameter
-. Resolution bandwidth : 3 MHz
-. Video bandwidth : 10 MHz
-. Sweep time : Auto
-. Span frequency : 20 MHz
-. Detector : Peak
-. Trace mode : Max. Hold

Configuration

Frequency (MHz)	Peak Conducted Power (dBm)	Peak Conducted Power (mW)	Max. Limit (dBm)	Result
2 425	4.37	2.74	30.00	Complies
2 450	4.21	2.64	30.00	Complies
2 475	4.11	2.58	30.00	Complies

Maximum Peak Output Power Plot on configuration / 2 425 MHz



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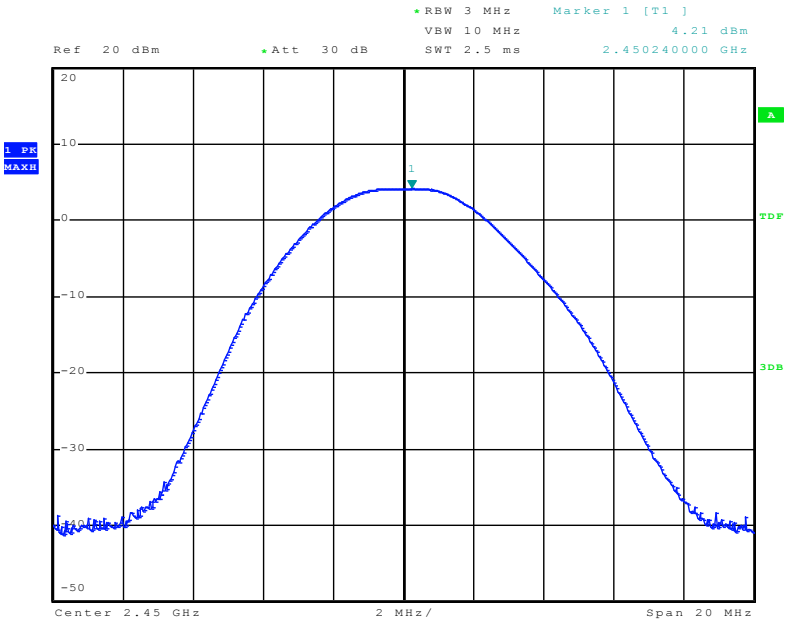
Maximum Peak Output Power Plot on configuration / 2 450 MHz



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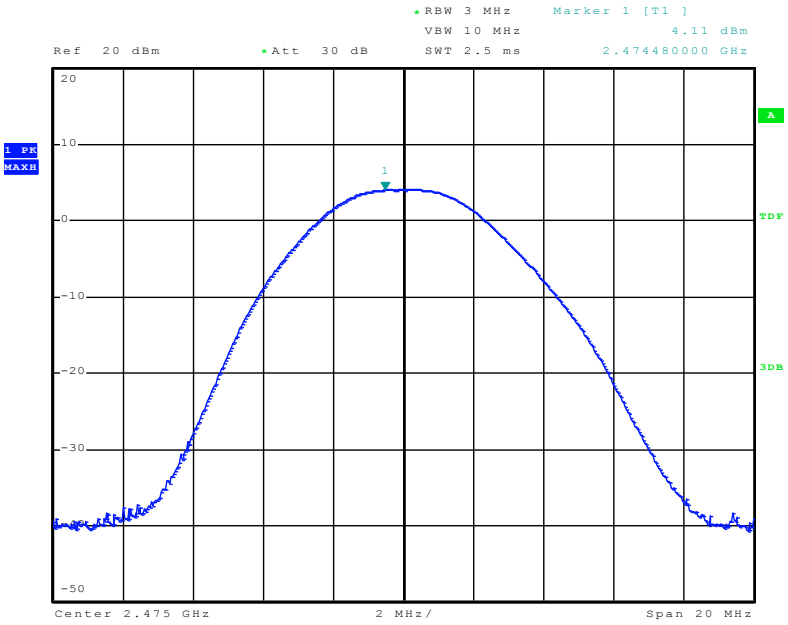
Maximum Peak Output Power Plot on configuration / 2 475 MHz



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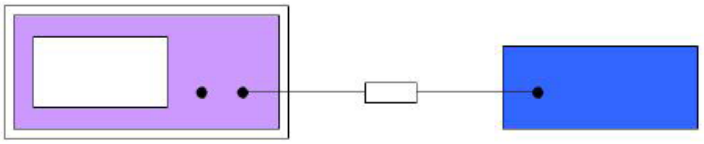
8. Power Spectral Density Measurement

8.1 Operating Environment

Temperature : 22.0 °C
Relative Humidity : 43.0 % R.H.

8.2 Test Set-up (Layout)



8.3 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

8.4 Test Equipment used

	Model Number	Manufacturer	Description	Serial Number	Due to Calibration
■ -	FSP	Rohde & Schwarz	Spectrum Analyzer	101431	04. 26. 2013

