FCC test report

Test report nr. 25511FCC12

Measurements performed in accordance with:

FCC Rules: code of Federal Regulations (CFR) no. 47
PART 15 – RADIO FREQUENCY DEVICES

Product:	Transmitter (Low Power Device)
Tested model:	ONE2E/A, ONE4E/A
FCC ID	PML433ONA
Applicant:	Nice S.p.A.
Manufacturer:	Nice S.p.A.
Trademark:	Nice
Testing Laboratory	Nice S.p.A. Via Pezza Alta, 13 I-31046 Rustignè di Oderzo (TV)
Registration number:	771316
Date of receipt sample:	2012-12-04
Testing date:	2012-12-04 to 2012-12-07
Issue date:	*28 March 2013*

Tested by: C. Musat

Checked by: E. Campion

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1
General Description of Equipment under Test

1.1 Applicant

Name: Nice S.p.A.

Address: Via Pezza Alta, 13 31046 Rustignè di Oderzo (TV)

Country: ITALY

1.2 Manufacturer

Name: Nice S.p.A.

Address: Via Pezza Alta, 13 31046 Rustignè di Oderzo (TV)

Country: ITALY

1.3 Equipment classification

According to definition 15.3 (o) is a intentional Radiator operating within the Bands:

so it shall fulfil provisions of 47CFR Part 15 Subpart C – international radiators – and Section 15.209.

According to definition 15.3 (z) is a unintentional Radiator:

So it shall fulfil provisions of 47CFR Part 15 Subpart B – Unintentional radiator and section 15.107 and 15.109.

1.4 Basic Description of equipment under test

Parameters	Value
Type of equipment:	Transmitter (low power device)
Model:	ONE2e/A, ONE4E/A
FCC ID:	PML433ONA
Trade Name:	Nice
Data cable:	-
Telecom cable:	-
Power supply type:	3Vdc (battery type CR2032)
AC power input cable:	-
DC power input cable:	-

Model	Description
ONE4E/A	Transmitter with 4 buttons
ONE2E/A	Transmitter with 2 buttons. Same of ONE4E/A but with 2 buttons.

1.5 Feature of equipment under test

Parameters	Value
Power specification	3Vdc (battery type CR 2032)
Operating frequency:	433.92MHz
Maximum RF output power:	88.50dBµV/m peak (average 78.88dBµV/m)
Occupied Bandwidth (99% BW):	64.65kHz
Emission Designator (ITU):	64K6A1D
Modulation:	OOK (On Off Key)
Channel spacing:	No channel
Antenna:	Integral
Rx Sensitivity:	-
Main SW identification:	FIRFON402
Main HW board identification:	SB211B3
Peripherals included (for system application):	-
Interfaces:	-
Integrated interfaces	-
AC adapter:	-

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2
Test configuration of equipment under test

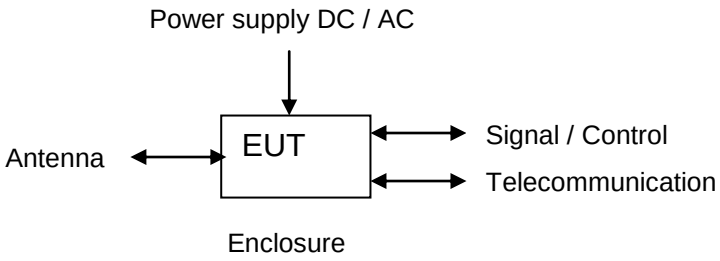
2.1 Environmental conditions

Test conditions	Measured
Ambient temperature:	20 ÷ 25°C
Relative humidity:	50 ÷ 60%
Atmospheric pressure:	900 ÷ 1010mb

2.2 Description of support equipment

Equipment	Manufacturer	Model
-	-	-

2.3 Interface identification and connection diagram of test system



#	Interface	Description	Maximum length	Ref. Document
1	Enclosure	Plastic enclosure	56 x 45 x 11 mm	-
2	AC mains power input	-	-	-
3	DC power port	3Vdc battery type CR2032	-	-
4	Signal / control port	-	-	-
5	Antenna port	-	-	-

3
Operation of equipment under test

3.1 Operating test conditions

#	Description
1	Transmitter
2	standby

4
Tests identification and result

CFR47 Part 15 Section	Title	Operating condition	Result
15.203 15.247 (b)(4)(i)	Antenna requirements	-	N/A
15.207 (a)	Conduced emission	#1	N/A
15.209 (a) (f)	Radiated emission	#1	Pass
15.231 (a)	Timing of the transmitter	#1	Pass
15.231 (a)	Transmit behaviour after releasing the TX-button	#1	Pass
15.231 (b)	Radiated output power	#1	Pass
15.35 (c)	Typical pulse train of a signal	#1	Pass
15.231 (b)	Compliance with the limit of FCC	#1	Pass
15.231 (b)	Spurious emission - radiated	#1	Pass
15.231 (c)	Occupied bandwidth	#1	Pass

4.1 Methods of measurement

All compliance measurements have been carried out using the procedures described in the standard ANSI C63.4-2009 (excluding sub-par. 4.1.5.2, 5.7.9 and 14), C63.10-2009 and Section 15.31 of CFR47 Part 15 – Subpart A (General).

