



RADIO TEST REPORT

REPORT NO.: RJ941208L11

MODEL NO.: SDC-CF10G

RECEIVED: Dec. 22, 2005

TESTED: Dec. 22, 2005

ISSUED: Apr. 06, 2006

APPLICANT: Summit Data Communications, Inc.

ADDRESS: 526 South Main Street Suite 411, Akron, Ohio,
44311 United States

ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang
244, Taipei Hsien, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

TESTING LABORATORY STATUS:

Advance Data Technology Corporation has been holding the following status after having been assessed according to the provisions of ISO/IEC 17025:

Telefication Listed Testing Laboratory:

listed by Telefication B.V., Edisonstraat 12A, 6902 PK Zevenaar, The Netherlands
(Certificate No: L127 dated 19 September 2003) for testing the following test standards:

- RCR STD - 33 REV. 3.0 June 1997
- ARIB STD - T66 Version 2.1 March 2003
- ARIB STD - T71 Version 1.0 December 2000



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1 CERTIFICATION

PRODUCT: SDC-CF10G 802.11g Compact Flash Module with Antenna Connectors

MODEL: SDC-CF10G

BRAND: Summit

APPLICANT: Summit Data Communications, Inc.

TESTED: Dec. 22, 2005

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: ARIB STD-T66

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions herein specified.

PREPARED BY Wendy Liao , **DATE :** Apr. 06, 2006
Wendy Liao

TECHNICAL
ACCEPTANCE : Stanley Hsu , **DATE :** Apr. 06, 2006
Responsible for RF Stanley Hsu

APPROVED BY : Gary Chang , **DATE :** Apr. 06, 2006
Gary Chang / Supervisor

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Radio Reg. Article Reference	ARIB STD-T66 Ref.	Report reference	Parameter	Test Results (NOTE)
GENERAL PROVISIONS				
5	3.2 (4)	4.1	Frequency tolerance	C
6	3.2 (7)	4.2	Occupied bandwidth	C
7	3.2 (6)	4.4	Spurious emissions	C
TRANSMITTING EQUIPMENT				
14	--	4.5	Antenna power	C
14.2	--	--	SAR	NA
TRANSMITTING ANTENNA				
20	--	3.4	Type, configuration, etc. of transmitting antenna	C
22	--	3.5	Direction pattern of transmitting antenna	C
RECEIVING EQUIPMENT				
24	3.3 (1)	4.6	Spurious emissions of receiver	C
26	--	3.4	Refer to all articles for transmitting antenna	C
OPERATING FREQUENCY 2400 TO 2483MHz				
49.20 (1); a	3.7 (1)	3.4	High Frequency/modulation section cannot be opened easily	C
49.20 (1); b	3.1 (1)	3.1	Communication method	C
49.20 (1); c	3.2 (1)a	3.1	Modulation method	C
49.20 (1); d	3.2 (1)a	3.1	Spread spectrum method	C
49.20 (1); e	3.2 (2)	4.5	Antenna power	C
49.20 (1); f (1)	3.6 (2)	3.5.2	Absolute gain of transmitting antenna	C
49.20 (1); f (2)	3.6 (2)	4.5	Angular width of principal radiation (AWPR)	C
49.20 (1); g	3.2 (10)	--	Number of carriers within 1 MHz bandwidth in OFDM	C
49.20 (1); h	3.2 (8)	4.3	Diffusion bandwidth	C
49.20 (1); i	3.2 (9)	4.3	Spreading factor	C
49.20 (1); j	3.2 (11)	--	Frequency retention time (FH employed)	NA
NOTE: C = Conform NC = Not Conform NT = Not Tested NA = Not Applicable				

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

ITEM	UNCERTAINTY
Occupied Bandwidth	206.50 Hz
Spurious emissions	3.93 dB
Output power density	1.11 dB
Adjacent Channel Leakage Power	1.86 dB
Out of band radiated power	3.93 dB
Frequency Tolerance	603.76 Hz
Burst length	0.01 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	SDC-CF10G 802.11g Compact Flash Module with Antenna Connectors
MODEL NO.	SDC-CF10G
TYPE OF EQUIPMENT	Data transmission equipment operating in the 2.4GHz ISM band using spread spectrum techniques
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	IEEE 802.11b: 11/5.5/2/1Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2400MHz ~ 2483.5MHz
NUMBER OF CHANNEL	802.11b: 13 802.11g: 13
RATED RF OUTPUT POWER DENSITY	802.11b: 7.00mW/MHz 802.11g: 5.50mW/MHz
CONDUCTED RF OUTPUT POWER DENSITY	802.11b: 6.66mW/MHz 802.11g: 5.09mW/MHz
RADIATED RF OUTPUT POWER DENSITY	802.11b: 11.053 mW/MHz 802.11g: 8.447 mW/MHz
ANTENNA TYPE	Refer to Note 1 for detail antennas

NOTE:

1. The EUT have three combinations of antenna type. Please refer to following table

No.	Antenna type	Gain (dBi)
1	Dipole	2.2
2	Dipole (VMT)	2.2
3	Printed (MX3)	0

2. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
3. The EUT complies with IEEE 802.11g standards, and backwards compatible with IEEE 802.11b products.
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST CHANNELS

IEEE 802.11b:

CHANNEL	TRANSMITTER	RECEIVER
1	2412 MHz	2412 MHz
7	2442 MHz	2442 MHz
13	2472 MHz	2472 MHz

IEEE 802.11g:

CHANNEL	TRANSMITTER	RECEIVER
1	2412 MHz	2412 MHz
7	2442 MHz	2442 MHz
13	2472 MHz	2472 MHz

After pre-testing all data rates, the worst cases were 11Mbps with DSSS technique and 6Mbps with OFDM technique.

Two test results were presented in the following sections, the test result A is for DSSS technique and the test result B is for OFDM technique.

NOTE: By means of test software (MFG test program) provided by manufacture, the power levels during the tests were set according to the following codes:

IEEE 802.11b:

CHANNEL	POWER SETTING
1	80
7	80
13	80

IEEE 802.11g:

CHANNEL	POWER SETTING
1	100
7	100
13	100

3.3 TEST CONDITIONS

TEST CONDITIONS	VOLTAGE (Vdc)
V_{normal}	3.3
$V_{+10\%}$	3.63
$V_{-10\%}$	2.97

3.4 ASSEMBLY

The EUT is constructed as an SDC-CF10G 802.11g Compact Flash Module with Antenna Connectors. The housing consists of two metal parts that is the special structure designed by manufacturer. Separating the two parts (i.e operating of the housing) was only possible by means of brute force.

3.5 ANTENNA SPECIFICATIONS

3.5.1 ANTENNA GAIN

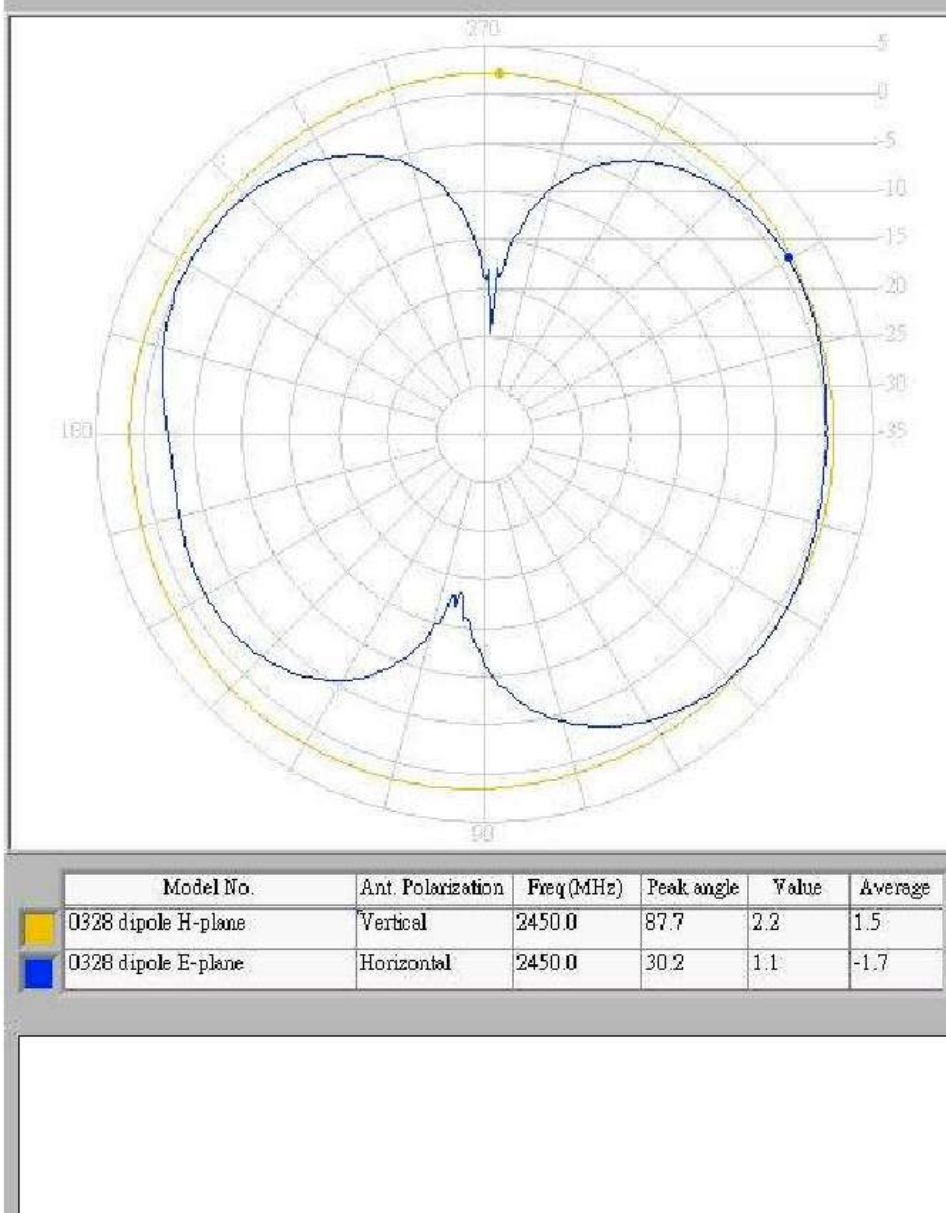
ANTENNA TYPE	GAIN (dBi)
Dipole	2.2
Dipole (VMT)	2.2
Printed (MX3)	0

3.5.2 ANTENNA PATTERN

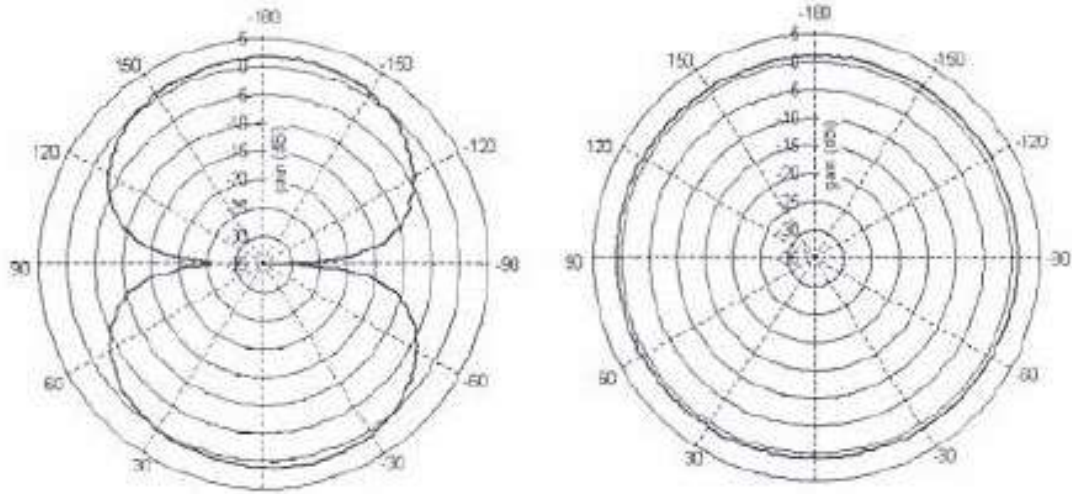
Antenna 1

Antenna spec for 2.2 dBi (520x710x16M jpeg)

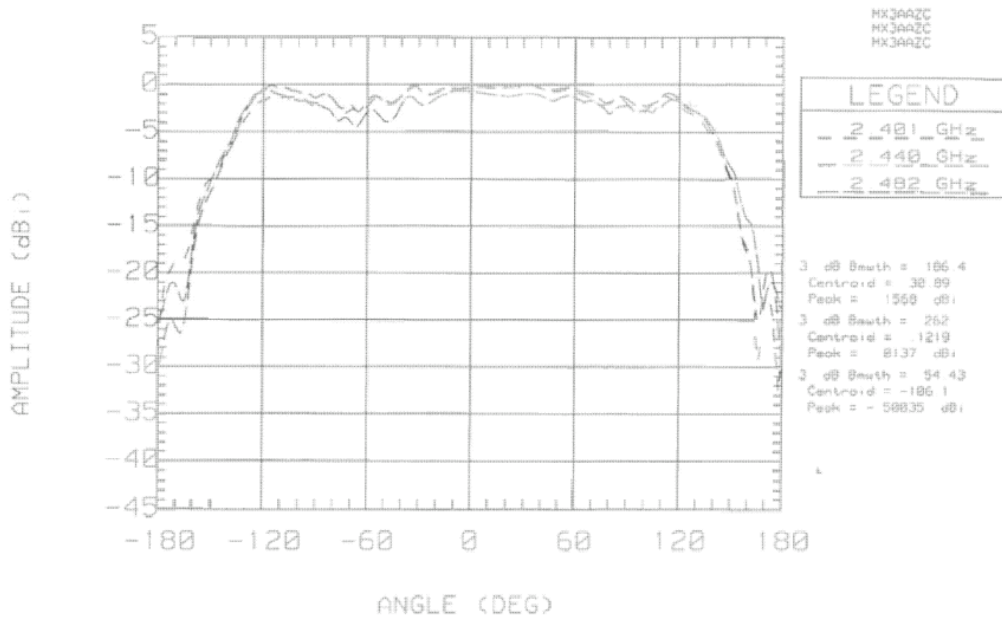
GEMTEK 正文科技股份有限公司



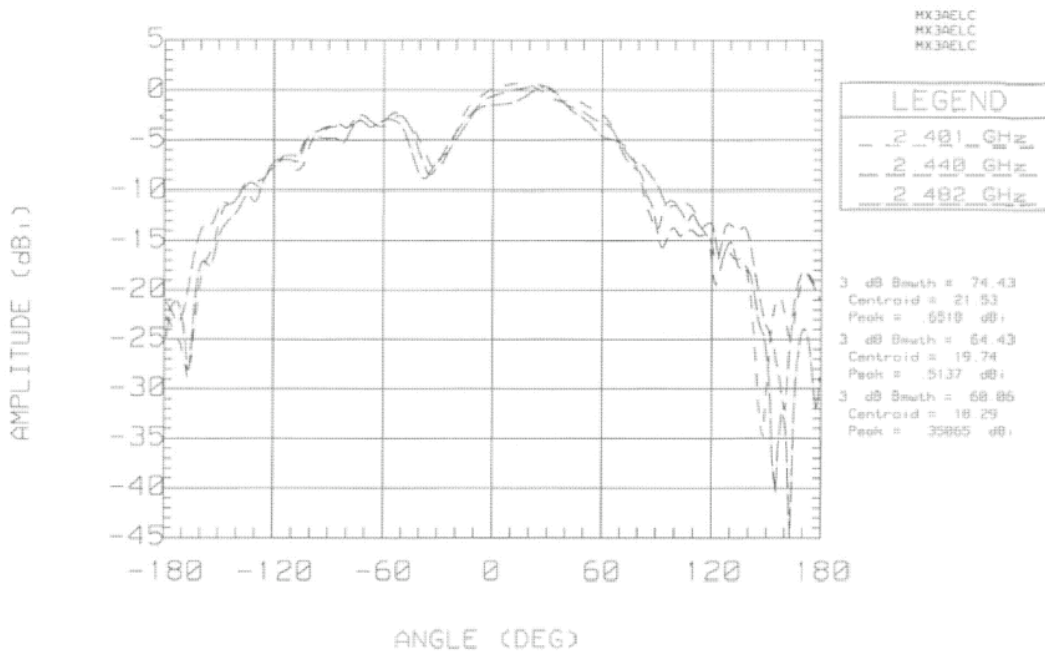
Antenna 2



Antenna 3



3.2 Elevation:



13 Jun 2000 06:52:16

4 TEST RESULTS

4.1 FREQUENCY TOLERANCE MEASUREMENT

4.1.1 LIMITS OF FREQUENCY TOLERANCE MEASUREMENT

Tolerance of frequency shall be +/- 50ppm

4.1.2 TEST RESULTS (A)

ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V _{normal}	Carrier frequency (MHz)	2411.99396	2441.99194	2471.99068
	Frequency tolerance (ppm)	-2.504	-3.301	-3.770
V _{+10%}	Carrier frequency (MHz)	2411.99320	2441.99124	2471.99062
	Frequency tolerance (ppm)	-2.819	-3.587	-3.794
V _{-10%}	Carrier frequency (MHz)	2411.99160	2441.99180	2471.99058
	Frequency tolerance (ppm)	-3.483	-3.358	-3.811

4.1.3 TEST RESULTS (B)

ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V _{normal}	Carrier frequency (MHz)	2411.99116	2441.99058	2471.99106
	Frequency tolerance (ppm)	-3.665	-3.857	-3.617
V _{+10%}	Carrier frequency (MHz)	2411.99121	2441.99106	2471.99104
	Frequency tolerance (ppm)	-3.644	-3.661	-3.625
V _{-10%}	Carrier frequency (MHz)	2411.99118	2441.99098	2471.99102
	Frequency tolerance (ppm)	-3.657	-3.694	-3.633

4.2 OCCUPIED BANDWIDTH MEASUREMENT (99% POWER BANDWIDTH)

4.2.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

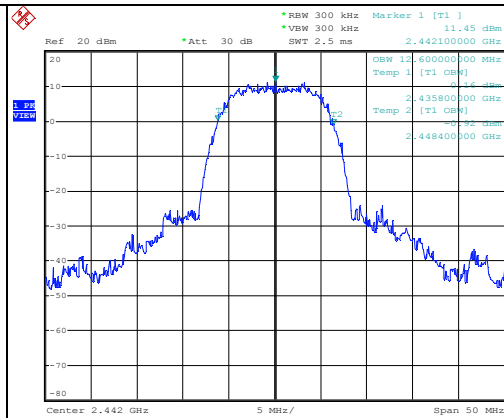
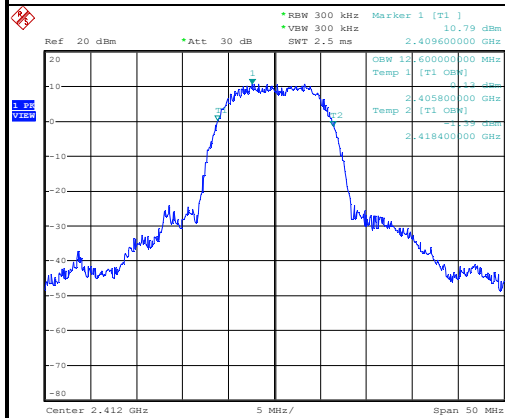
Occupied bandwidth shall be 26MHz or less.