7.5 Test Result

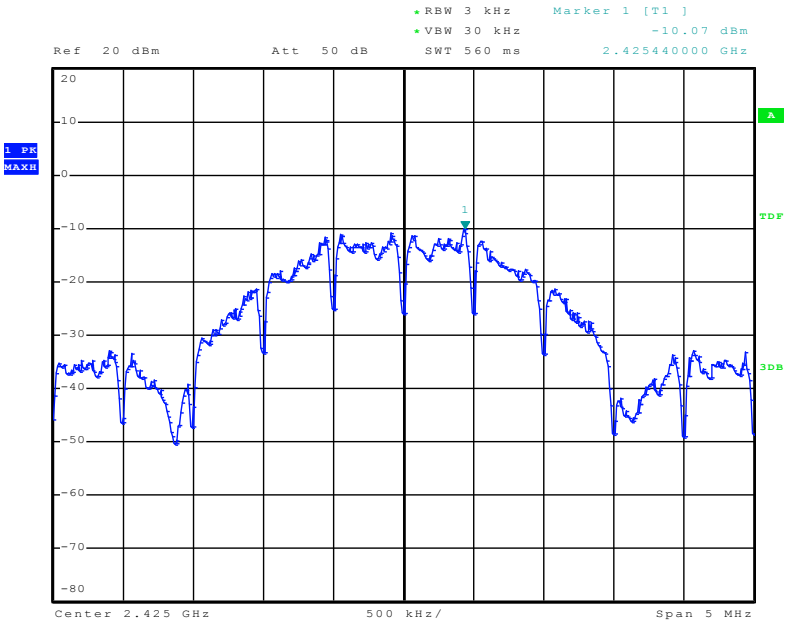
-. Test Date : February 18, 2013
-. Reference Standard : Part 15 Subpart C, Sec. 15.247(e)
-. Operating Condition : RF transmitting mode (Low: 2 425 MHz, Middle: 2 450 MHz, High: 2 475 MHz)
-. Power Source : AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)

Spectrum Parameter
-. Resolution bandwidth : 3 kHz
-. Video bandwidth : 30 kHz
-. Sweep time : Auto
-. Span frequency : 5 MHz
-. Detector : Peak
-. Trace mode : Max. Hold

Configuration

Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
2 425 MHz	- 10.07	8.00	Complies
2 450 MHz	- 10.82	8.00	Complies
2 475 MHz	- 11.25	8.00	Complies

Power Density Plot on configuration / 2 425 MHz



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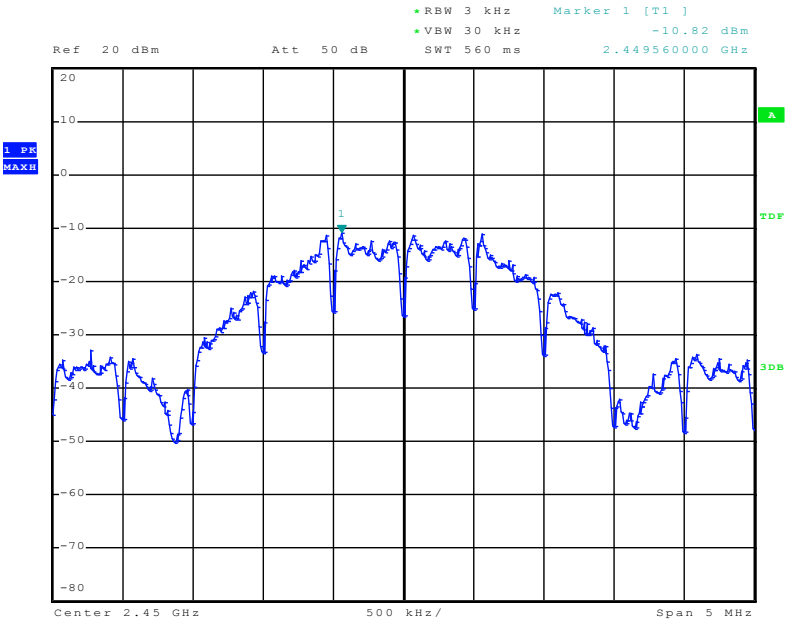
Power Density Plot on configuration / 2 450 MHz



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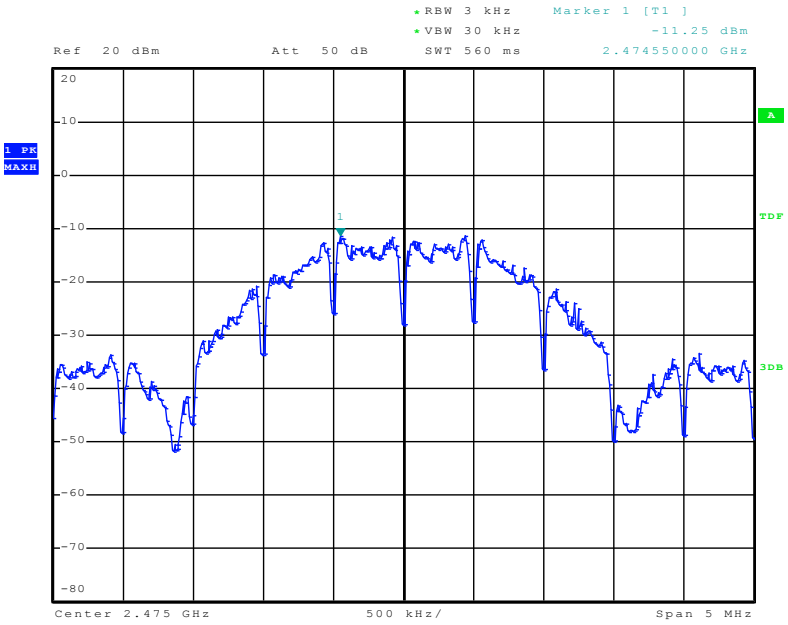
Power Density Plot on configuration / 2 475 MHz



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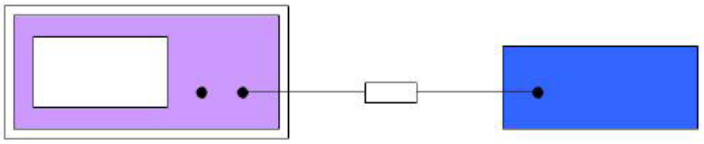
9. 6 dB Spectrum bandwidth Measurement

9.1 Operating environment

Temperature : 22.0 °C
Relative Humidity : 43.0 % R.H.