4.2 Frequency range investigated

a) conduced emission tests: from 9kHz to 30MHz.
b) Radiated emission tests: from 150kHz to tenth harmonic of fundamental.

5
Tests

5.1 Antenna requirements

~~Specify:~~	
~~Base standard:~~	~~47CFR Part 15 Sections 15.203, 15.204~~

~~An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, bu the use of a standard antenna jack or electrical connector is prohibited. This requirements does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219 or 15.221. Further, this requirements does not apply to intentional radiators which, in accordance with Section 15.31 (d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.~~

~~Antenna Specification:~~	
~~N° of authorized antenna type:~~	
~~Antenna type:~~	
~~Maximum total gain:~~	
~~External power amplifiers:~~	

~~Antenna description:~~		
~~***No.***~~	~~***Manufacturer***~~	~~***Model Type***~~

~~Comments:~~
~~-~~

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5.2 Conduced emission

Specify:	
Base standard:	47CFR Part 15 Section 15.207

1) The EUT was placed on wooden table size 80cm, raised 80cm in which is located 40cm away from the vertical wall shielded room.
2) Each EUT powered input cord was individually connected through a 50Ω/50µH LISN to the input power source.
3) Exploratory measurements were made identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4) The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was than performed over the frequency range of 0,15MHz to 30MHz.
5) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 10kHz during the measurements.
6) The measurements with Quasi-Peak detector are performed only for frequencies for which the Peak values are ≥ (Q.P. limit – 6dB)

Test Requirements:	
Test Setup:	ANSI C63.4
Limit of mains terminal disturbance voltage:	15.207 (a)
Frequency range:	9kHz – 150kHz 150kHz – 30MHz
IF Bandwidth:	200Hz 9kHz
EMC class	B

Limits (1):

Frequency [MHz]	*Quasi-Peak (dBµV)*	*Average (dBµV)*
0,15 – 0,5	66 – 56	56 – 46
0,5 – 5	56	46
5 - 30	60	50

Note: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.

Test Data:		
Port under test	*Operating condition*	*Result*
AC mains power input port	#1	Complies

Comments:
-

5.3 Radiated emission

Specify:	
Base standard:	47CFR Part 15 Section 15.209

1) The EUT was placed on turntable which is 0,8m above the ground plane.
2) The turntable shall rotate from 0° to 360° degrees to determine the position of maximum emission level.
3) The EUT is positioned 3m away from the receiving antenna which varied from 1 to 4m to find the highest emission.
4) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 100kHz below 1000MHz and 1MHz above 1000MHz.
5) The receiving antenna was positioned in both horizontal and vertical polarization.
6) The measurements with Quasi-Peak detector, below 1000MHz are performed only for frequencies for which the Peak values are ≥ (Q.P. limit – 6dB).

Test Requirements:	
Test Setup:	ANSI C63.4
Test facility:	Anechoic chamber
Test distance:	3m
Limits for radiated disturbances:	15.209 (a)
Frequrncy range:	150kHz to 1GHz
IF bandwidth (below 30MHz):	9kHz
IF badwidth (below 1000MHz):	120kHz
IF badwidth (above 1000MHz):	1MHz
EMC class:	B

Limits [(1)]:

Frequency [MHz]	*Field Strength (μV/m)*	*Measurement distance (m)*
0,0009 – 0,490	2400/F(kHz)	300
0,490 – 1,750	24000/F(kHz)	30
1,750 - 30	30	30
30 - 88	100	30
88 -216	150	3
216 - 960	200	3
above 960	500	3