4.2.2 TEST RESULTS (A)

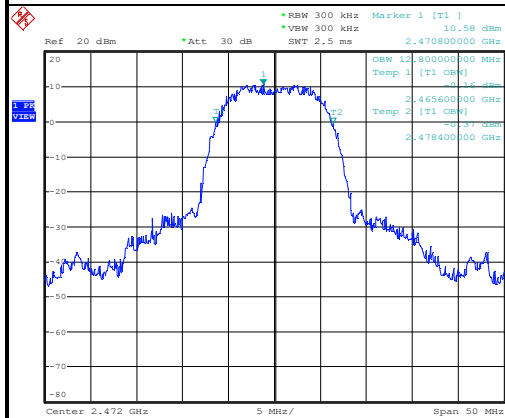
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V_{normal}	Occupied bandwidth (MHz)	12.60	12.60	12.80
$V_{+10\%}$	Occupied bandwidth (MHz)	12.60	12.80	12.80
$V_{-10\%}$	Occupied bandwidth (MHz)	12.70	12.70	12.90
Measurement uncertainty		± 206.50 Hz		

NOTE: For the test plots please refer to the below pages.

Vnormal



Channel 1



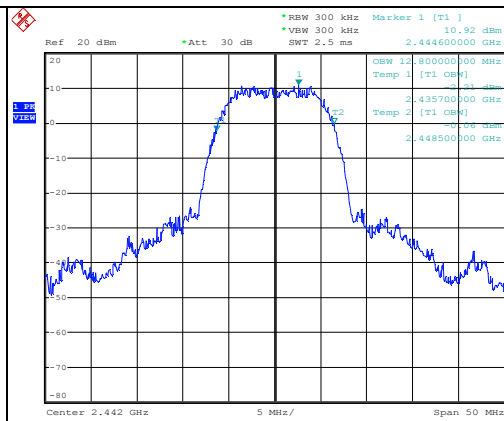
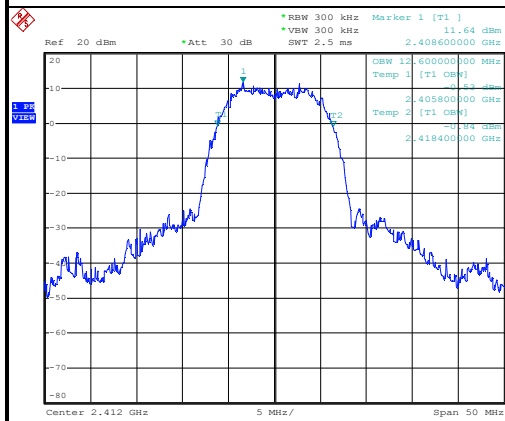
Channel 7



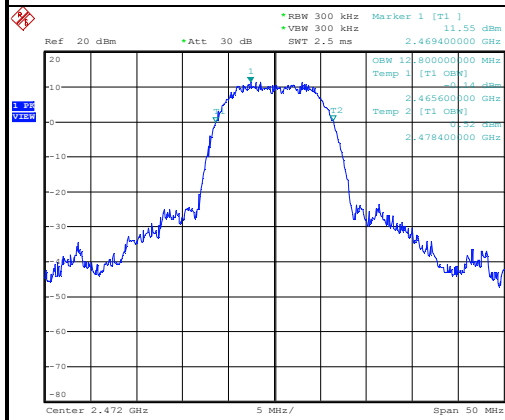
Channel 13

Measurement uncertainty: ± 206.50 Hz

V +10%



Channel 1

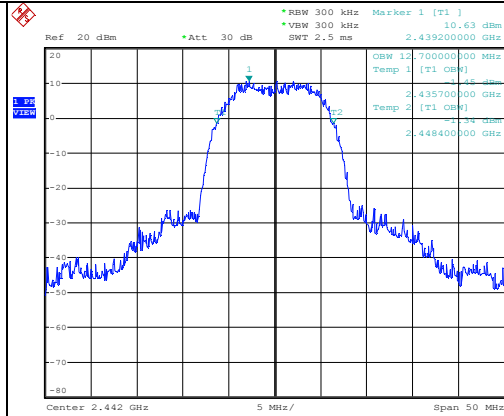
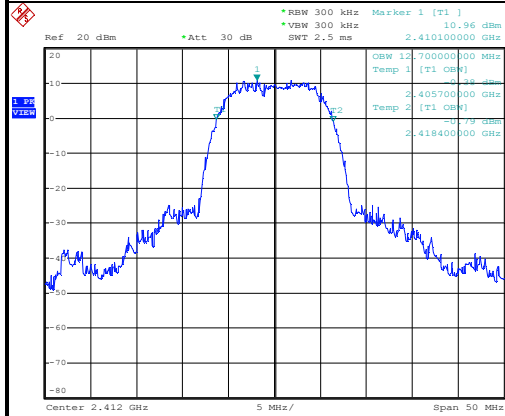


Channel 7

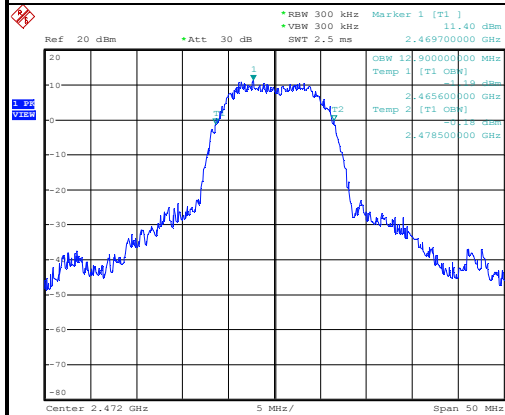
Channel 13

Measurement uncertainty: ± 206.50 Hz

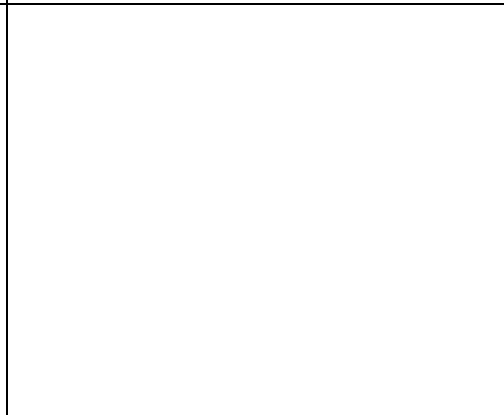
V_{-10%}



Channel 1



Channel 7



Channel 13

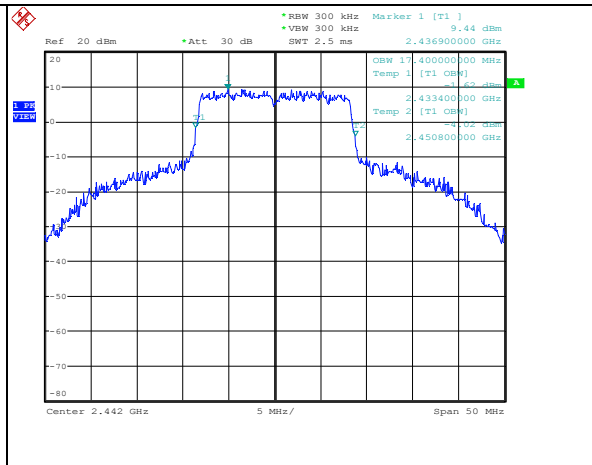
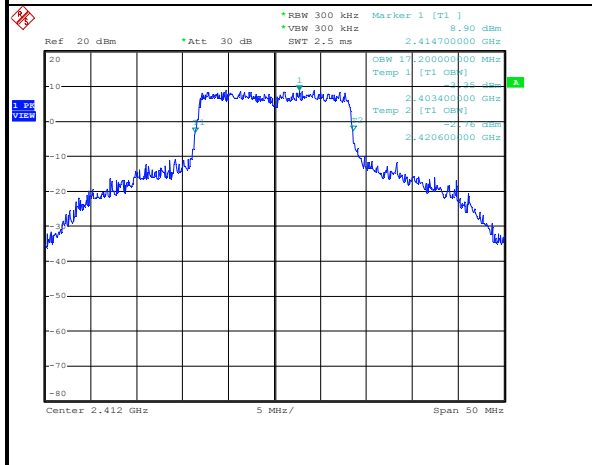
Measurement uncertainty: ± 206.50 Hz

4.2.3 TEST RESULTS (B)

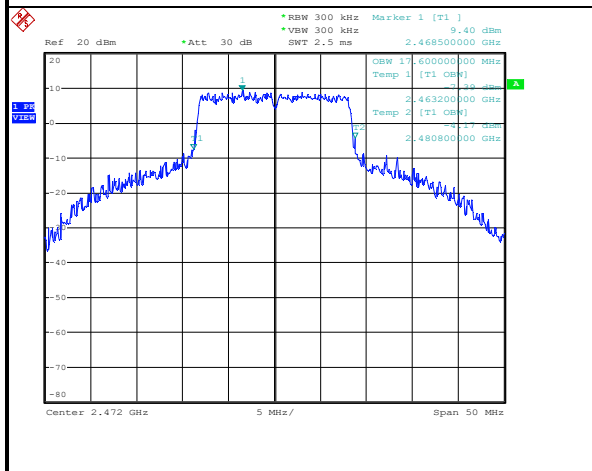
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V_{normal}	Occupied bandwidth (MHz)	17.20	17.40	17.60
$V_{+10\%}$	Occupied bandwidth (MHz)	17.20	17.60	17.30
$V_{-10\%}$	Occupied bandwidth (MHz)	17.20	17.30	17.30
Measurement uncertainty		± 206.50 Hz		

NOTE: For the test plots please refer to the below pages.

Vnormal



Channel 1



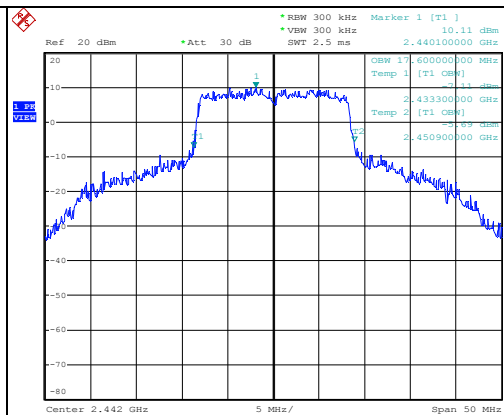
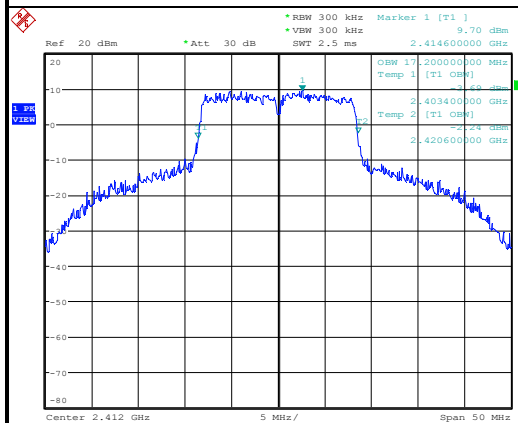
Channel 7



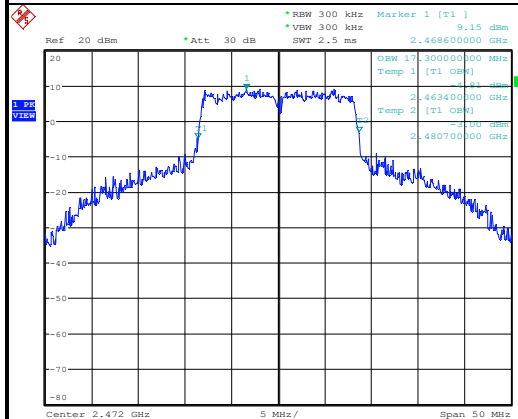
Channel 13

Measurement uncertainty: ± 206.50 Hz

V_{+10%}



Channel 1

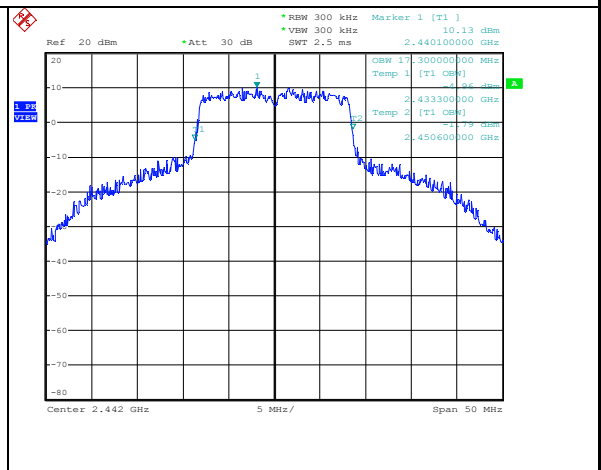
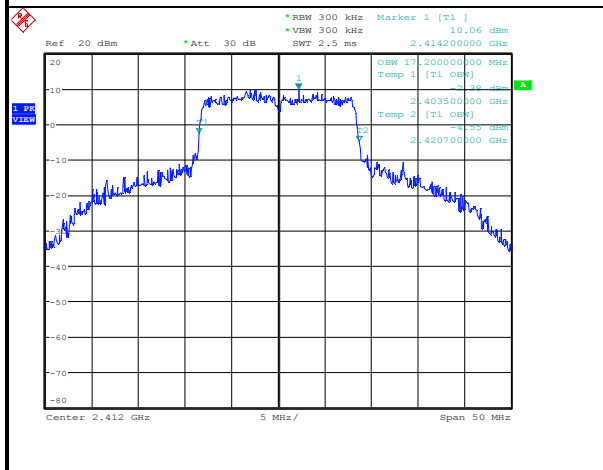


Channel 7

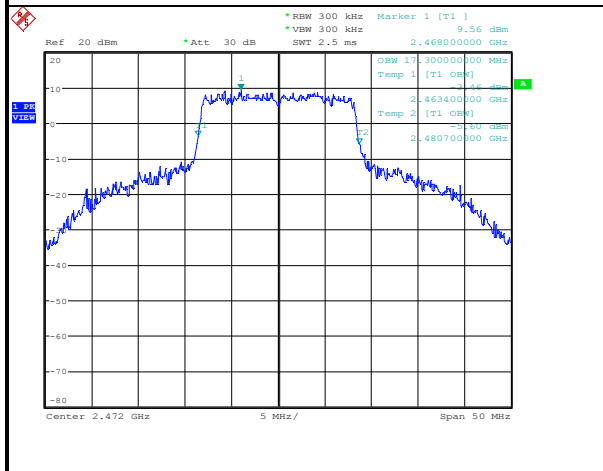
Channel 13

Measurement uncertainty: ± 206.50 Hz

V_{-10%}



Channel 1



Channel 7



Channel 13



Measurement uncertainty: ± 206.50 Hz

4.3 SPREADING BANDWIDTH MEASUREMENT (90% POWER BANDWIDTH)

4.3.1 LIMITS OF SPREADING BANDWIDTH AND SPREADING FACTOR

ITEM	LIMIT	REMARK
SPREADING BANDWIDTH	$\geq 500\text{kHz}$	-
SPREADING FACTOR	≥ 5	Operating frequency 2400 to 2483MHz
	≥ 10	Operating frequency 2471 to 2497MHz