9.2 Test Set-up (Layout)



9.3 Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

9.4 Test Equipment used

	Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ -	FSP	Rohde & Schwarz	Spectrum Analyzer	101431	04. 26. 2013

9.5 Test result

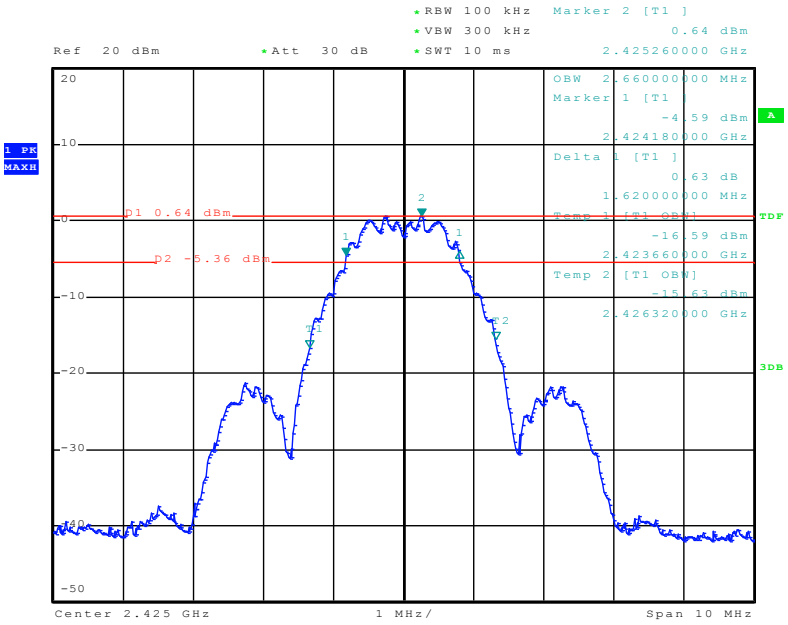
-. Test Date : February 18, 2013
-. Reference Standard : Part 15 Subpart C, Sec. 15.247(a)(2)
-. Operating Condition : RF transmitting mode (Low: 2 425 MHz, Middle: 2 450 MHz, High: 2 475 MHz)
-. Power Source : AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)

Spectrum Parameter
-. Resolution bandwidth : 100 kHz
-. Video bandwidth : 300 kHz
-. Sweep time : Auto
-. Span frequency : 10 MHz
-. Detector : Peak
-. Trace mode : Max. Hold

Configuration

Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied bandwidth (MHz)	Min. Limit (kHz)	Result
2 425	1.62	2.66	500	Complies
2 450	1.62	2.64	500	Complies
2 475	1.60	2.64	500	Complies

6 dB Bandwidth Plot on Configuration / 2 425 MHz



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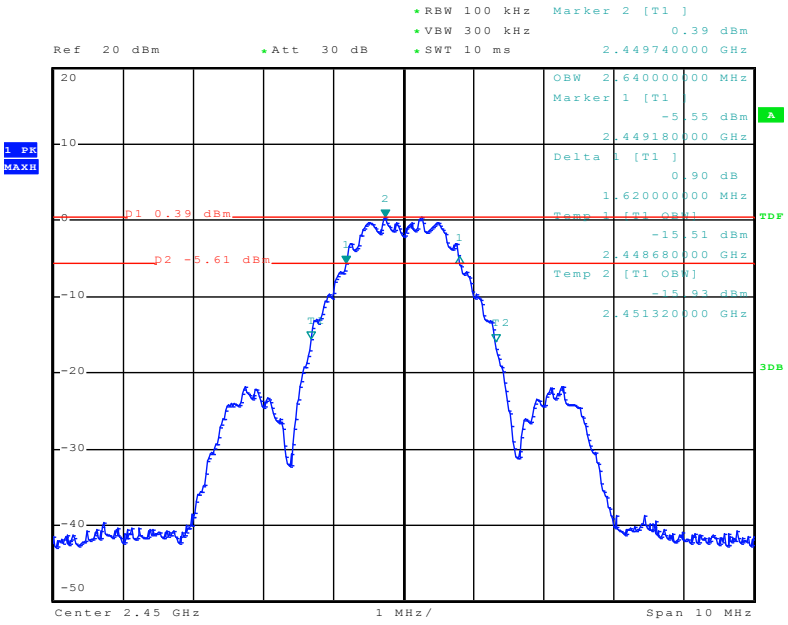
6 dB Bandwidth Plot on Configuration / 2 450 MHz