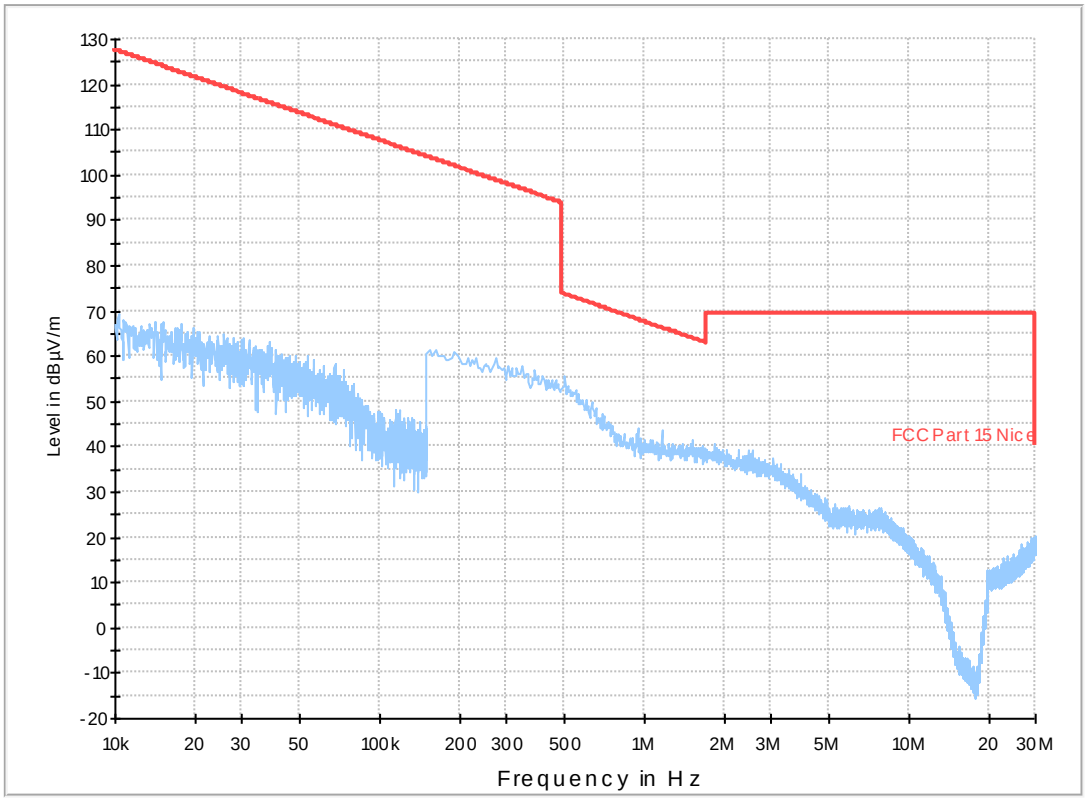
Note: [(1)] to convert the measuring distance from 3m to 300m and 30m to 300m a correction factor from 40dB/decade was used

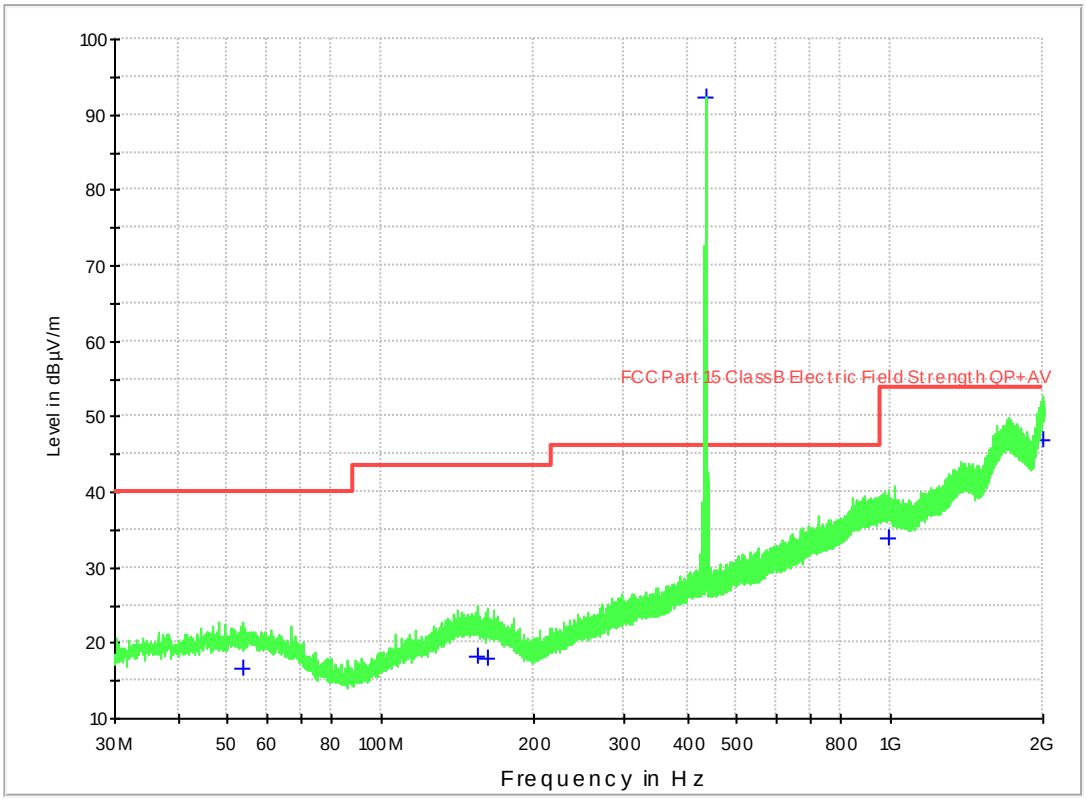
Test Data.:

Port under test	*Operating condition*	*Result*
Enclosure	#1	Complies

Comments:

the results represent the worst case of emissions between three polarizations verified (X, Y and Z).

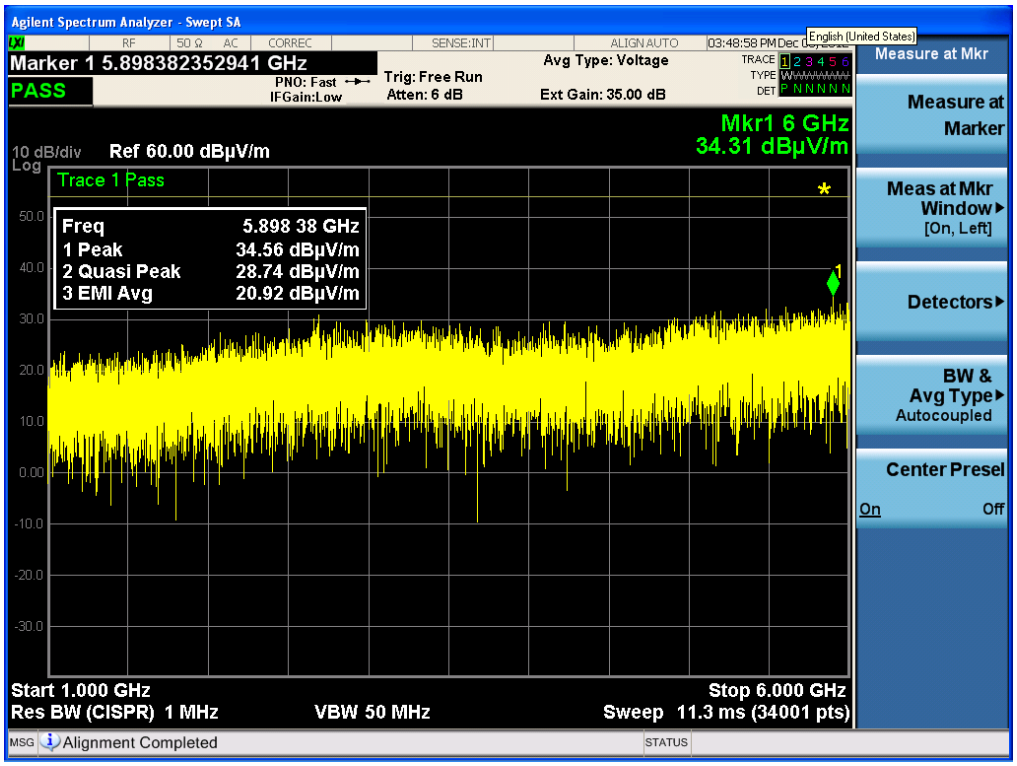

130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Level in dBµV/m
10k
20
30
50
100k
200
300
500
1M
2M
3M
5M
10M
20
30M
Frequency in Hz
FCC Part 15 Nice