4.3.2 TEST RESULTS (A)

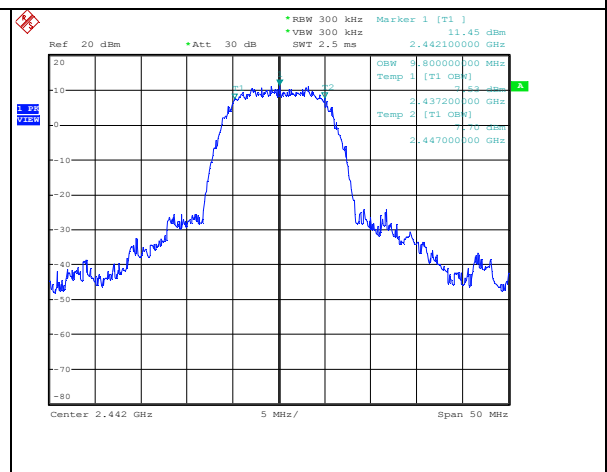
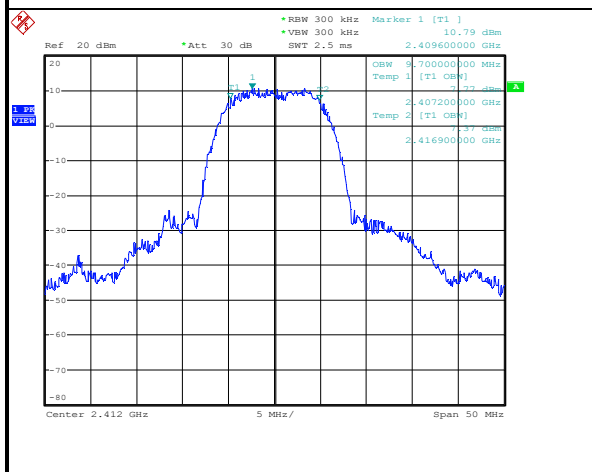
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V_{normal}	Occupied bandwidth (MHz)	9.70	9.80	9.80
$V_{+10\%}$	Occupied bandwidth (MHz)	9.70	9.80	9.70
$V_{-10\%}$	Occupied bandwidth (MHz)	9.70	9.60	9.80
Measurement uncertainty		$\pm 206.50 \text{ Hz}$		

NOTE: For the test plots please refer to the below pages.

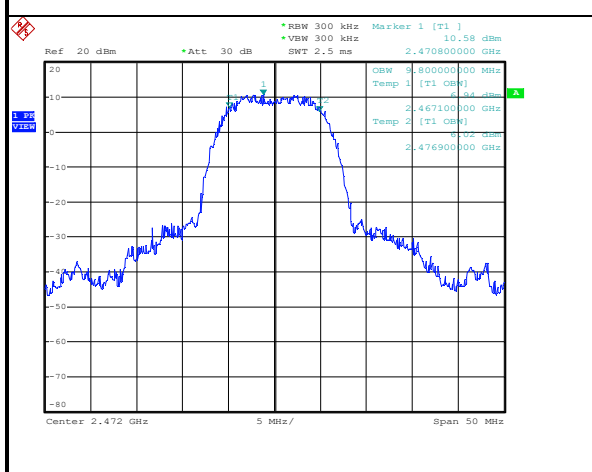
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V_{normal}	Spreading factor	7.05	7.13	7.13
$V_{+10\%}$	Spreading factor	7.05	7.13	7.05
$V_{-10\%}$	Spreading factor	7.05	6.98	7.13

NOTE: Spreading Factor: 90% channel power bandwidth / 1.375.

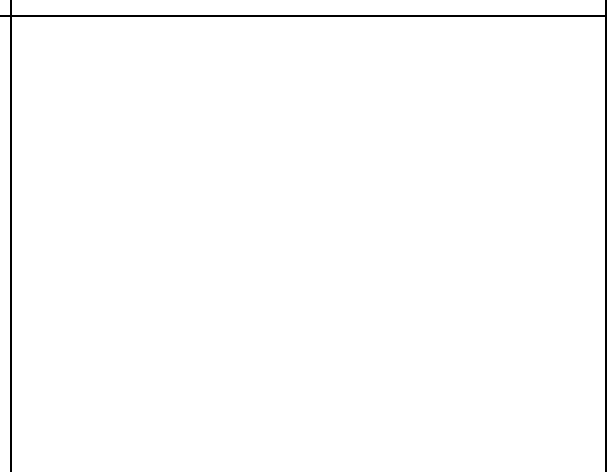
Vnormal



Channel 1



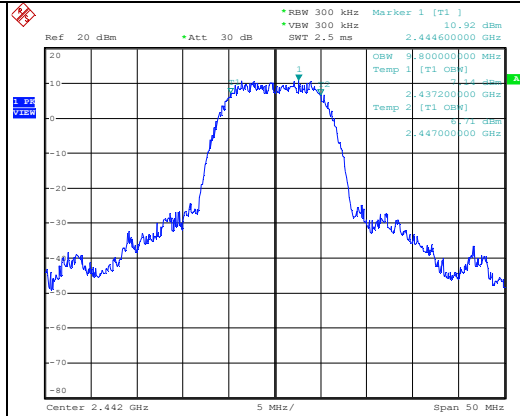
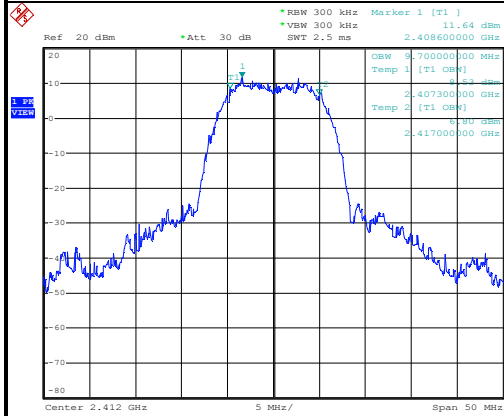
Channel 7



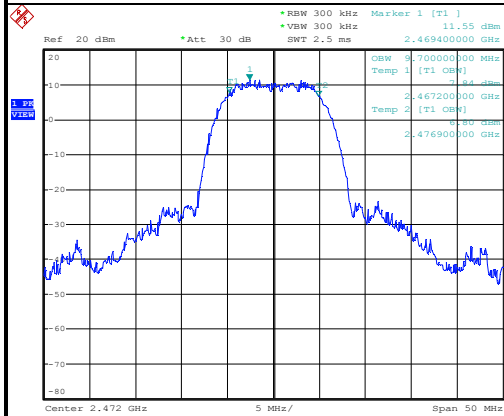
Channel 13

Measurement uncertainty: ± 206.50 Hz

V +10%



Channel 1

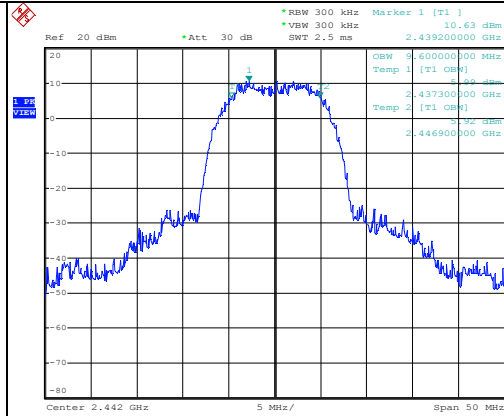
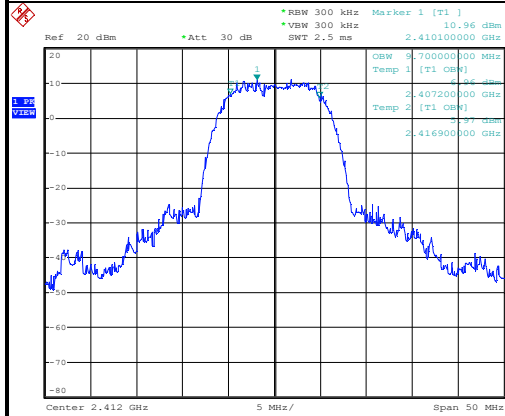


Channel 7

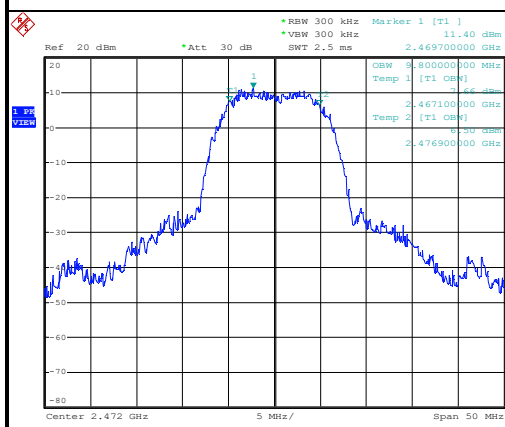
Channel 13

Measurement uncertainty: ± 206.50 Hz

V_{-10%}



Channel 1



Channel 7



Channel 13

Measurement uncertainty: ± 206.50 Hz

4.3.3 TEST RESULTS (B)

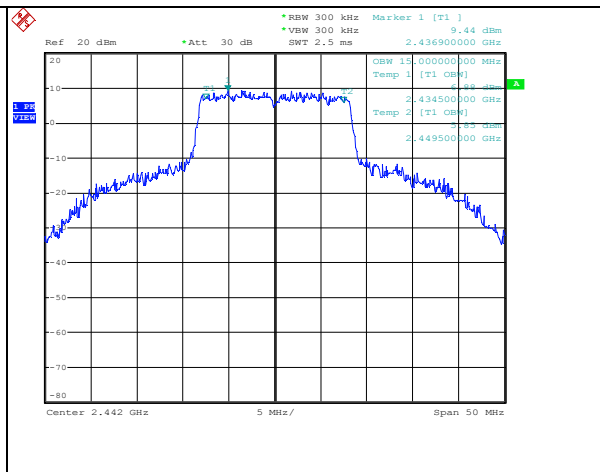
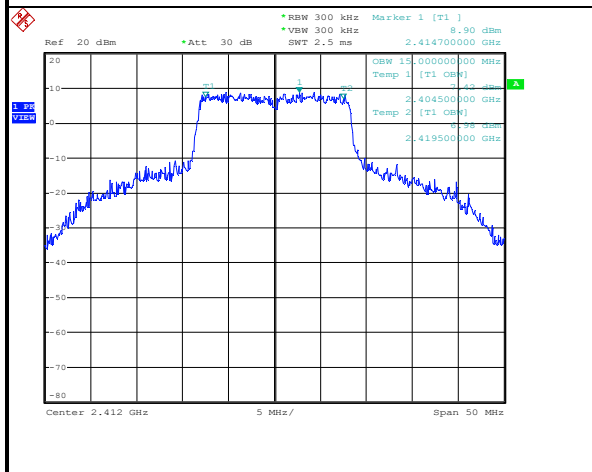
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V _{normal}	Occupied bandwidth (MHz)	15.00	15.00	15.00
V _{+10%}	Occupied bandwidth (MHz)	14.80	14.80	15.00
V _{-10%}	Occupied bandwidth (MHz)	14.80	14.80	14.90
Measurement uncertainty		± 206.50 Hz		

NOTE: For the test plots please refer to the below pages.

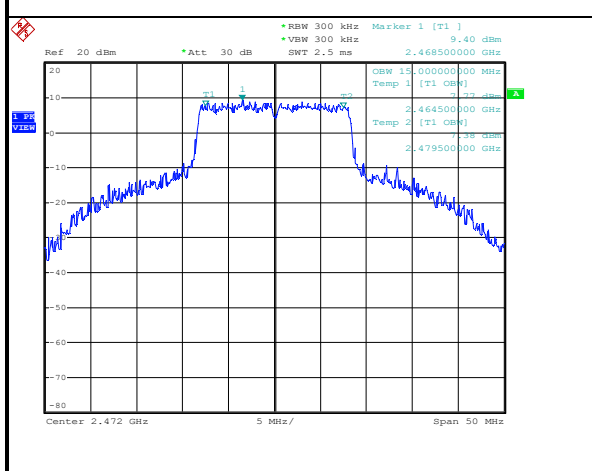
ENVIRONMENTAL CONDITIONS		26 deg.C, 60% RH 991 hPa		
VOLTAGE		CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz
V _{normal}	Spreading factor	10.00	10.00	10.00
V _{+10%}	Spreading factor	9.87	9.87	10.00
V _{-10%}	Spreading factor	9.87	9.87	9.93

NOTE: Spreading Factor: 90% channel power bandwidth / 1.5.

Vnormal



Channel 1



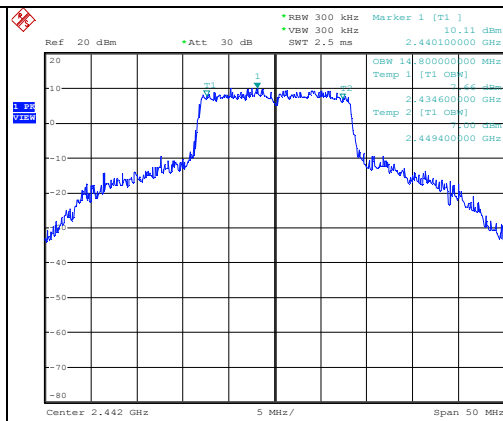
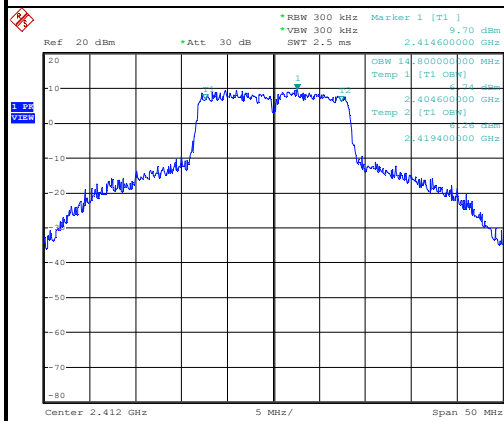
Channel 7



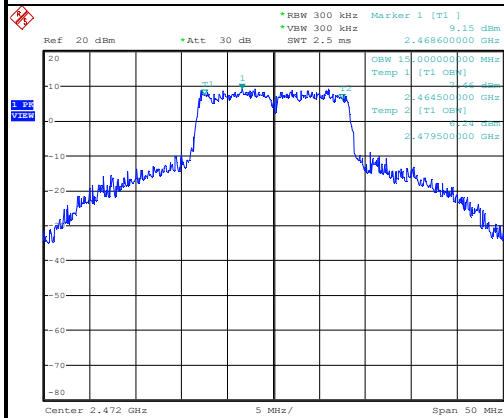
Channel 13

Measurement uncertainty: ± 206.50 Hz

V_{+10%}



Channel 1

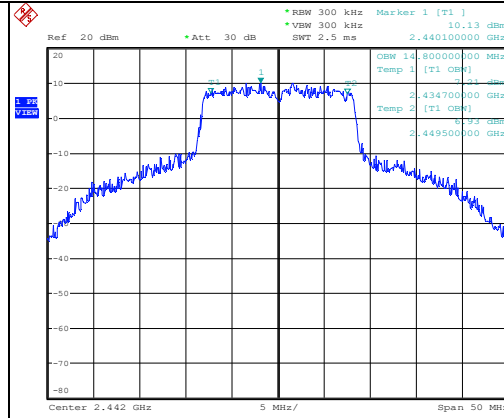
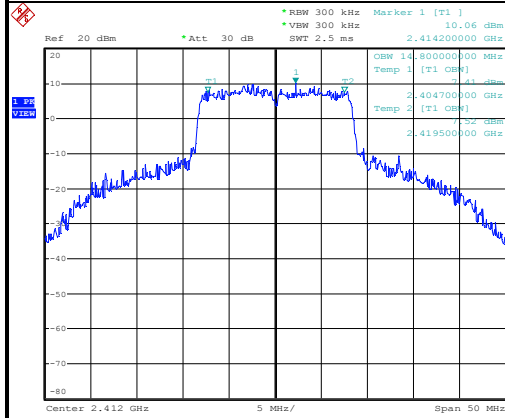