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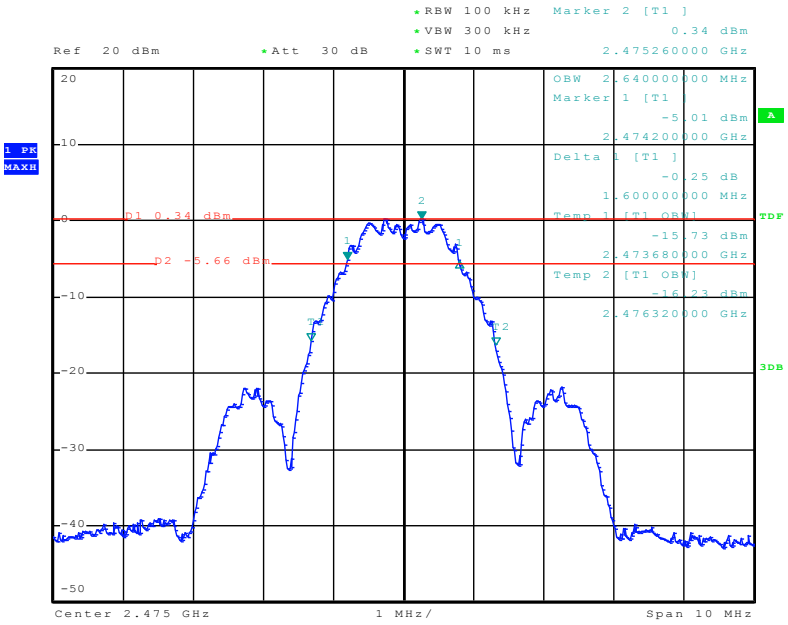
6 dB Bandwidth Plot on Configuration / 2 475 MHz



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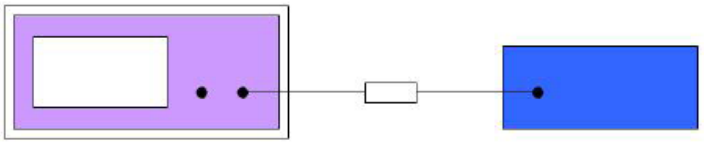
10. Band Edge Measurement

10.1 Operating environment

Temperature : 22.0 °C
Relative Humidity : 41.0 % R.H.

10.2 Test set-up (Lay-out)



10.3 Limit

Below -20 dB of the highest emission level of operating band (in 100 kHz resolution band width)

10.4 Test equipment used

	Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ -	FSP	Rohde & Schwarz	Spectrum Analyzer	101431	04. 26. 2013

10.5 Test Result

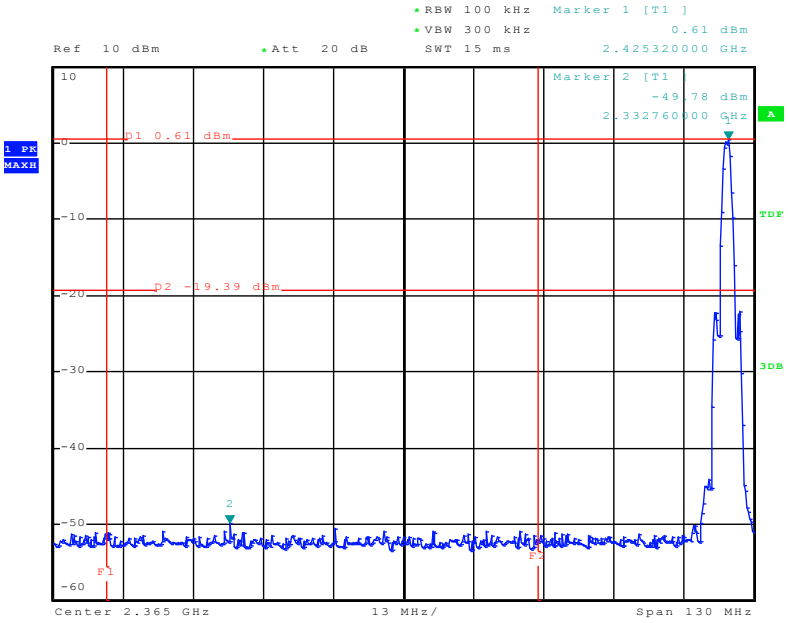
-. Test Date : January 11 ~ February 19, 2013
-. Reference standard : Part 15 Subpart C, Sec. 15.247(d)
-. Operating condition : RF transmitting mode (Low: 2 425 MHz, High: 2 475 MHz)
-. Power Source : AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)

The spectrum plots are attached on the following 8 images, D1 line indicates the highest level, D2 line indicates the 20 Db offset below D1. It shows compliance with the requirement in part 15.247(d)

Spectrum Parameter
-. Resolution bandwidth : 100 kHz
-. Video bandwidth : 300 kHz
-. Sweep time : Auto
-. Detector : Peak
-. Trace mode : Max. Hold