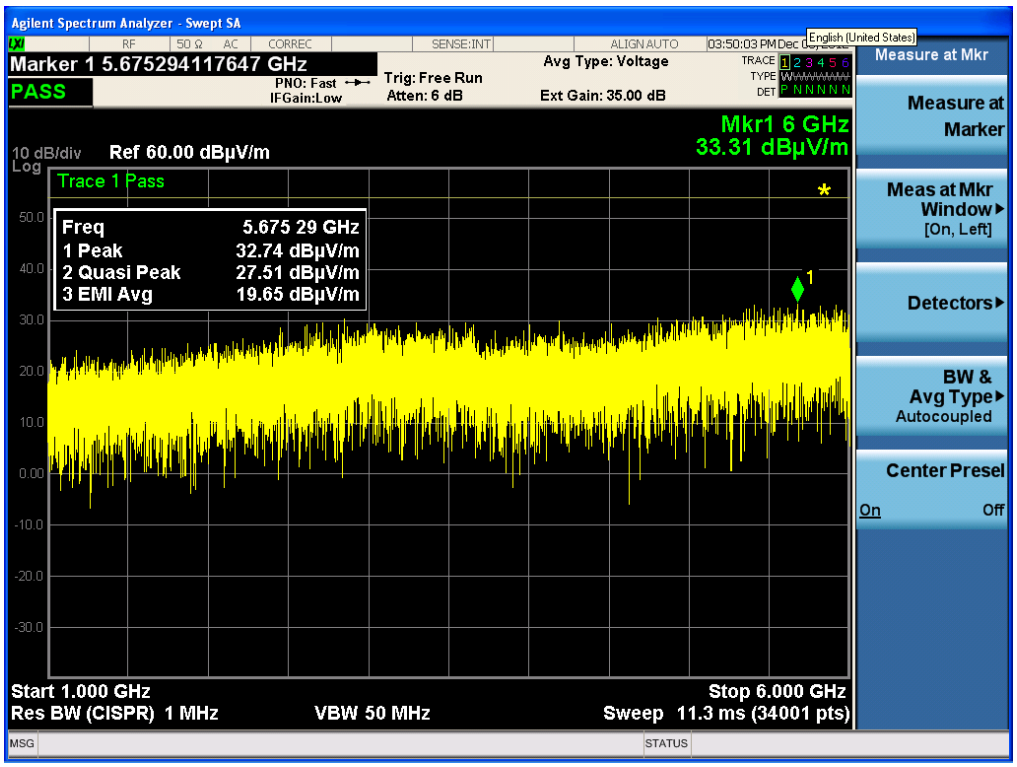
Worst case between Horizontal and Vertical polarizations

Result Table_Single

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
53.520000	16.5	1000.0	120.000	100.0	V	0.0	12.6	
154.440000	18.2	1000.0	120.000	100.0	V	0.0	14.6	
162.080000	17.9	1000.0	120.000	100.0	V	0.0	14.3	
433.960000	92.3	1000.0	120.000	100.0	H	0.0	19.9	
995.560000	33.8	1000.0	120.000	100.0	V	0.0	29.5	
1995.940000	46.9	1000.0	120.000	100.0	V	0.0	42.2	



Horizontal polarization



Vertical polarization

5.4 Timing of the transmitter

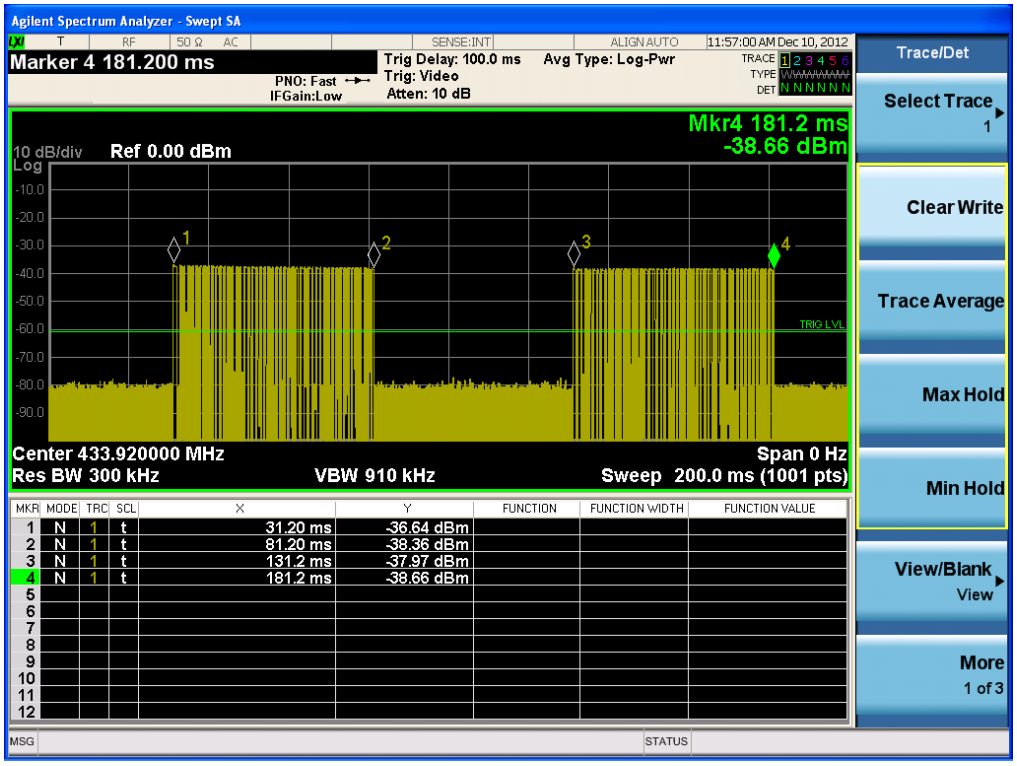
Specify:	
Base standard:	CFR47 Part 15 Section 15.231 (a)