Channel 7

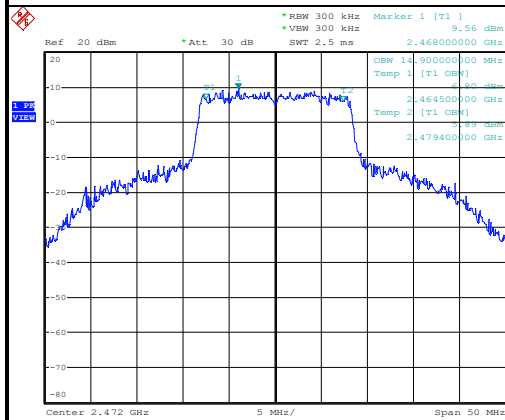
Channel 13

Measurement uncertainty: ± 206.50 Hz

V_{-10%}



Channel 1



Channel 7

Channel 13

Measurement uncertainty: ± 206.50 Hz

4.4 SPURIOUS EMISSIONS FOR TRANSMITTER MEASUREMENT

4.4.1 LIMITS OF SPURIOUS EMISSIONS

FREQUENCIES (MHz)	LIMIT
Operating frequency 2400 to 2483.5MHz	
$2387.0 \leq f < 2400.0$	$\leq 25\mu\text{W}$
$2483.5 < f \leq 2496.5$	$\leq 25\mu\text{W}$
All other frequencies	$\leq 2.5\mu\text{W}$
Operating frequency 2471 to 2497MHz	
$2458.0 \leq f < 2471.0$	$\leq 25\mu\text{W}$
$2497.0 < f \leq 2510.0$	$\leq 25\mu\text{W}$
All other frequencies	$\leq 2.5\mu\text{W}$

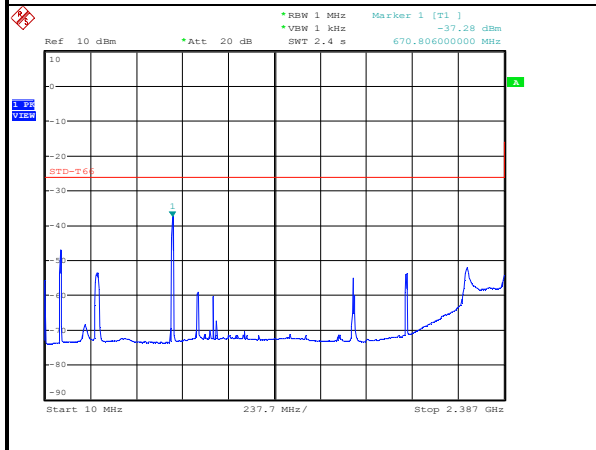
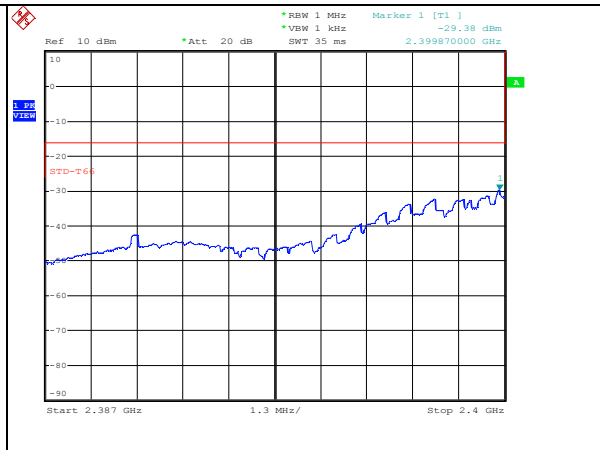
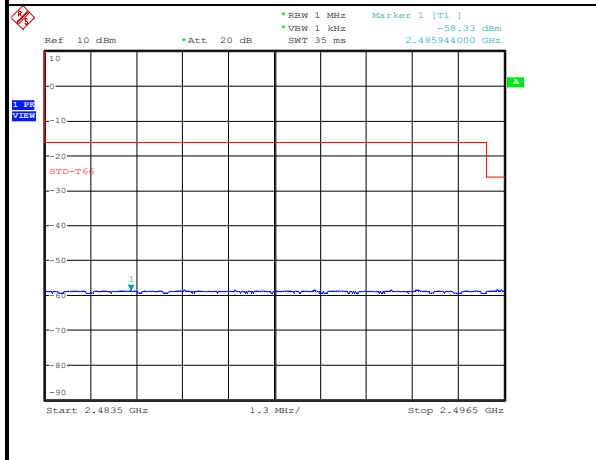
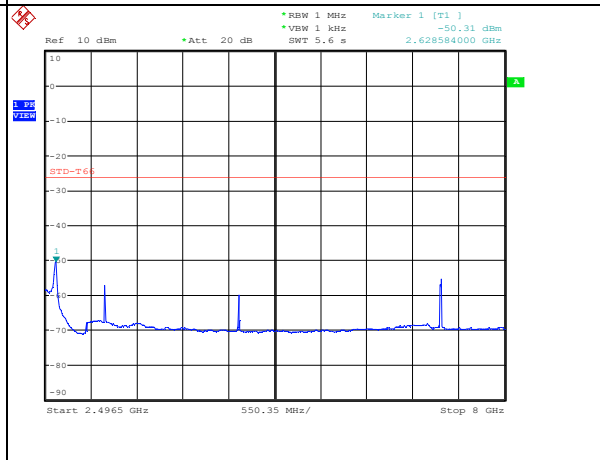
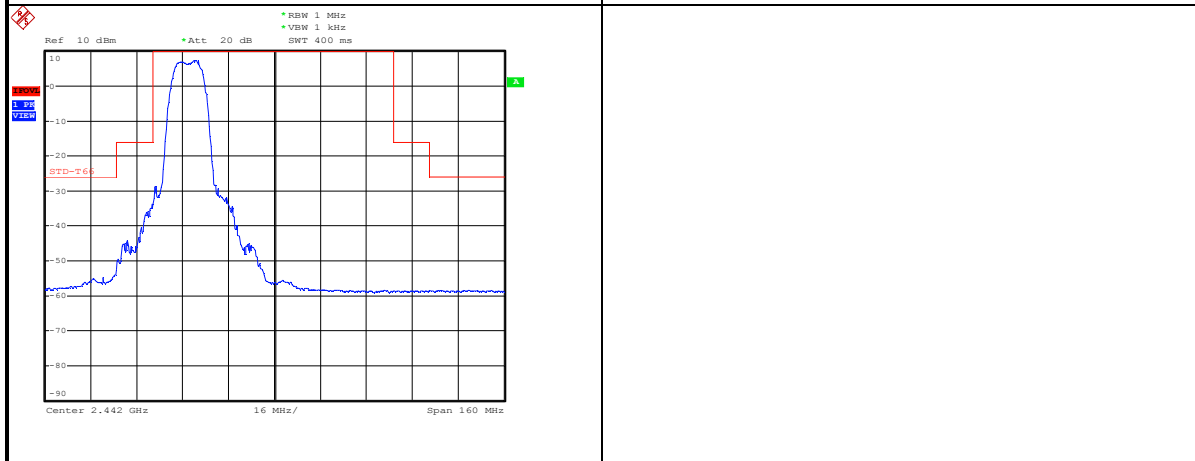
4.4.2 SUMMARY OF TEST RESULT (A)

TEST CHANNEL		CH1 (2412MHz)		CH7 (2442MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE	FREQUENCY (MHz)	MEASURE. VALUE		
Vnormal	10.0MHz to 2387.0MHz	670.80	0.187068 uW	699.33	0.135207 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.87	1.153453 uW	2398.05	0.002009 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2485.94	0.001469 uW	2483.94	0.001786 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2628.58	0.009311 uW	2650.59	0.010209 uW	2.5 uW	PASS
V+10%	10.0MHz to 2387.0MHz	675.56	1.393157 uW	704.08	0.159588 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.94	0.687068 uW	2398.96	0.001982 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2489.37	0.001517 uW	2486.33	0.001888 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2628.58	0.012134 uW	2650.59	0.010447 uW	2.5 uW	PASS
V-10%	10.0MHz to 2387.0MHz	675.56	0.135831 uW	704.08	0.155239 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.97	0.893305 uW	2399.87	0.001919 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2485.39	0.001489 uW	2483.50	0.001738 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2628.58	0.010046 uW	2650.59	0.008872 uW	2.5 uW	PASS

TEST CHANNEL		CH13 (2472MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE		
Vnormal	10.0MHz to 2387.0MHz	732.60	0.167494 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2387.59	0.001845 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.52	1.402814 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2672.61	0.009078 uW	2.5 uW	PASS
V+10%	10.0MHz to 2387.0MHz	732.60	0.174181 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2388.89	0.001841 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.81	1.294196 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2683.61	0.009817 uW	2.5 uW	PASS
V-10%	10.0MHz to 2387.0MHz	732.60	0.164059 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2392.25	0.001892 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.96	1.534617 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2672.61	0.00984 uW	2.5 uW	PASS

NOTE: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.

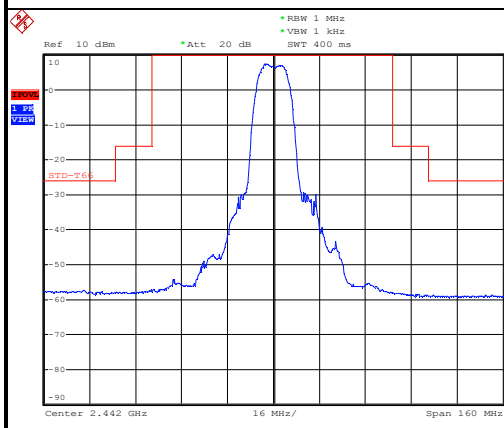
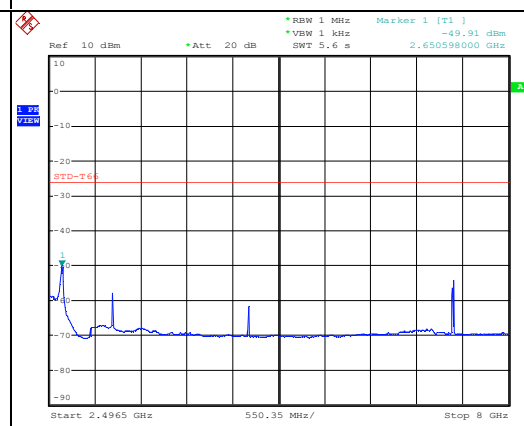
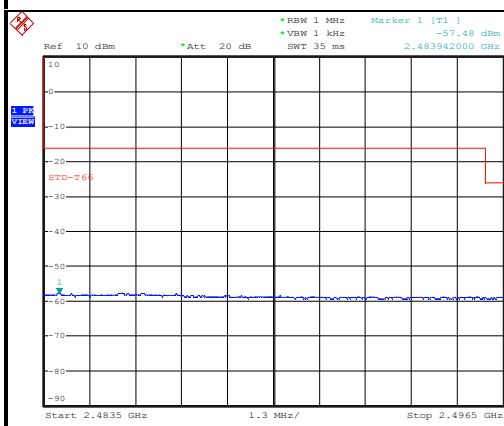
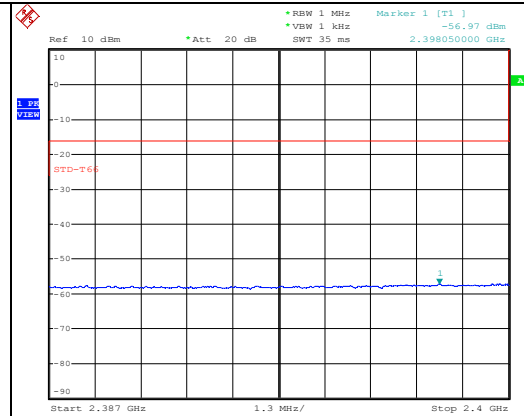
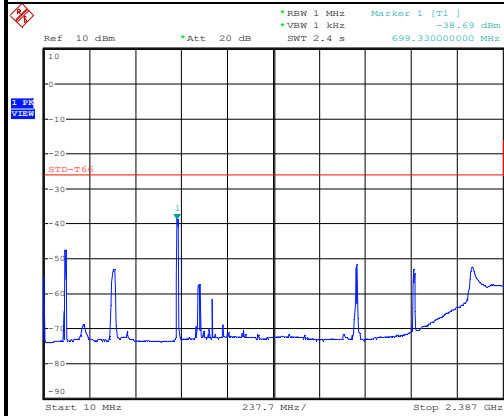
4.4.3 TEST RESULTS (A)

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa
Vnormal Channel 1	
	
	
	
Measurement uncertainty: $\pm 3.93\text{dB}$	

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

Vnormal Channel 7

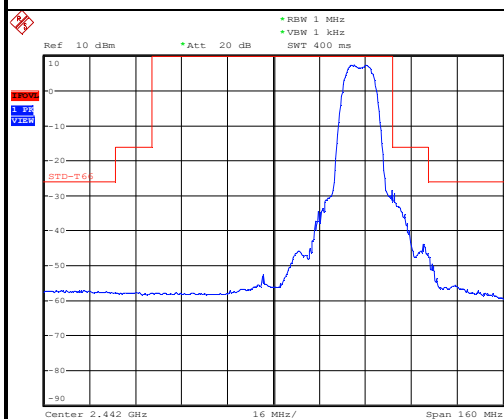
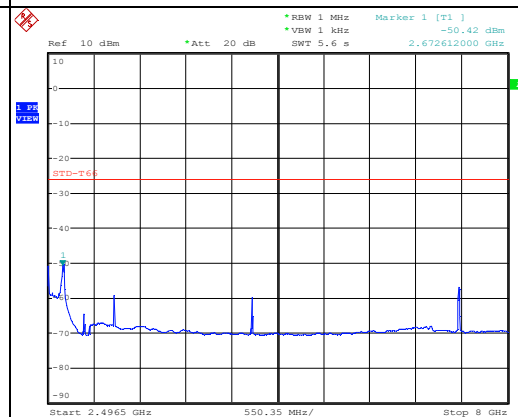
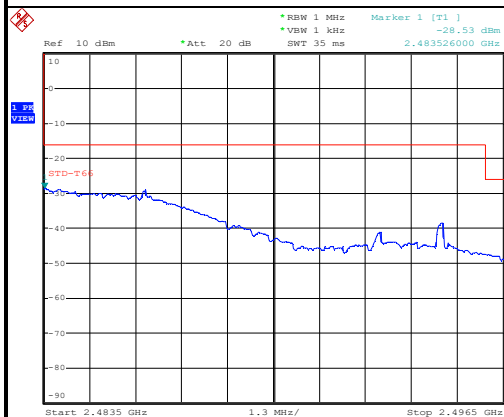
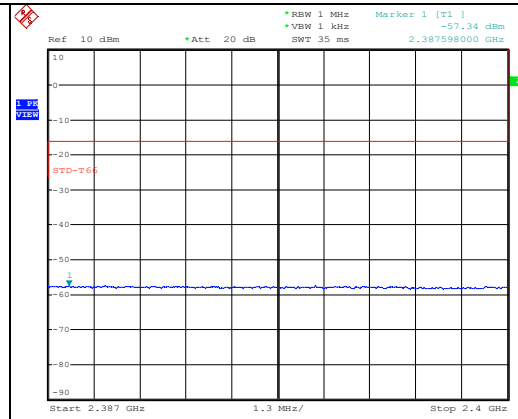
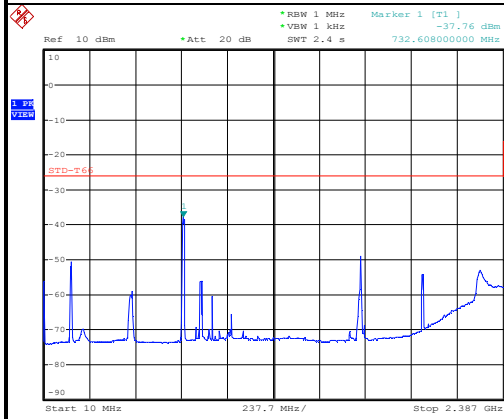