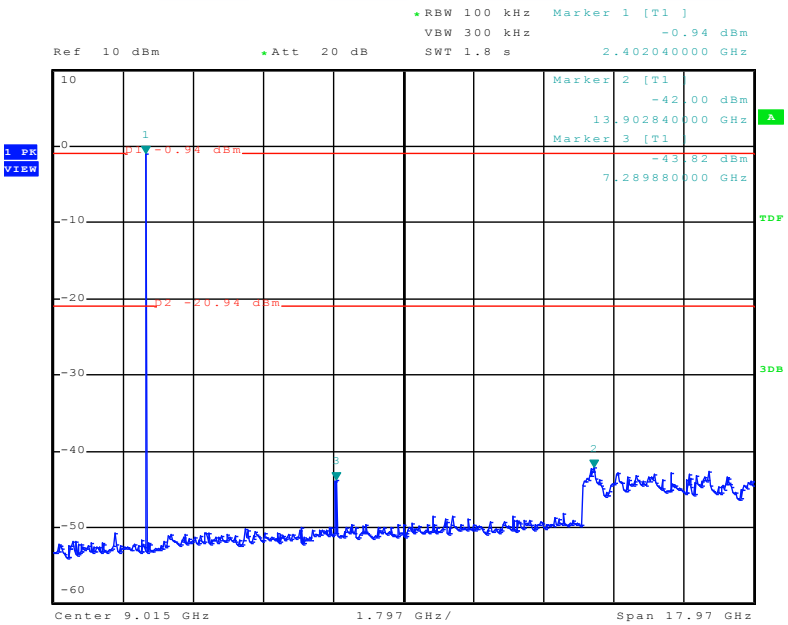
For Emission not in Restricted Band

Low Band Edge Plot on Configuration / 2 425 MHz



Date: 19.FEB.2013 09:31:26

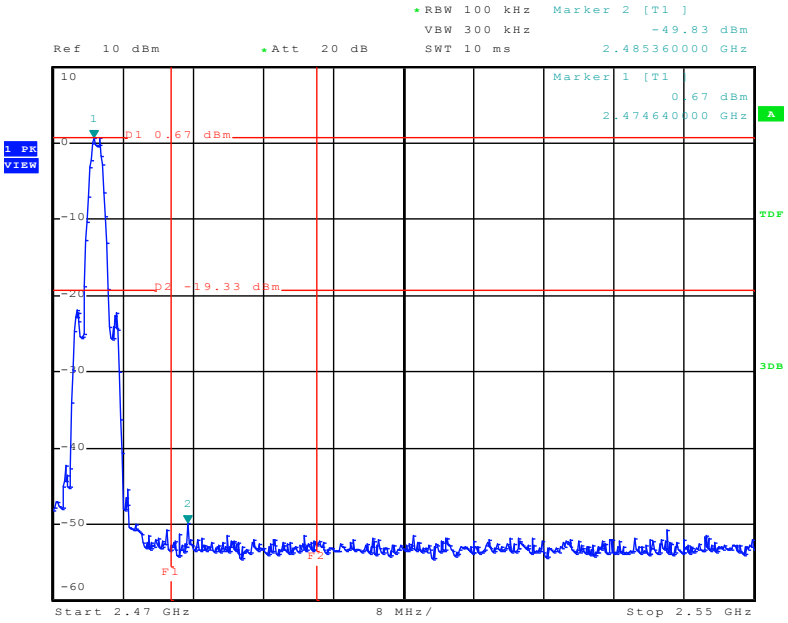
High Band Edge Plot on Configuration / 2 425 MHz



Date: 11.JAN.2013 14:00:56

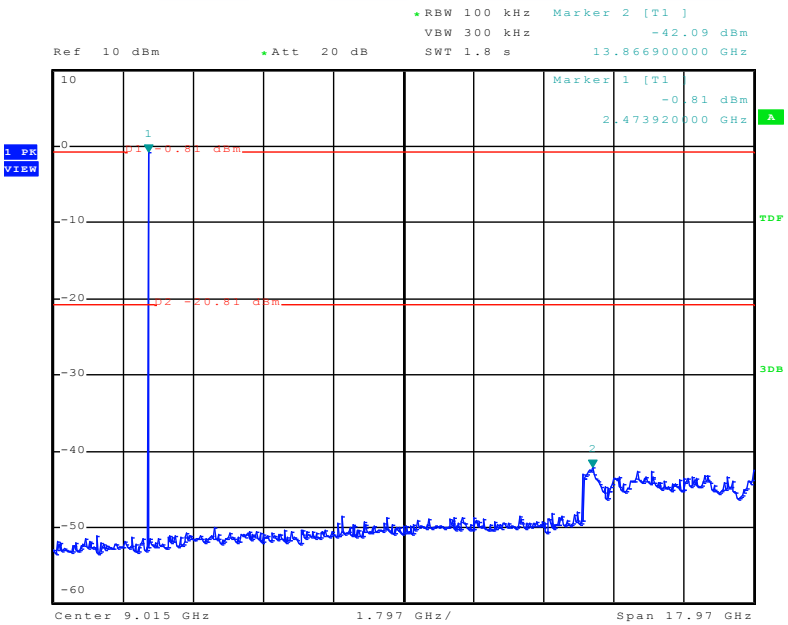
For Emission not in Restricted Band

Low Band Edge Plot on Configuration / 2 475 MHz



Date: 11.JAN.2013 14:04:16

High Band Edge Plot on Configuration / 2 475 MHz



Date: 11.JAN.2013 14:06:22

11. Radiated Emission

11.1 Operating Environment

Temperature : 23.0 °C
Relative Humidity : 42.0 % R.H.

11.2 Test set-up

The formal radiated emission was measured at 3 m distance anechoic chamber.
The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane.
The turntable with EUT was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels.
This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

11.3 Measurement uncertainty

The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement”.
The measurement uncertainty was given with a confidence of 95 %.

Test Items (Semi anechoic chamber)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	± 4.35 Db	Confidence level of approximately 95 % (k = 2)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 4.29 Db	Confidence level of approximately 95 % (k = 2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 4.43 Db	Confidence level of approximately 95 % (k = 2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 4.21 Db	Confidence level of approximately 95 % (k = 2)

11.4 Limit

20 Db in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) limit in the table below has to be followed.

Frequencies (MHz)	**Field Strength (microvolt/meter)**	**Measurement Distance (meters)**
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	2400/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

[Limit at 3 m] = [Limit at 300 m] -40 × log (3 [m] / 300 [m])
[Limit at 3 m] = [Limit at 30 m] -40 × log (3 [m] / 30 [m])