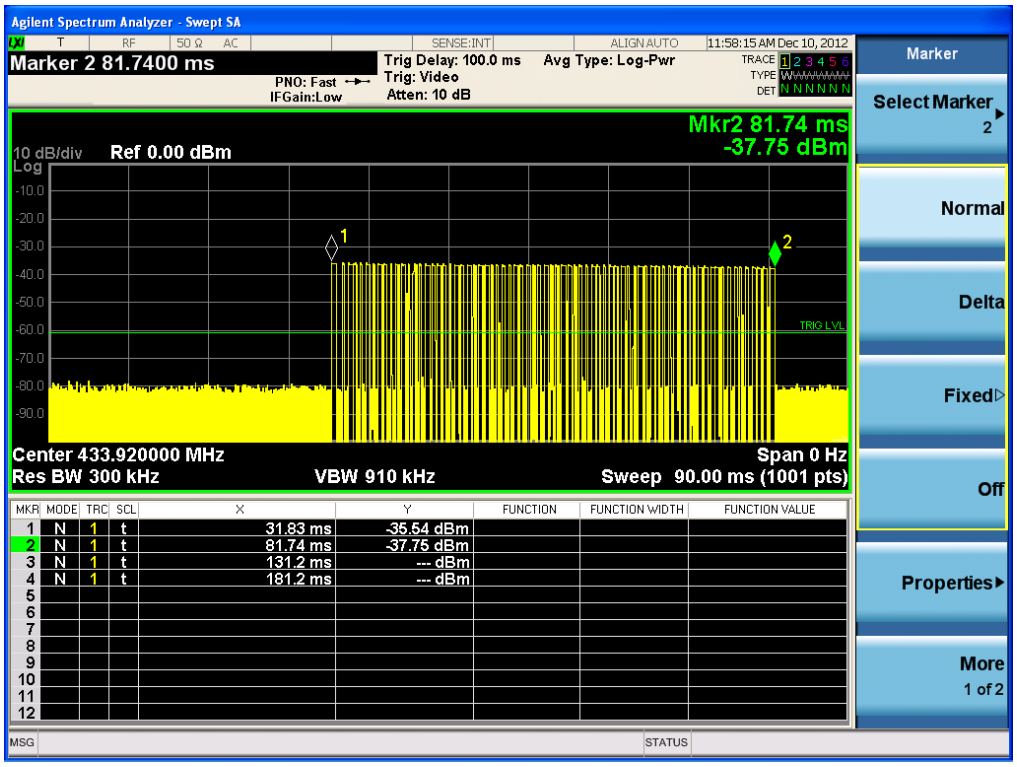
Unless otherwise specified, e.g. Section 15.225 (b), when the radiated emission limits are expressed in term of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0,1 seconds. As an alternative (provided the transmitter operates for longer than 0,1 seconds) or in cases where the pulse exceeds 0,1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0,1 second interval strength shall be submitted with any application fro certification or shall be retained in the measurement data file for equipment subjected to notification or verification.

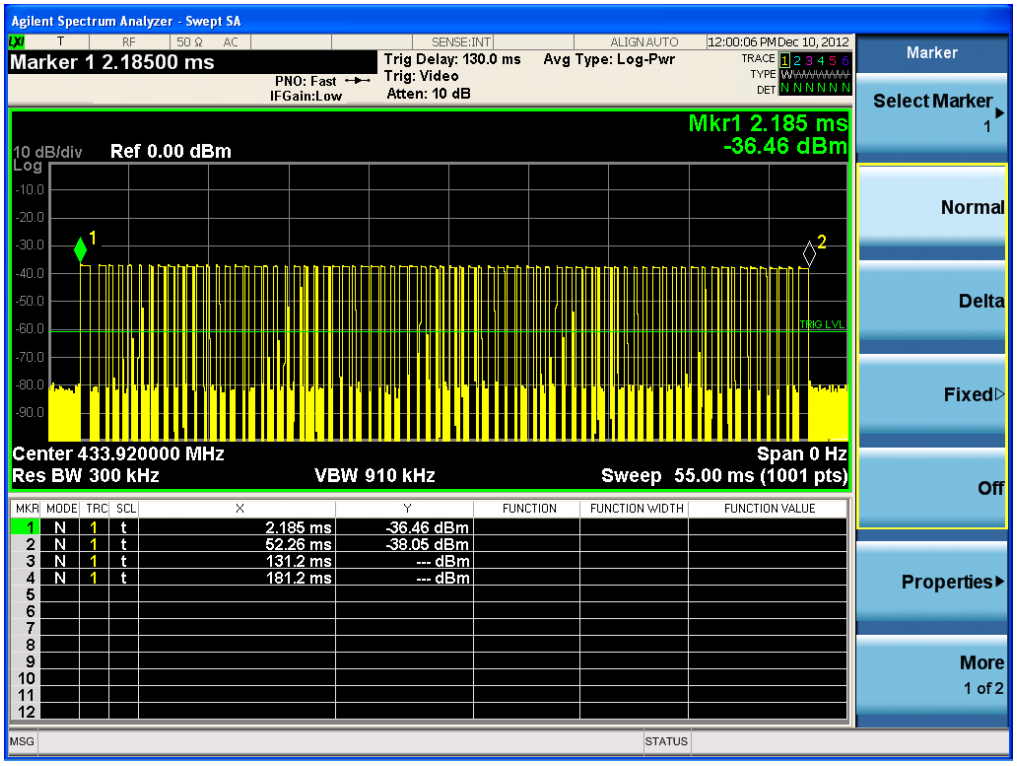
Test requirements:	
Test Setup:	CFR47 Part 15 Section 15.35 (c)
RBW:	1MHz
VBW:	3MHz