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

Vnormal
Channel 13

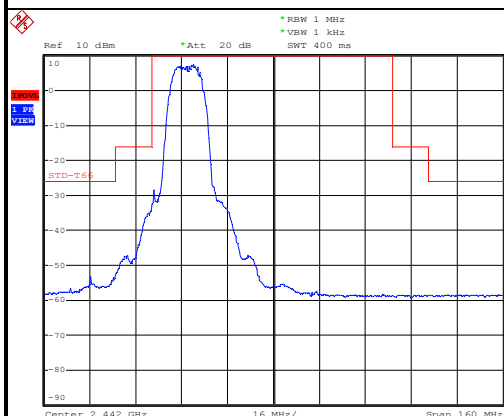
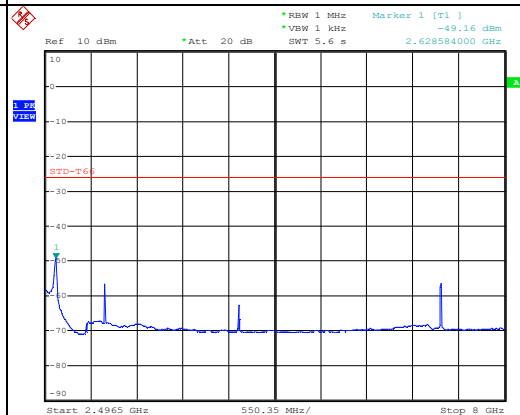
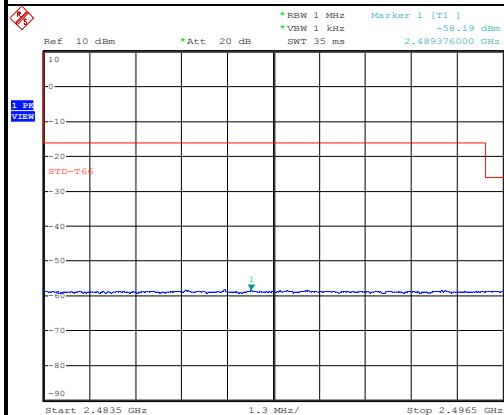
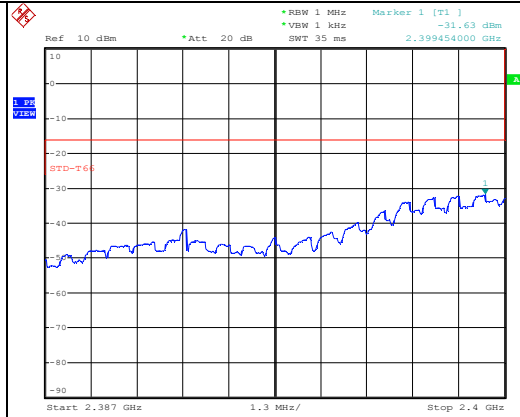
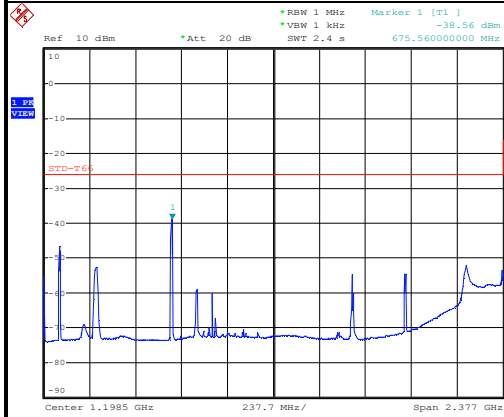


Measurement uncertainty: $\pm 3.93\text{dB}$

**ENVIRONMENTAL
CONDITIONS**

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 1

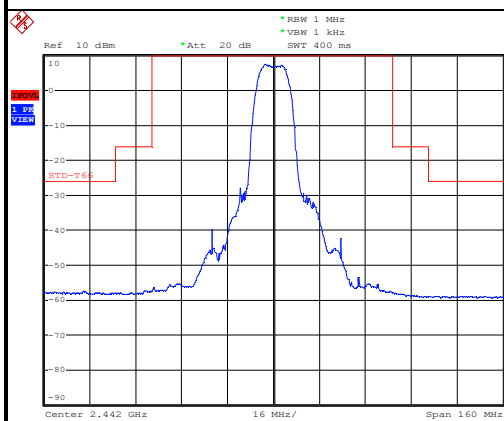
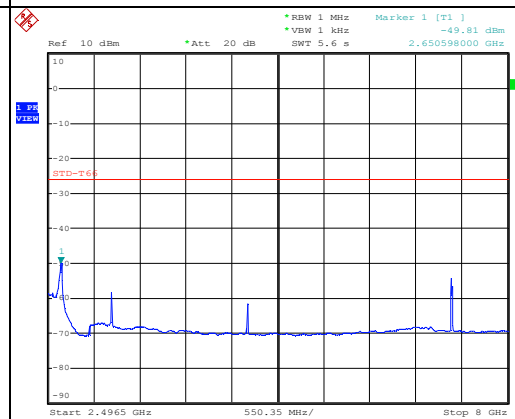
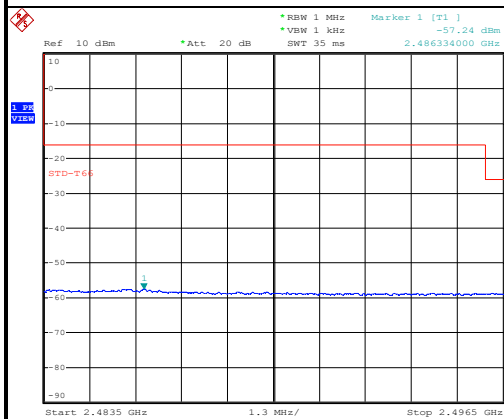
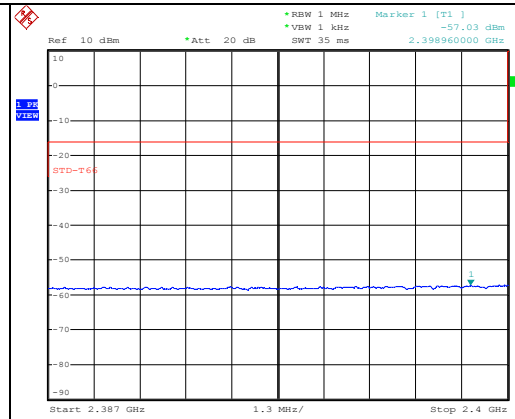
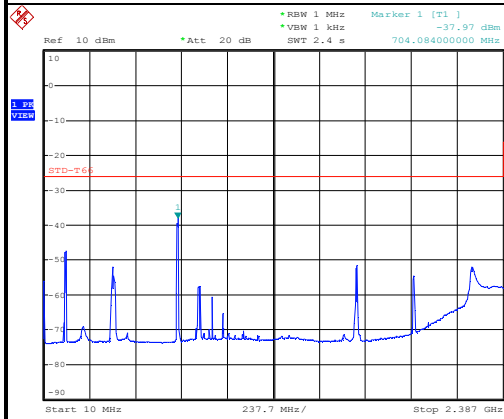


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 7

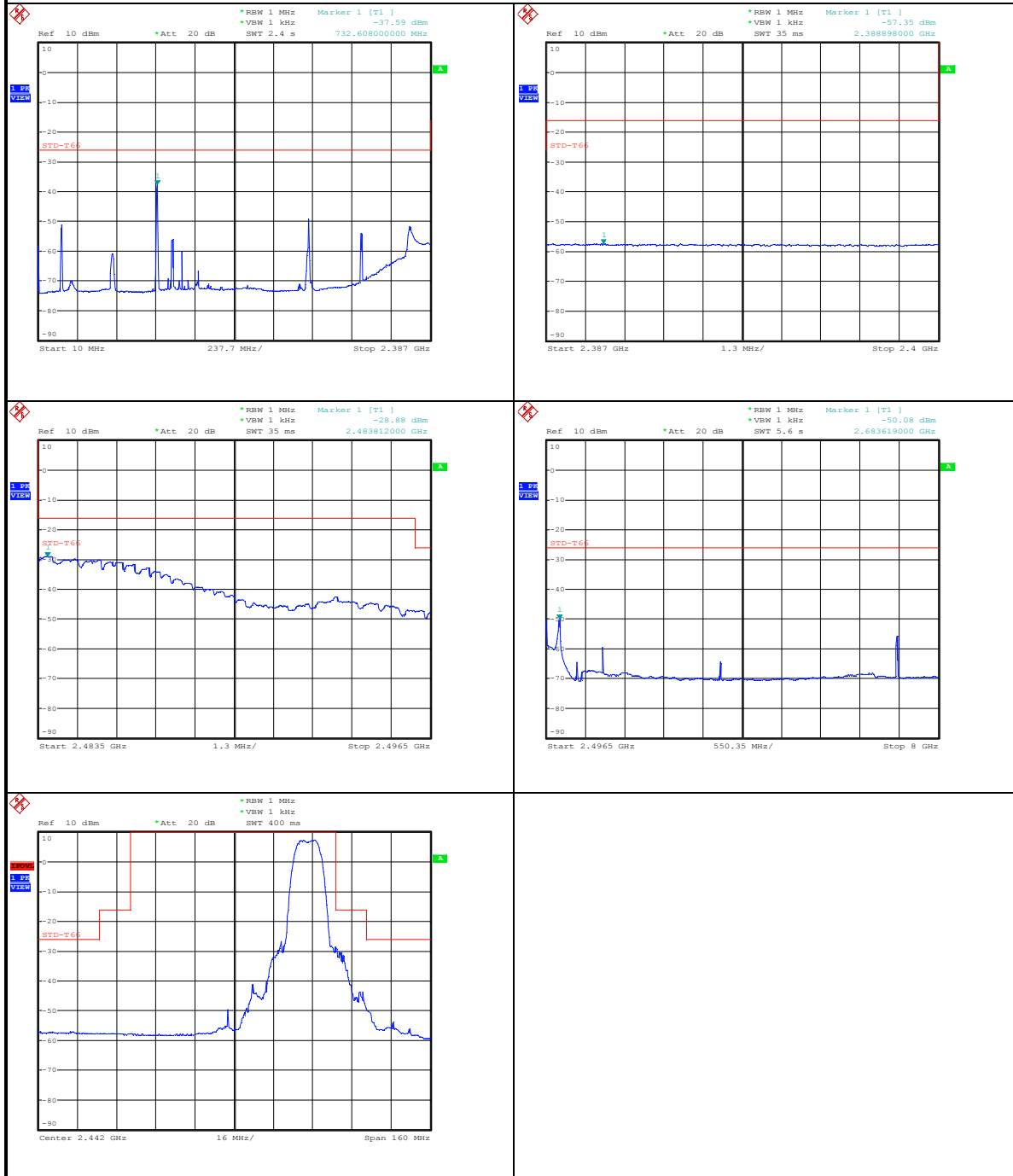


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 13

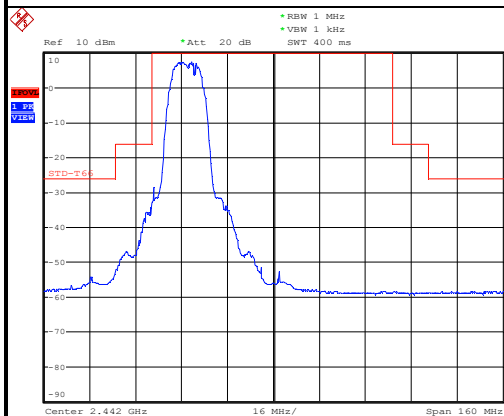
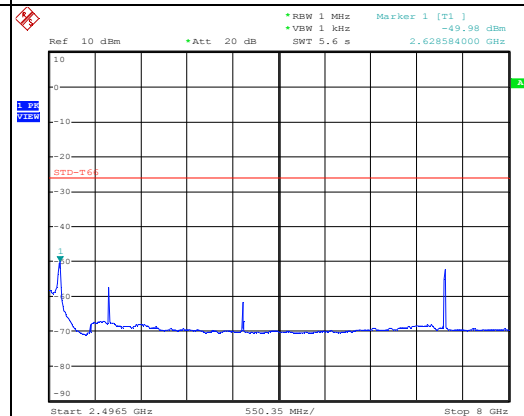
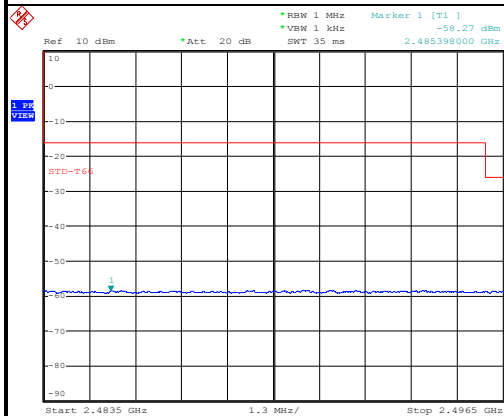
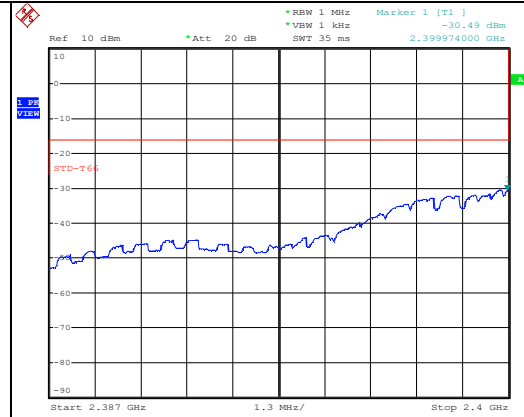
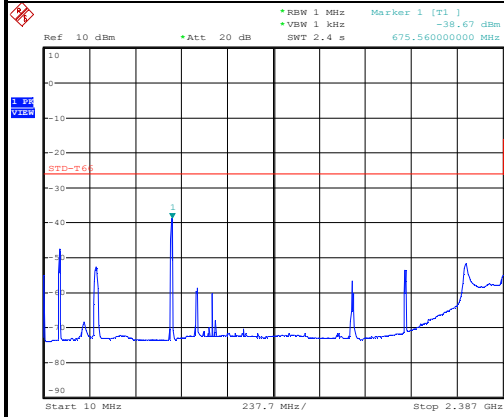


Measurement uncertainty: $\pm 3.93\text{dB}$

**ENVIRONMENTAL
CONDITIONS**

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 1

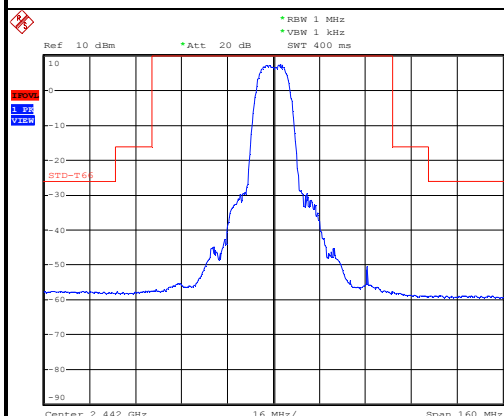
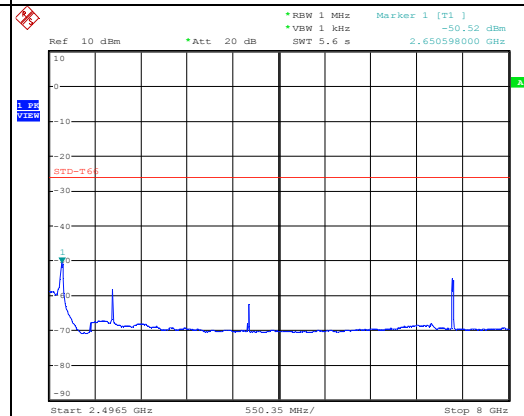
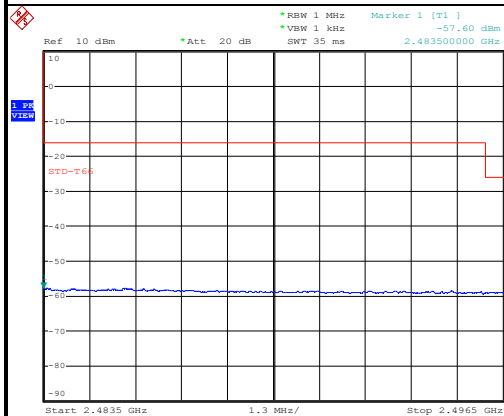
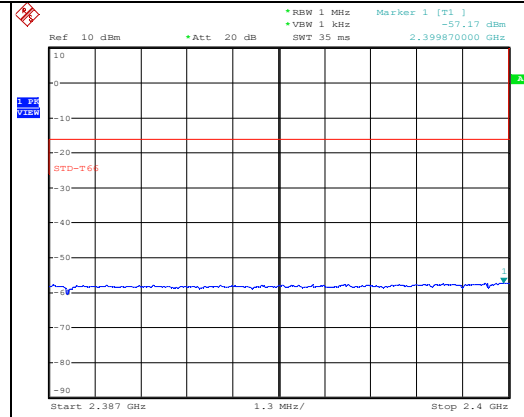
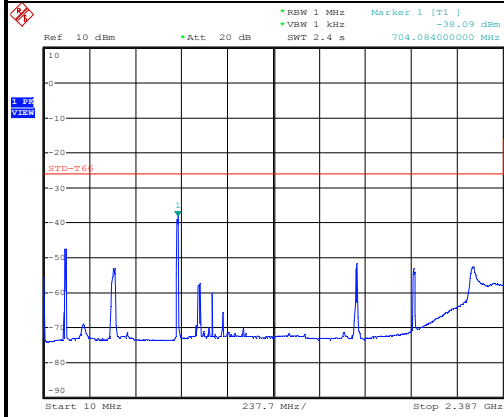