11.5 Test equipment used

	Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ -	ESIB26	Rohde & Schwarz	EMI Test Receiver	830482/010	05. 23. 2013
■ -	FSP	Rohde & Schwarz	Spectrum Analyzer	101431	04. 26. 2013
■ -	VULB9160	Schwarzbeck	Broadband test antenna	3193	03. 14. 2013
■ -	MCU066	Maturo GmbH	Position Controller	1390306	N/A
■ -	TT2.5SI	Maturo GmbH	Turntable	1390307	N/A
■ -	AM4.0	Maturo GmbH	Antenna Mast	1390308	N/A
■ -	BBHA9120D	Schwarzbeck	Horn antenna	207	01. 29. 2014
■ -	3160-09	ETS LINDGREN	Horn antenna	LM3423	11. 14. 2013
■ -	AFS44-00101800-25-10P-44	MITEQ	Preamplifier	1258942	11. 12. 2013
■ -	AFS44-00101800-25-10P-44	MITEQ	Preamplifier	1258943	11. 12. 2013

11.6 Radiated emission test data

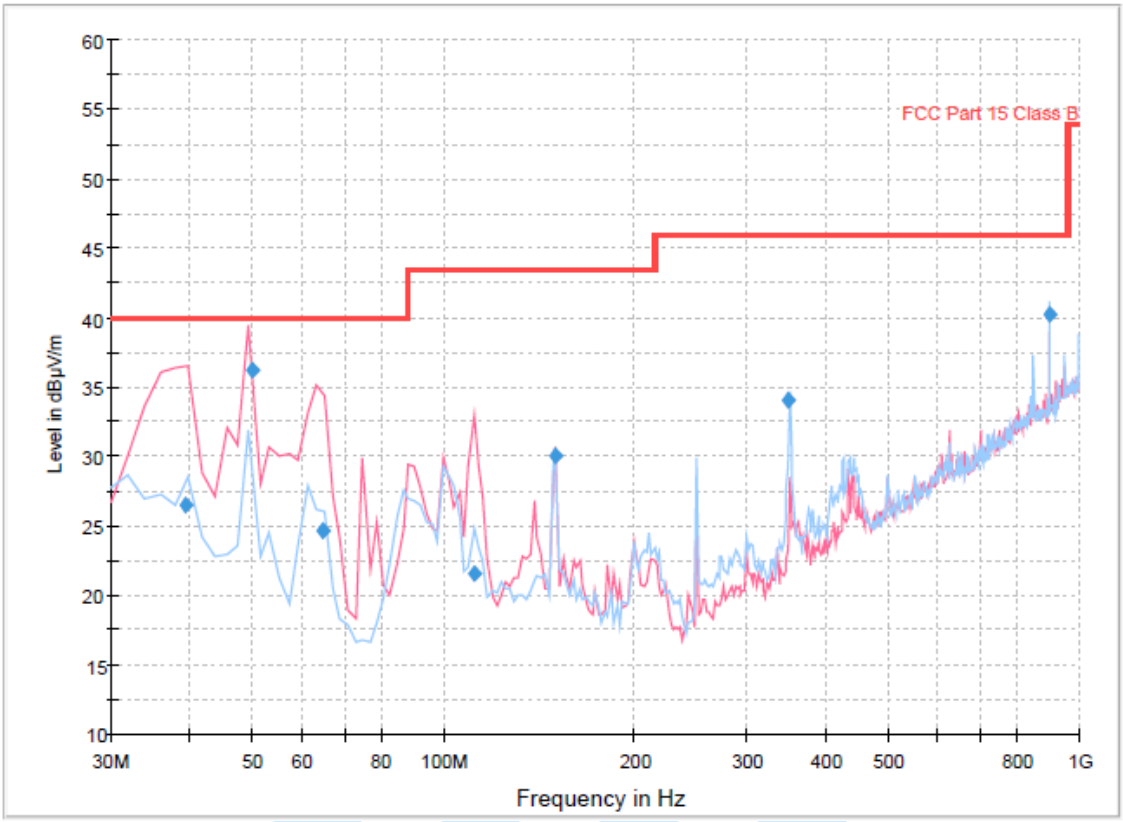
-. Test Date : January 8 ~ 9, 2013
-. Reference standard : Part 15 Subpart C, Sec. 15.247(d) / ANSI C63.10
-. Operating condition : RF transmitting mode (Low: 2 425 MHz, Middle: 2 450 MHz, High: 2 475 MHz)
-. Measuring distance : 3 m
-. Power Source : AC 120 V / 60 Hz (DC 12 V supplied fed from the adapter)
-. Note : None.
-. Measurement

Frequency range	9 kHz ~ 90 kHz, 110 kHz ~ 150 kHz	90 kHz ~ 110 kHz	150 kHz ~ 490 kHz	490 kHz ~ 30 MHz	30 MHz ~ 1 GHz	Above 1 GHz
Detector type	Peak / Average	Quasi peak	Peak / Average	Quasi peak	Quasi peak	Peak / Average
IF bandwidth	200 Hz	200 Hz	9 kHz	9 kHz	120 kHz	1 MHz

Result of radiated emission (9 kHz to 30 MHz)

No emission found between lowest internal used/generated frequency to 30 MHz.