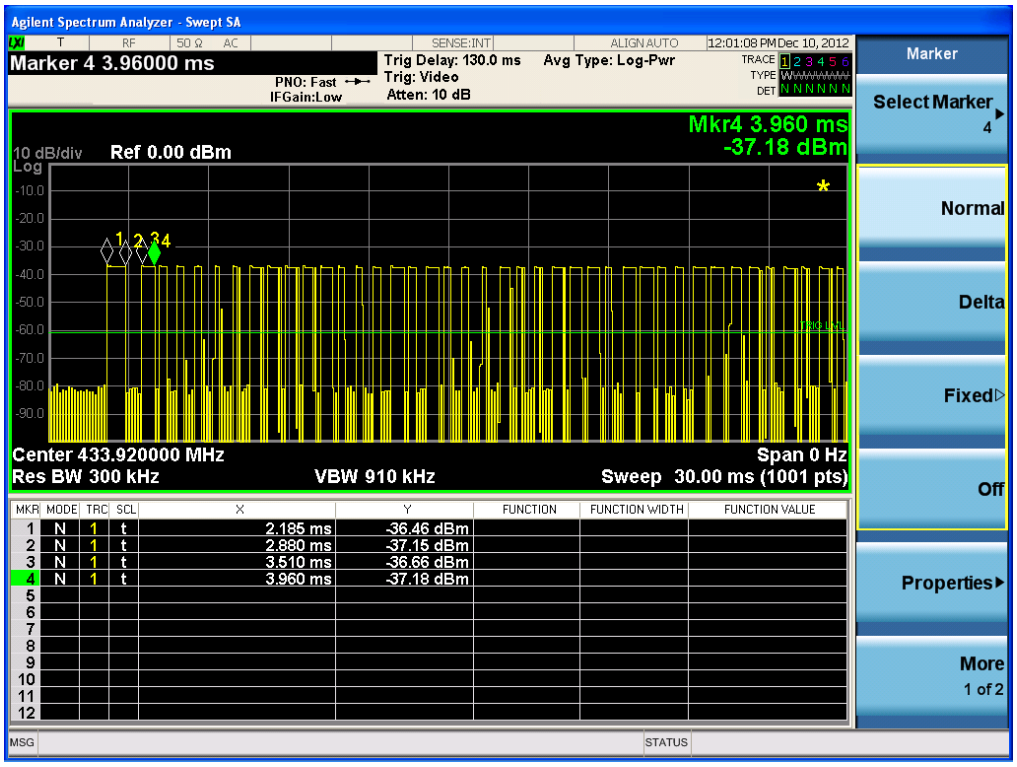
Test Data:	
Frame period:	49.5ms
Pause:	50.5ms
Pulse train length:	49.5ms
ON Time:	72 x 0.44 + 2 x 0.66 = 33ms (worst case, all bit at 1. See 5.7)
OFF Time:	72 x 0.22 = 15.84 (worst case, all bit at 1. See 5.7)