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 7

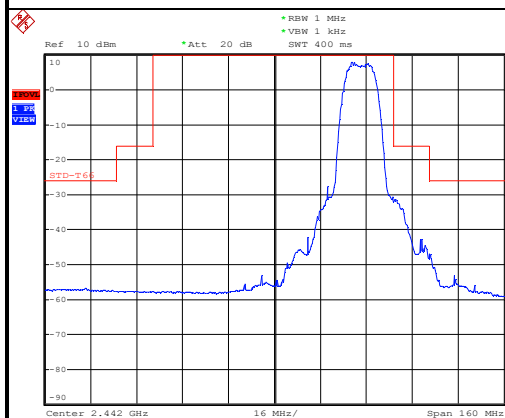
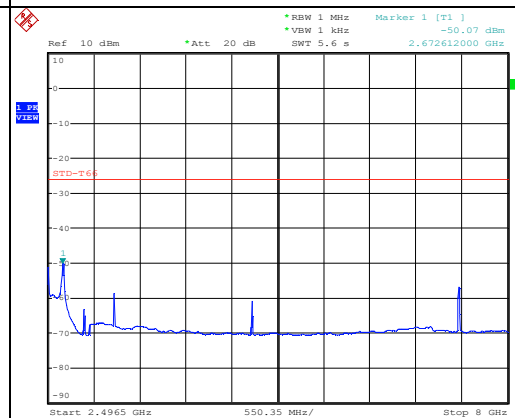
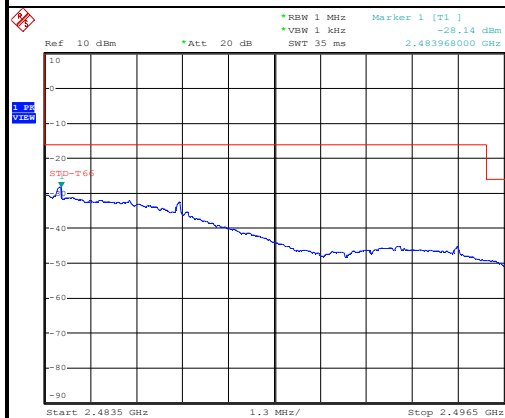
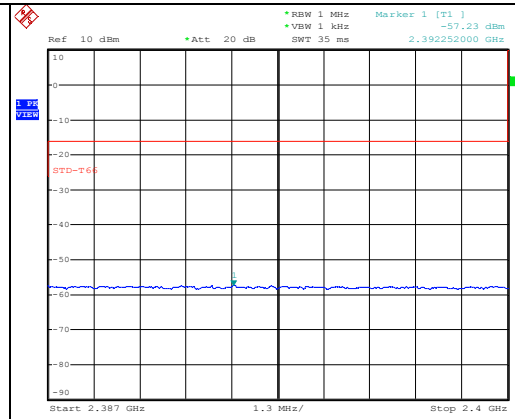
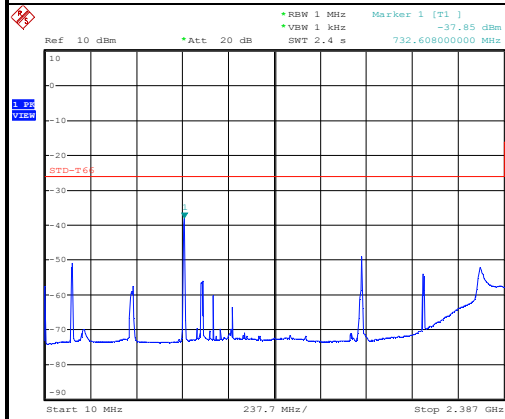


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 13



Measurement uncertainty: $\pm 3.93\text{dB}$

4.4.4 SUMMARY OF TEST RESULT (B)

TEST CHANNEL		CH1 (2412MHz)		CH7 (2442MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE	FREQUENCY (MHz)	MEASURE. VALUE		
Vnormal	10.0MHz to 2387.0MHz	670.80	0.258226 uW	704.08	0.267917 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.94	14.962357 uW	2399.89	0.013552 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2484.25	0.003236 uW	2483.60	0.014289 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	7240.51	0.006501 uW	2650.59	0.009376 uW	2.5 uW	PASS
V+10%	10.0MHz to 2387.0MHz	670.80	0.253513 uW	704.08	0.228034 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.97	14.723125 uW	2399.97	0.013709 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.81	0.003097 uW	2483.81	0.014997 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2628.58	0.008954 uW	2650.59	0.00871 uW	2.5 uW	PASS
V-10%	10.0MHz to 2387.0MHz	670.80	0.244906 uW	704.08	0.265461 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.97	15.100802 uW	2399.87	0.013868 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2484.28	0.003221 uW	2484.07	0.015136 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	3211.95	0.00471 uW	2650.59	0.009099 uW	2.5 uW	PASS

TEST CHANNEL		CH13 (2472MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE		
Vnormal	10.0MHz to 2387.0MHz	732.60	0.239883 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.89	0.004046 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.55	17.947336 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2496.50	0.138038 uW	2.5 uW	PASS
V+10%	10.0MHz to 2387.0MHz	732.60	0.20893 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.94	0.004198 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.52	17.864876 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2496.50	0.132434 uW	2.5 uW	PASS
V-10%	10.0MHz to 2387.0MHz	732.60	0.25527 uW	2.5 uW	PASS
	2387.0MHz to 2400.0MHz	2399.97	0.004064 uW	25.0 uW	PASS
	2483.5MHz to 2496.5MHz	2483.50	17.947336 uW	25.0 uW	PASS
	2496.5MHz to 8000.0MHz	2496.50	0.155239 uW	2.5 uW	PASS

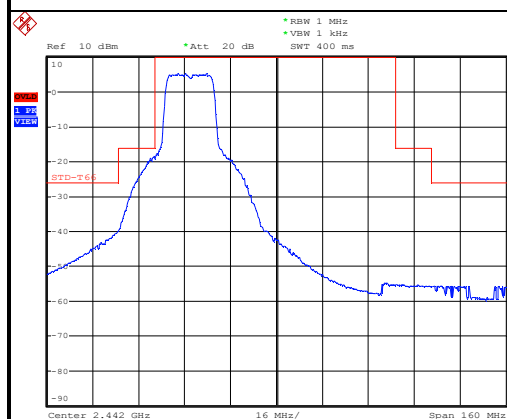
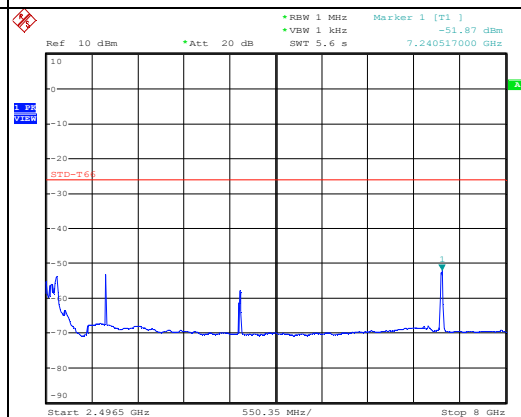
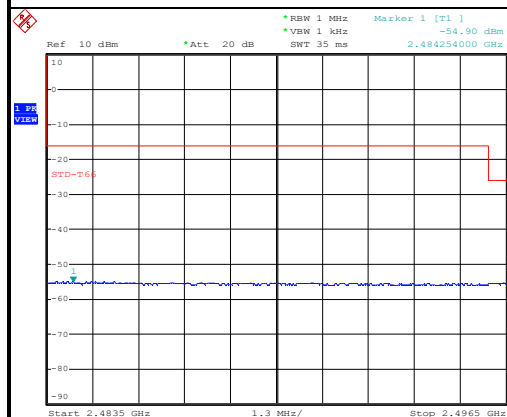
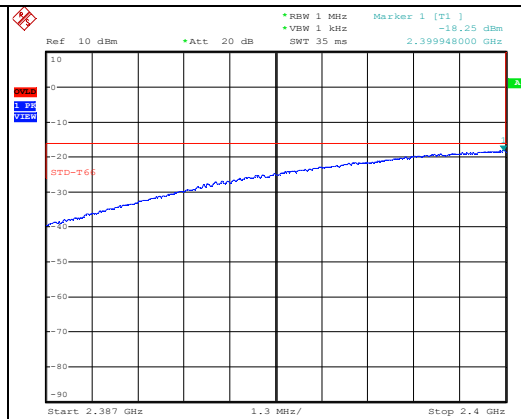
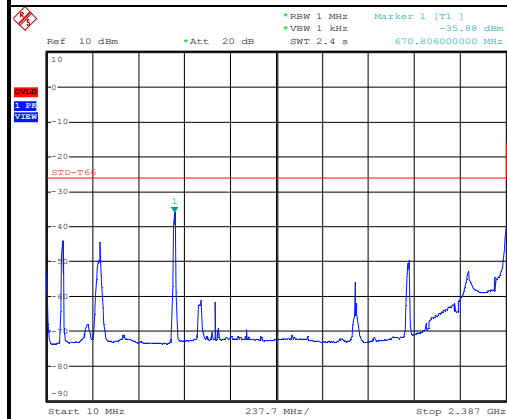
NOTE: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.

4.4.5 TEST RESULTS (B)

**ENVIRONMENTAL
CONDITIONS**

26 deg.C, 60% RH
991 hPa

Vnormal
Channel 1

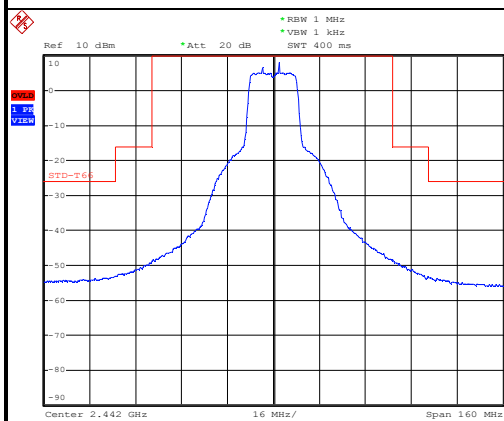
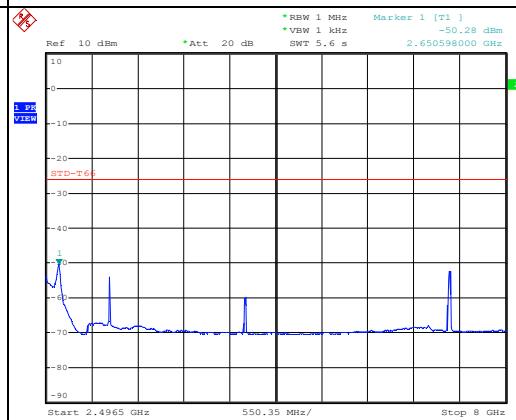
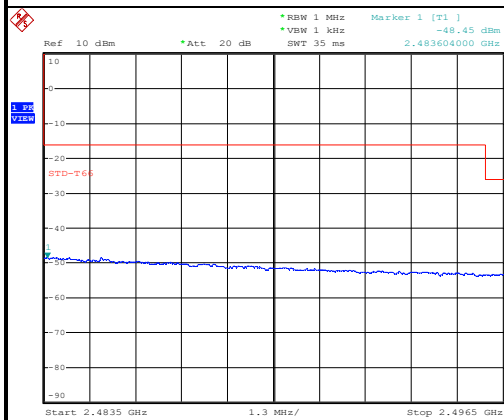
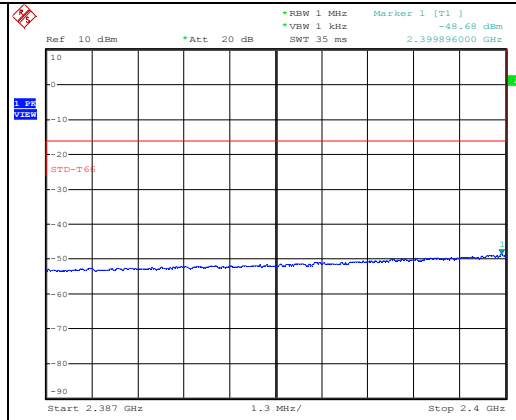
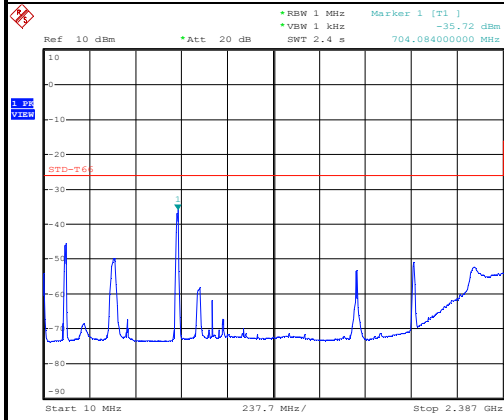


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

Vnormal Channel 7

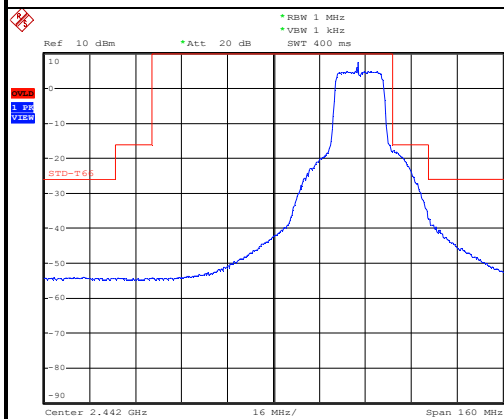
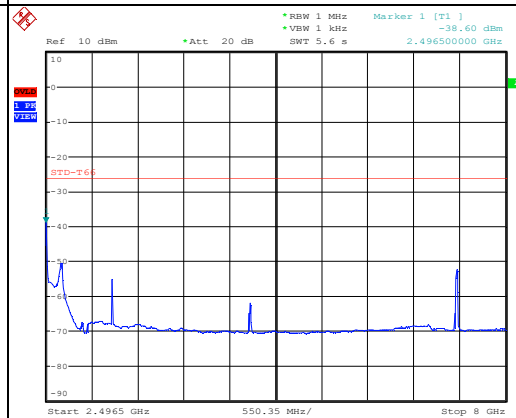
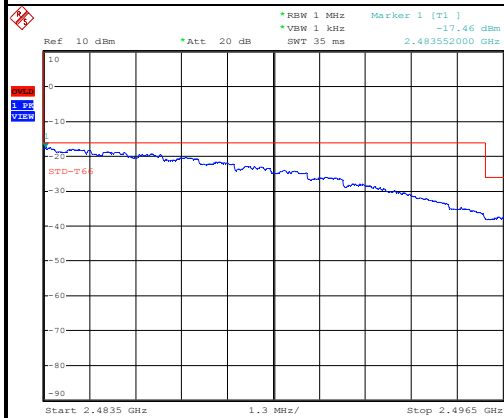
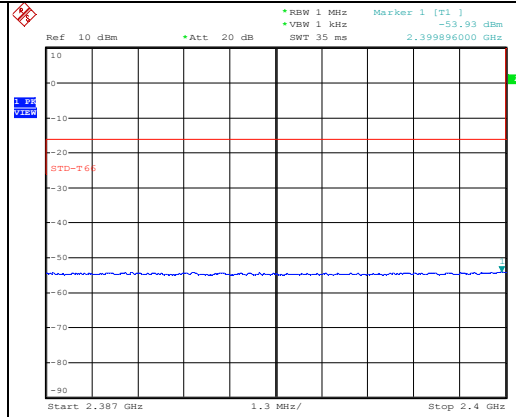
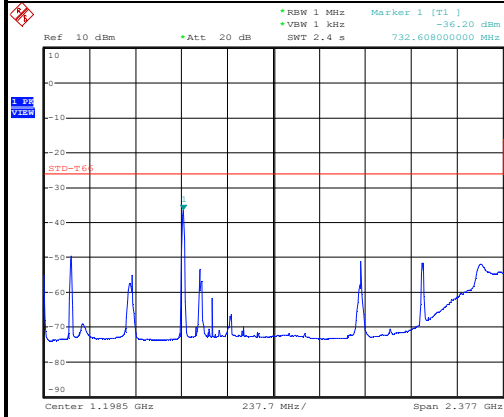