Result of radiated emission (30 MHz to 1 000 MHz)

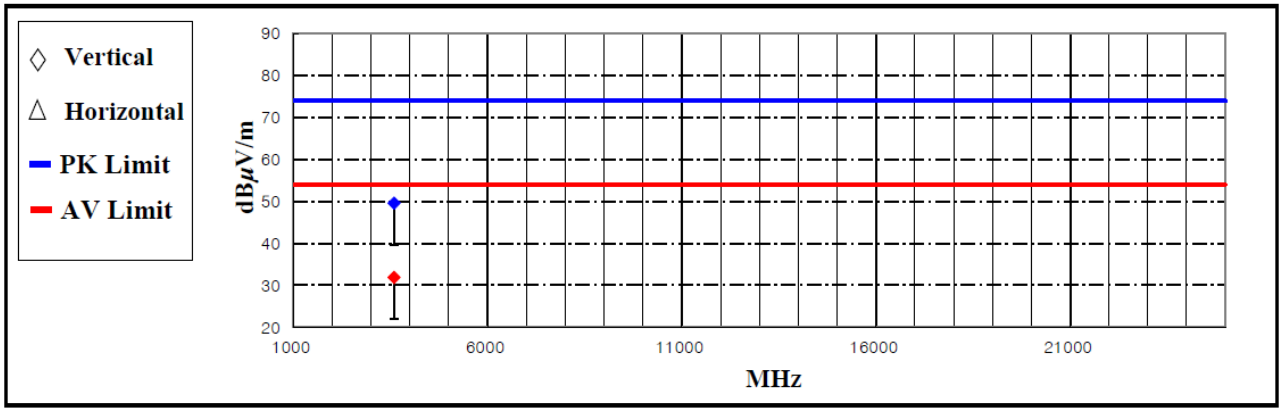


Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
39.450439	26.5	1000.0	120.000	115.0	V	283.0	12.2	13.5	40.0
50.021378	36.2	1000.0	120.000	100.0	V	270.0	12.8	3.8	40.0
64.404092	24.6	1000.0	120.000	100.0	V	77.0	11.8	15.4	40.0
111.937787	21.5	1000.0	120.000	100.0	V	105.0	11.2	22.0	43.5
149.980042	30.1	1000.0	120.000	100.0	V	74.0	14.5	13.4	43.5
349.991983	34.1	1000.0	120.000	100.0	H	-2.0	17.7	11.9	46.0
899.987223	40.3	1000.0	120.000	100.0	H	34.0	28.7	5.7	46.0

Worst case result of radiated emission (1 GHz to 25 GHz)

Frequency (MHz)	Measurement Level						Limit (dBμ V/m)		Margin (dB)		Positioning System		
	Reading Value (dBμ V/m)		AF	AMP / CL	Test Result (dBμ V/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
3595.74	54.70	37.00	29.30	-34.40	49.60	31.90	74.00	54.00	24.40	22.10	V	100	47



*Comment : AMP/CL_Cable loss value + AMP gain value
AF : Antenna factor value
Pol. : H(Horizontal), V(Vertical)

Result of radiated emission (Band Edge)

2 425 MHz

Frequency (MHz)	Measurement Level						Limit (dBμ V/m)		Margin (dB)		Positioning System		
	Reading Value (dBμ V)		AF	AMP / CL	Test Result (dBμ V/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
2389.88	57.48	38.98	26.96	-36.94	47.50	29.00	74.00	54.00	26.50	25.00	V	100	44

2 475 MHz

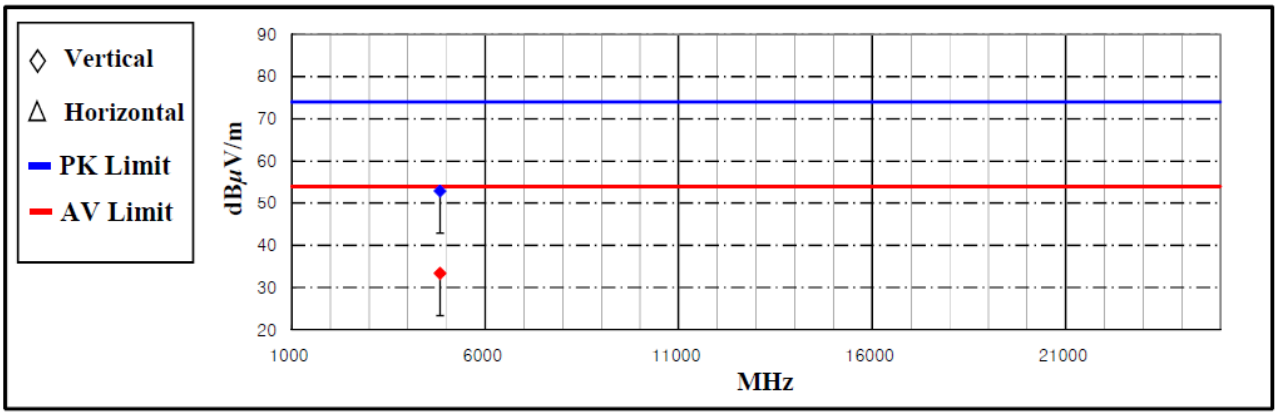
Frequency (MHz)	Measurement Level						Limit (dBμ V/m)		Margin (dB)		Positioning System		
	Reading Value (dBμ V)		AF	AMP / CL	Test Result (dBμ V/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
2489.10	58.45	38.35	27.22	-36.77	48.90	28.80	74.00	54.00	25.10	25.20	V	100	12

Note:
The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
Emission level (dBμV/m) = 20 log Emission level (μV/m).
Corrected reading: Antenna factor + Cable loss + Preamplifier gain + Read value = Test result

Result of radiated emission (1 GHz to 10th harmonics)

2 425 MHz

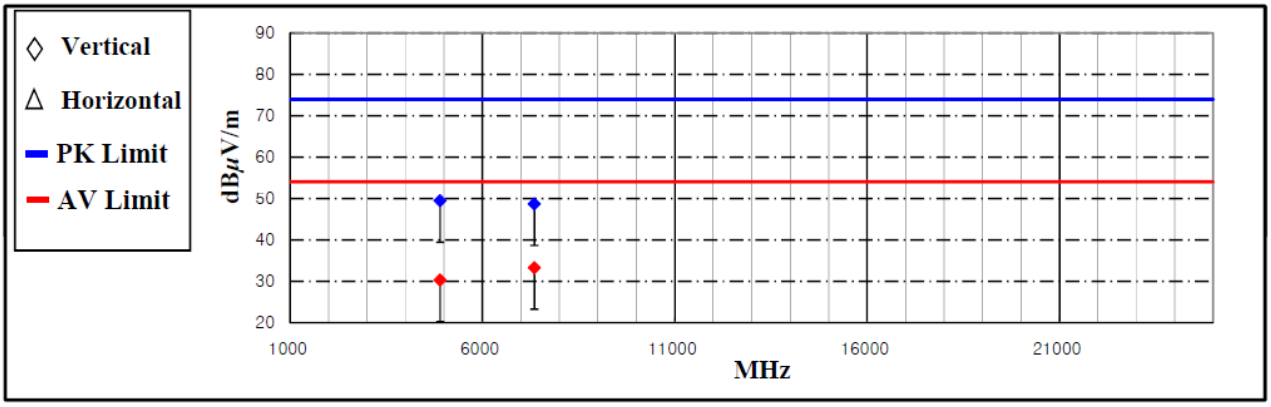
Frequency (MHz)	Measurement Level						Limit (dBμ V/m)		Margin (dB)		Positioning System		
	Reading Value (dBμ V/m)		AF	AMP / CL	Test Result (dBμ V/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
4833.66	54.46	34.96	31.25	-32.81	52.90	33.40	74.00	54.00	21.10	20.60	V	110	210



*Comment : AMP/CL_Cable loss value + AMP gain value
AF : Antenna factor value
Pol. : H(Horizontal), V(Vertical)

2 450 MHz

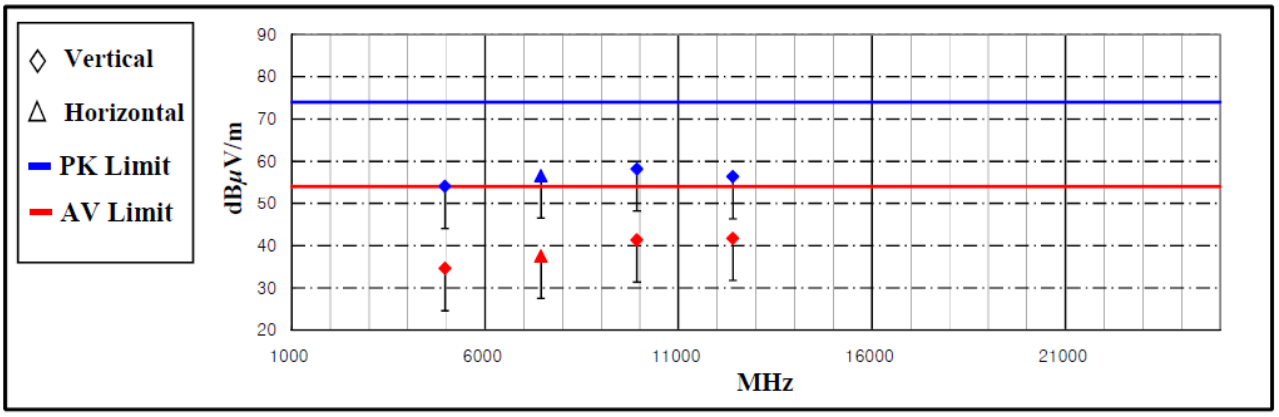
Frequency (MHz)	Measurement Level						Limit (dBμ V/m)		Margin (dB)		Positioning System		
	Reading Value (dBμ V/m)		AF	AMP / CL	Test Result (dBμ V/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
4899.99	50.88	31.68	31.37	-32.75	49.50	30.30	74.00	54.00	24.50	23.70	V	100	293
7348.46	39.82	24.42	36.01	-27.13	48.70	33.30	74.00	54.00	25.30	20.70	V	160	146



*Comment : AMP/CL_Cable loss value + AMP gain value
AF : Antenna factor value
Pol. : H(Horizontal), V(Vertical)

2 475 MHz

Frequency (MHz)	Measurement Level						Limit (dBμV/m)		Margin (dB)		Positioning System		
	Reading Value (dBμV/m)		AF	AMP / CL	Test Result (dBμV/m)						Pol.	Height	Angle
	Peak	Average	(dB/m)	(dB)	Peak	Average	Peak	Average	Peak	Average	(H/V)	(cm)	(°)
4960.91	55.33	35.93	31.48	-32.71	54.10	34.70	74.00	54.00	19.90	19.30	V	100	173
7441.50	47.36	28.36	36.19	-26.95	56.60	37.60	74.00	54.00	17.40	16.40	H	219	308
9922.03	40.86	24.06	39.28	-21.94	58.20	41.40	74.00	54.00	15.80	12.60	V	184	157
12402.22	38.74	24.14	39.15	-21.49	56.40	41.80	74.00	54.00	17.60	12.20	V	128	214



*Comment : AMP/CL_Cable loss value + AMP gain value
AF : Antenna factor value
Pol. : H(Horizontal), V(Vertical)

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Reading value + AF (Antenna Factor) + AMP/CL (Cable Loss + Preamp factor) = Test result

- The end -