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

Vnormal
Channel 13

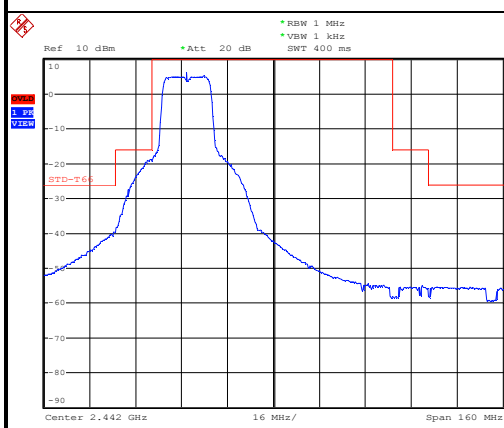
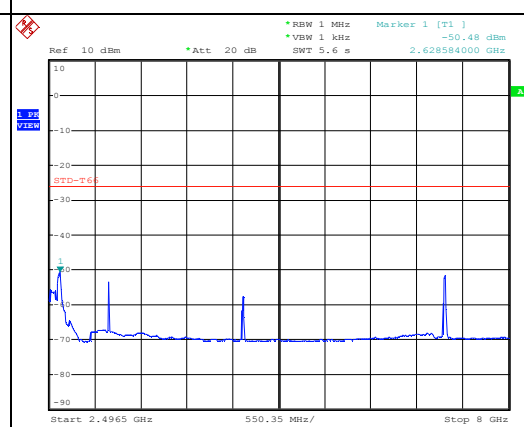
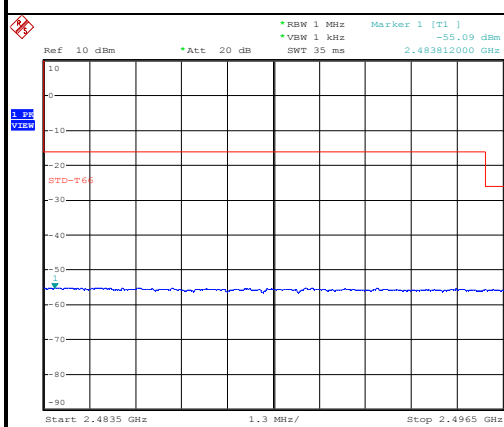
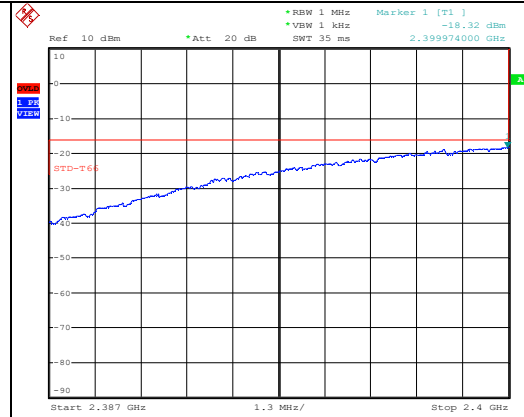
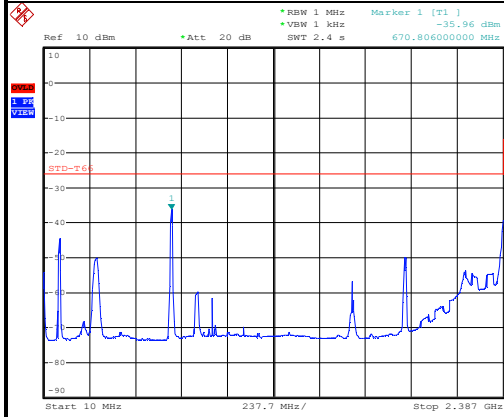


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 1

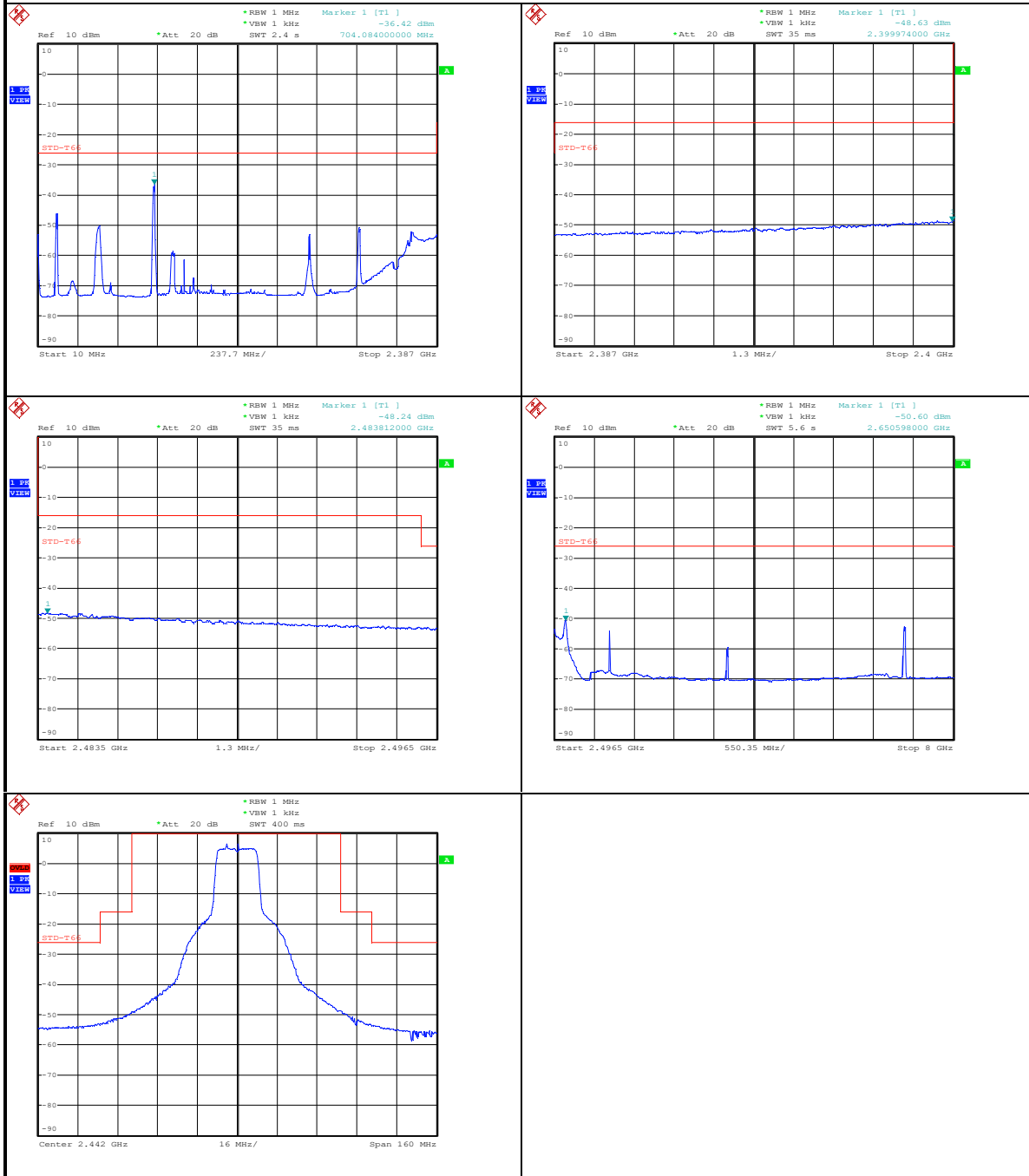


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 7

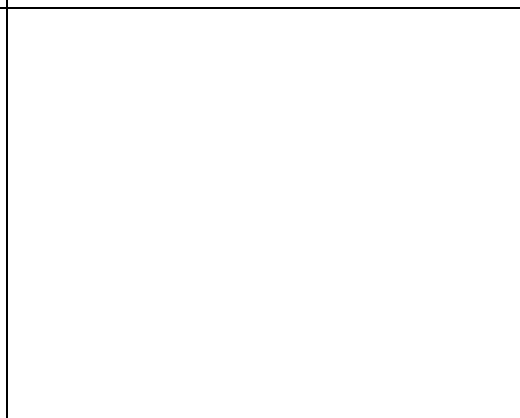
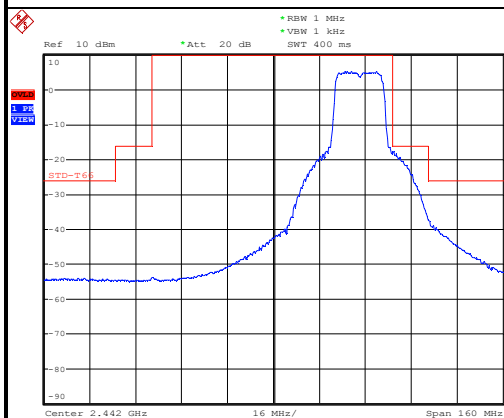
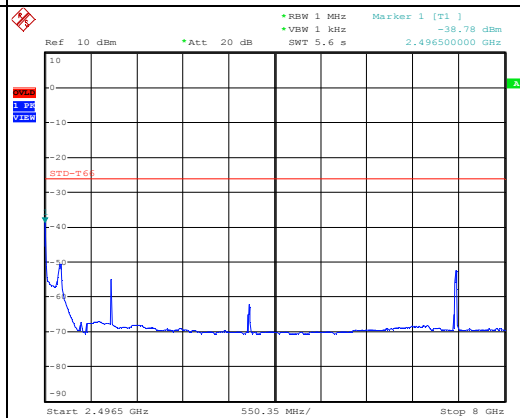
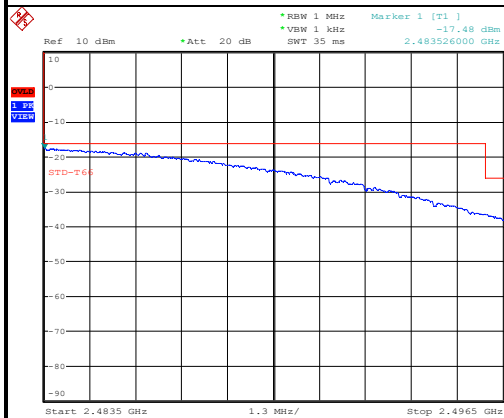
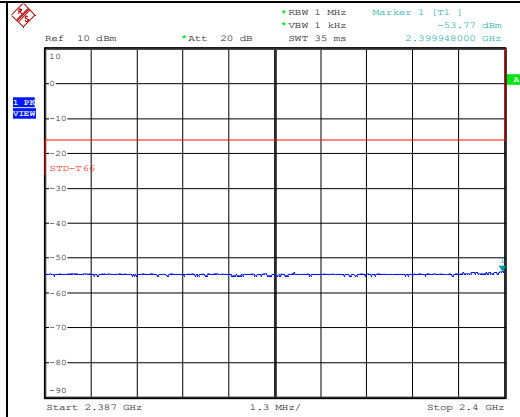
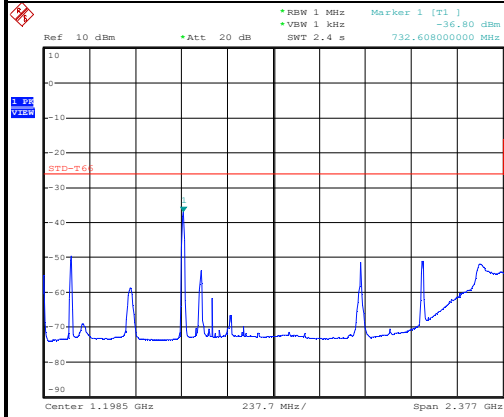


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{+10%}
Channel 13

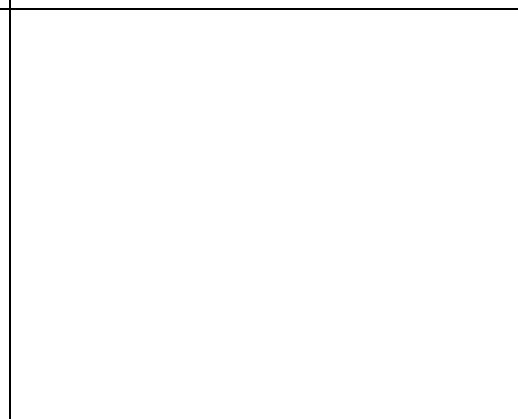
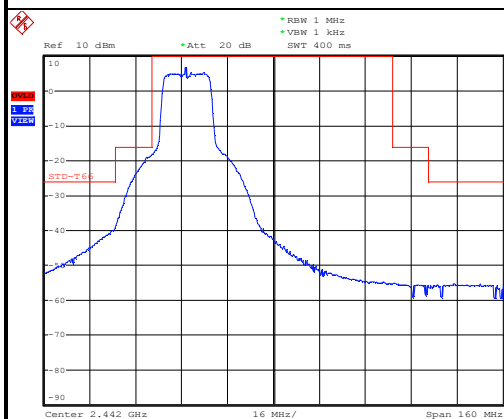
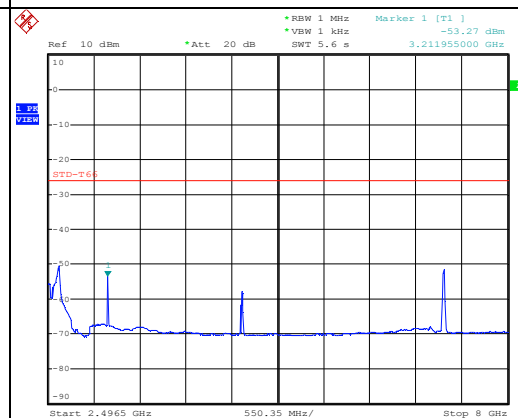
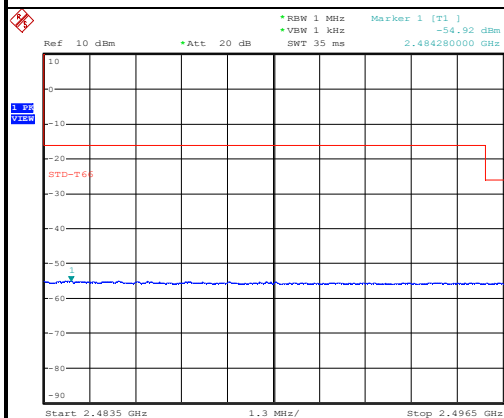
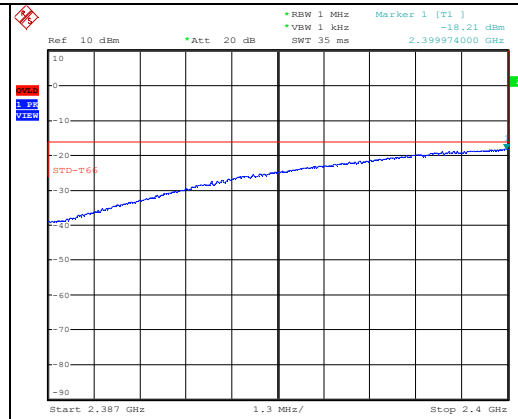
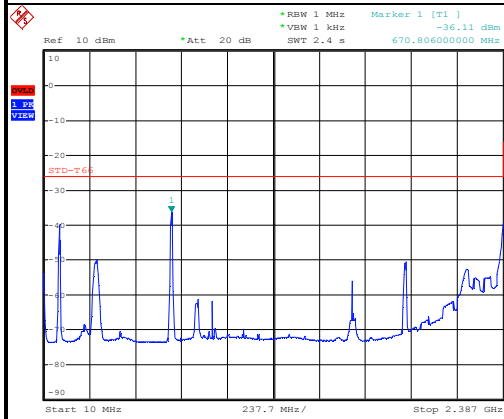


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 1

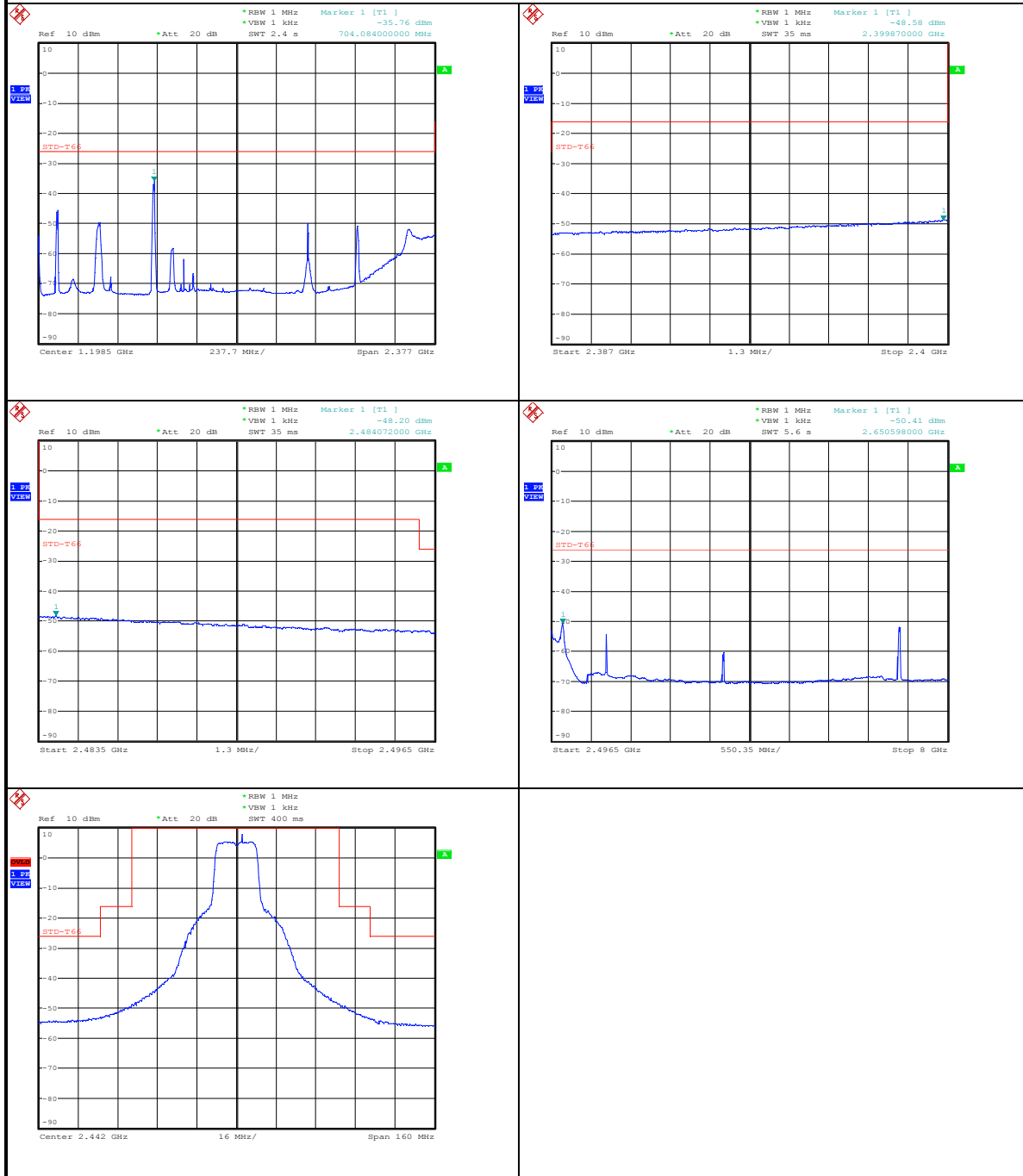


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 7

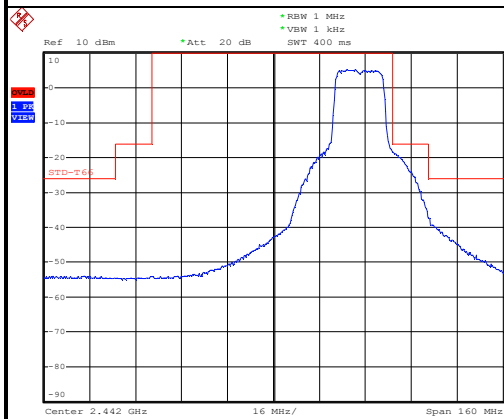
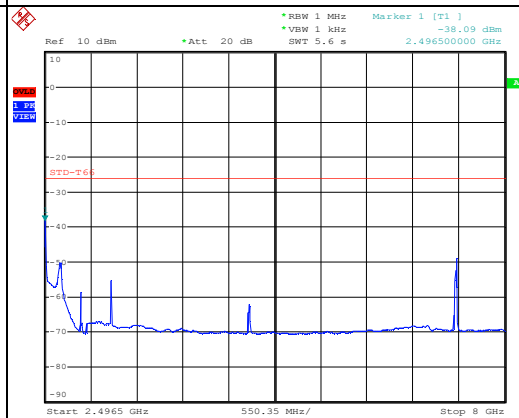
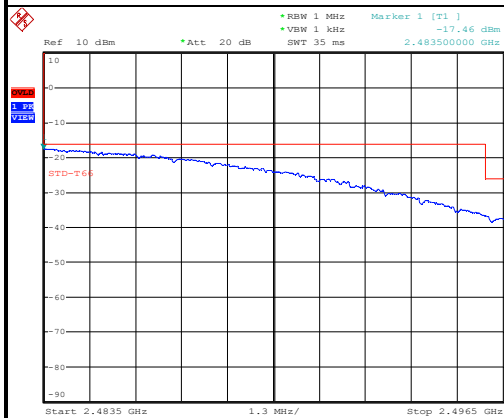
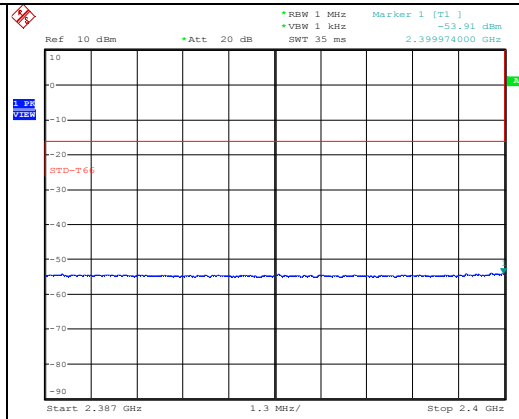
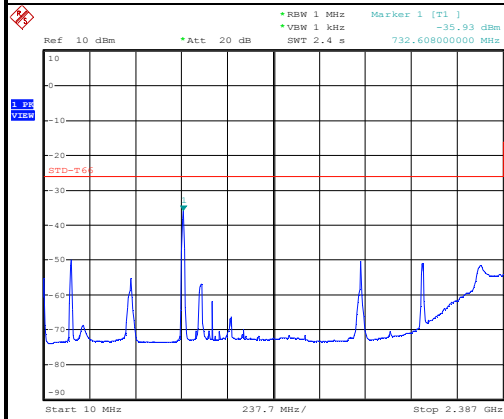


Measurement uncertainty: $\pm 3.93\text{dB}$

ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V_{-10%}
Channel 13



Measurement uncertainty: $\pm 3.93\text{dB}$

4.5 ANTENNA POWER MEASUREMENT

4.5.1 LIMITS OF ANTENNA POWER

Antenna power shall be 10mW/MHz or less.

Tolerance of antenna power shall be +20% (upper value) and -80% (lower value).



4.5.2 TEST RESULTS (A)

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
TEST CONDITION	CONDUCTED RF OUTPUT POWER DENSITY (mW/MHz)			
	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	6.23	6.63	6.56	10
Normal Voltage +10%	6.36	6.66	6.58	10
Normal Voltage -10%	6.30	6.61	6.54	10
Rated power	7.00mW			
Tolerance of antenna power	1.40mW ~ 8.40mW			
Measurement uncertainty	± 1.11dB			

ANTENNA 1, 2 GAIN: 2.2dBi

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
TEST CONDITION	RADIATED RF OUTPUT POWER DENSITY (mW/MHz)			
	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	10.339	11.003	10.887	16.368
Normal Voltage +10%	10.555	11.053	10.920	16.368
Normal Voltage -10%	10.455	10.970	10.854	16.368
Measurement uncertainty	± 1.11dB			

NOTE: The value of radiated RF output densities are "calculated" values.



ANTENNA 3 GAIN: 0dBi

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
	RADIATED RF OUTPUT POWER DENSITY (mW/MHz)			
TEST CONDITION	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	6.230	6.630	6.560	16.368
Normal Voltage +10%	6.360	6.660	6.580	16.368
Normal Voltage -10%	6.300	6.610	6.540	16.368
Measurement uncertainty	± 1.11dB			

NOTE: The value of radiated RF output densities are "calculated" values.

4.5.3 TEST RESULTS (B)

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
CONDUCTED RF OUTPUT POWER DENSITY (mW/MHz)				
TEST CONDITION	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	4.88	5.04	5.08	10
Normal Voltage +10%	4.91	5.06	5.09	10
Normal Voltage -10%	4.87	5.01	5.06	10
Rated power	5.5mW			
Tolerance of antenna power	1.10mW ~ 6.6mW			
Measurement uncertainty	± 1.11dB			

ANTENNA 1, 2 GAIN: 2.2dBi

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
RADIATED RF OUTPUT POWER DENSITY (mW/MHz)				
TEST CONDITION	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	8.099	8.364	8.431	16.368
Normal Voltage +10%	8.149	8.398	8.447	16.368
Normal Voltage -10%	8.082	8.315	8.398	16.368
Measurement uncertainty	± 1.11dB			

NOTE: The value of radiated RF output densities are "calculated" values.



ANTENNA 3 GAIN: 0dBi

ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa			
RADIATED RF OUTPUT POWER DENSITY (mW/MHz)				
TEST CONDITION	CHANNEL 1 2412MHz	CHANNEL 7 2442MHz	CHANNEL 13 2472MHz	MAX. LIMIT (mW/MHz)
Normal Voltage	4.880	5.040	5.080	16.368
Normal Voltage +10%	4.910	5.060	5.090	16.368
Normal Voltage -10%	4.870	5.010	5.060	16.368
Measurement uncertainty	$\pm 1.11\text{dB}$			

NOTE: The value of radiated RF output densities are "calculated" values.

4.6 SPURIOUS EMISSIONS FOR RECEIVER

4.6.1 LIMITS OF SPURIOUS EMISSIONS FOR RECEIVER

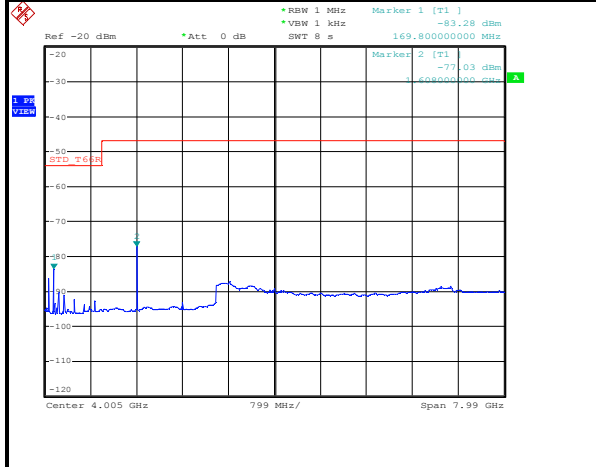
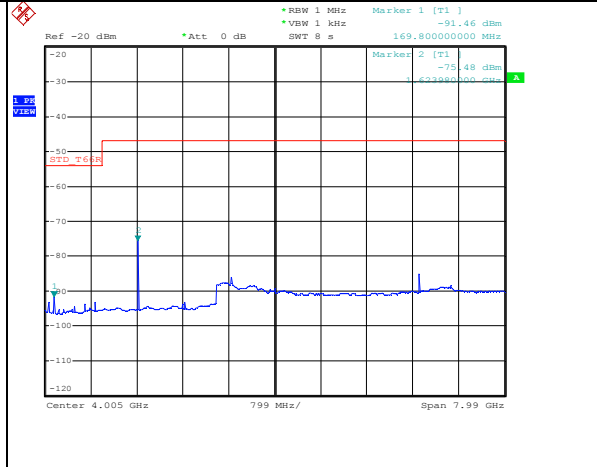
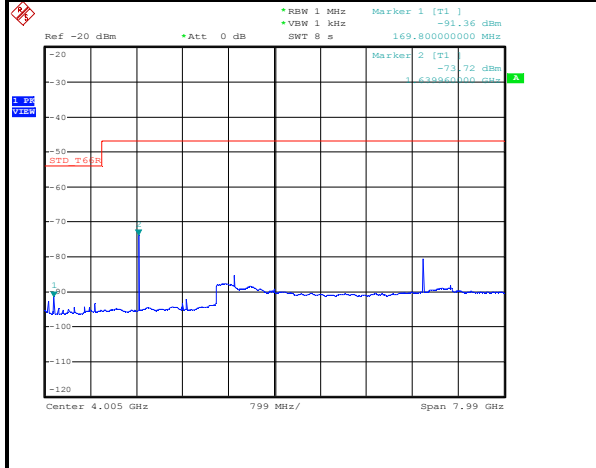

FREQUENCIES (MHz)	LIMIT
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

4.6.2 SUMMARY OF TEST RESULT

TEST CHANNEL		CH1 (2412MHz)		CH7 (2442MHz)		LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)	MEASURE. VALUE	FREQUENCY (MHz)	MEASURE. VALUE		
Vnormal	below 1GHz	169.80	0.004699 nW	169.80	0.000714 nW	4 nW	PASS
	above 1GHz	1608.00	0.019815 nW	1623.98	0.028314 nW	20 nW	PASS
V+10%	below 1GHz	169.80	0.004742 nW	169.80	0.000718 nW	4 nW	PASS
	above 1GHz	1608.00	0.019634 nW	1623.98	0.028379 nW	20 nW	PASS
V-10%	below 1GHz	169.80	0.000773 nW	169.80	0.000664 nW	4 nW	PASS
	above 1GHz	1608.00	0.019588 nW	1623.98	0.028184 nW	20 nW	PASS
TEST CHANNEL		CH13 (2472MHz)				LIMIT	RESULT
TEST CONDITION	FREQUENCY RANGE	FREQUENCY (MHz)		MEASURE. VALUE			
Vnormal	below 1GHz	169.80		0.000731 nW		4 nW	PASS
	above 1GHz	1639.96		0.042462 nW		20 nW	PASS
V+10%	below 1GHz	169.80		0.001396 nW		4 nW	PASS
	above 1GHz	1639.96		0.042658 nW		20 nW	PASS
V-10%	below 1GHz	169.80		0.004943 nW		4 nW	PASS
	above 1GHz	1639.96		0.042364 nW		20 nW	PASS

NOTE: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
2. The spectrum plots are attached on the following pages.

4.6.3 TEST RESULTS

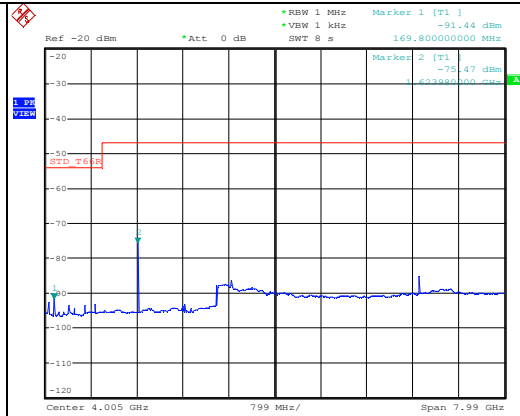
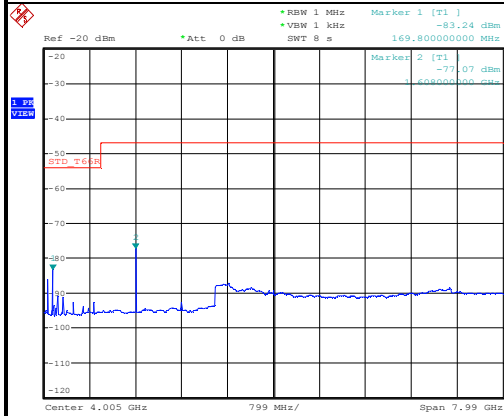
ENVIRONMENTAL CONDITIONS	26 deg.C, 60% RH 991 hPa
Vnormal	
	
Channel 1	Channel 7
	
Channel 13	
Measurement uncertainty: ± 3.93dB	



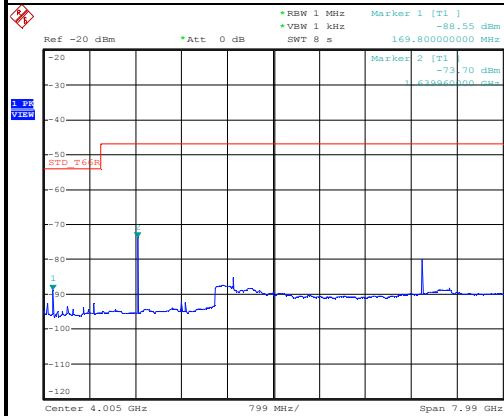
ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V +10%



Channel 1



Channel 7

Channel 13

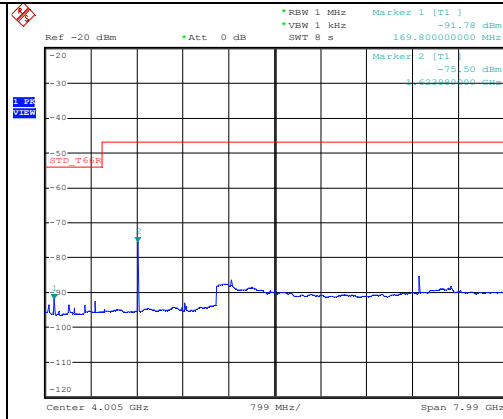
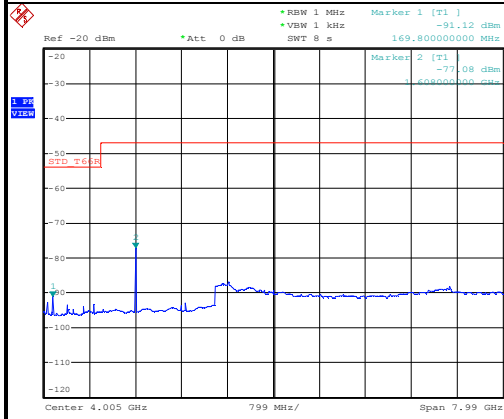
Measurement uncertainty: $\pm 3.93\text{dB}$



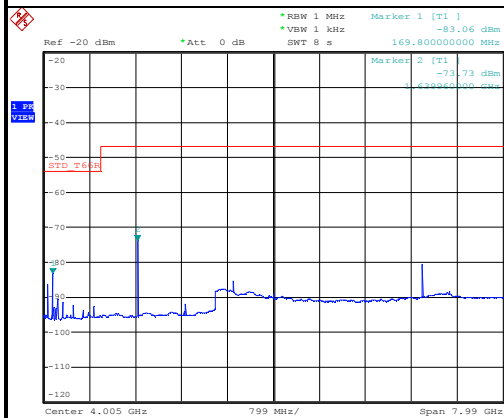
ENVIRONMENTAL CONDITIONS

26 deg.C, 60% RH
991 hPa

V-10%



Channel 1



Channel 7



Channel 13

Measurement uncertainty: $\pm 3.93\text{dB}$



5 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2006
SIGNAL GENERATOR / Agilent	E8257C	MY43320668	Dec. 07, 2006
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Jan. 16, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
GERMANY	TUV Rheinland
JAPAN	VCCI
NORWAY	NEMKO
CANADA	INDUSTRY CANADA, CSA
R.O.C.	CNLA, BSMI, DGT
NETHERLANDS	Telefication
SINGAPORE	PSB, GOST-ASIA (MOU)
RUSSIA	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Linko RF Lab.

Tel: 886-3-3270910

Fax: 886-3-3270892

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.