Comments:
-


Agilent Spectrum Analyzer - Swept SA
Marker 4 181.200 ms
PNO: Fast
IFGain:Low
Trig Delay: 100.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
11:57:00 AM Dec 10, 2012
Mkr4 181.2 ms
-38.66 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 200.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 31.20 ms -36.64 dBm
2 N 1 t 81.20 ms -38.36 dBm
3 N 1 t 131.2 ms -37.97 dBm
4 N 1 t 181.2 ms -38.66 dBm
Trace/Det
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View/Blank View
More 1 of 3
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 2 81.7400 ms
PNO: Fast
IFGain:Low
Trig Delay: 100.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
11:58:15 AM Dec 10, 2012
Mkr2 81.74 ms
-37.75 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 90.00 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 31.83 ms -35.54 dBm
2 N 1 t 81.74 ms -37.75 dBm
3 N 1 t 131.2 ms --- dBm
4 N 1 t 181.2 ms --- dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.18500 ms
PNO: Fast
IFGain:Low
Trig Delay: 130.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
12:00:06 PM Dec 10, 2012
Mkr1 2.185 ms
-36.46 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 55.00 ms (1001 pts)
1 N 1 t 2.185 ms -36.46 dBm
2 N 1 t 52.26 ms -38.05 dBm
3 N 1 t 131.2 ms --- dBm
4 N 1 t 181.2 ms --- dBm
Marker
Select Marker 1
Normal
Delta
Fixed
Off
Properties
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 4 3.96000 ms
PNO: Fast
IFGain:Low
Trig Delay: 130.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
12:01:08 PM Dec 10, 2012
Mkr4 3.960 ms
-37.18 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 30.00 ms (1001 pts)
1 N 1 t 2.185 ms -36.46 dBm
2 N 1 t 2.880 ms -37.15 dBm
3 N 1 t 3.510 ms -36.66 dBm
4 N 1 t 3.960 ms -37.18 dBm
Marker
Select Marker 4
Normal
Delta
Fixed
Off
Properties
More 1 of 2

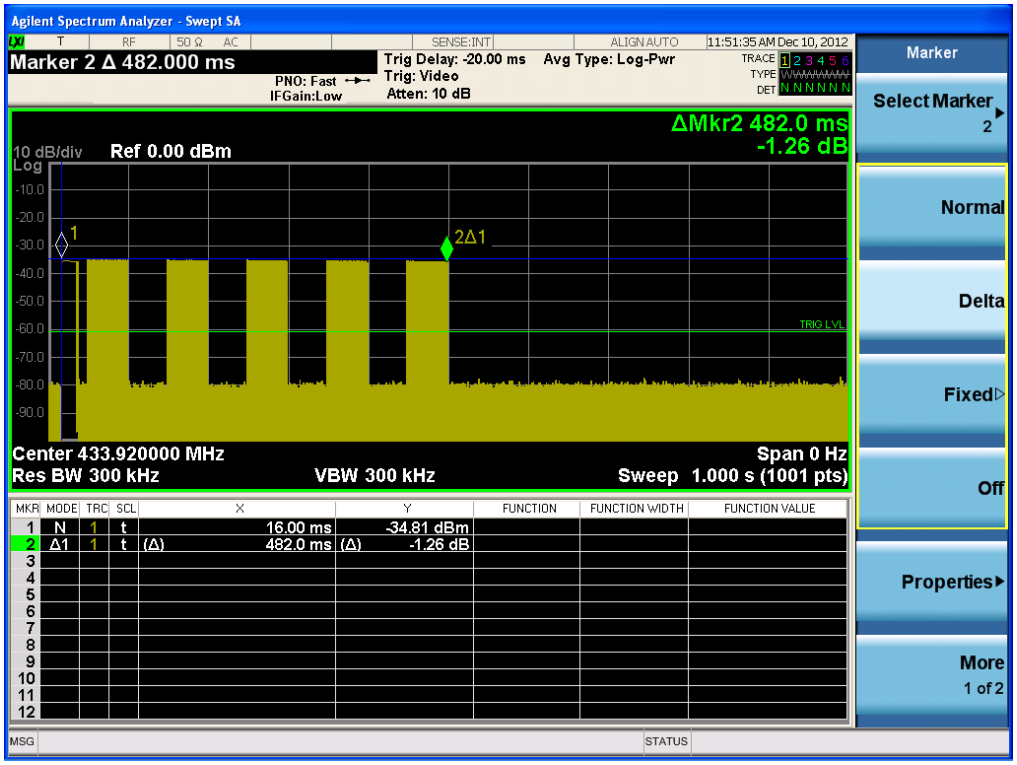
5.5 Transmit behaviour after releasing the TX-button

Specify:	
Base standard:	47CFR Part 15 Section 15.231 (a)

Test requirements:	
Test Setup:	47CFR Part 15 Section 15.35 (c)
RBW:	1MHz
VBW:	3MHz

Test data:	
T1:	-
T2:	-
T2-T1:	482ms

Comments:
after releasing button, the transmitter stop the transmission in worst case at 482ms.



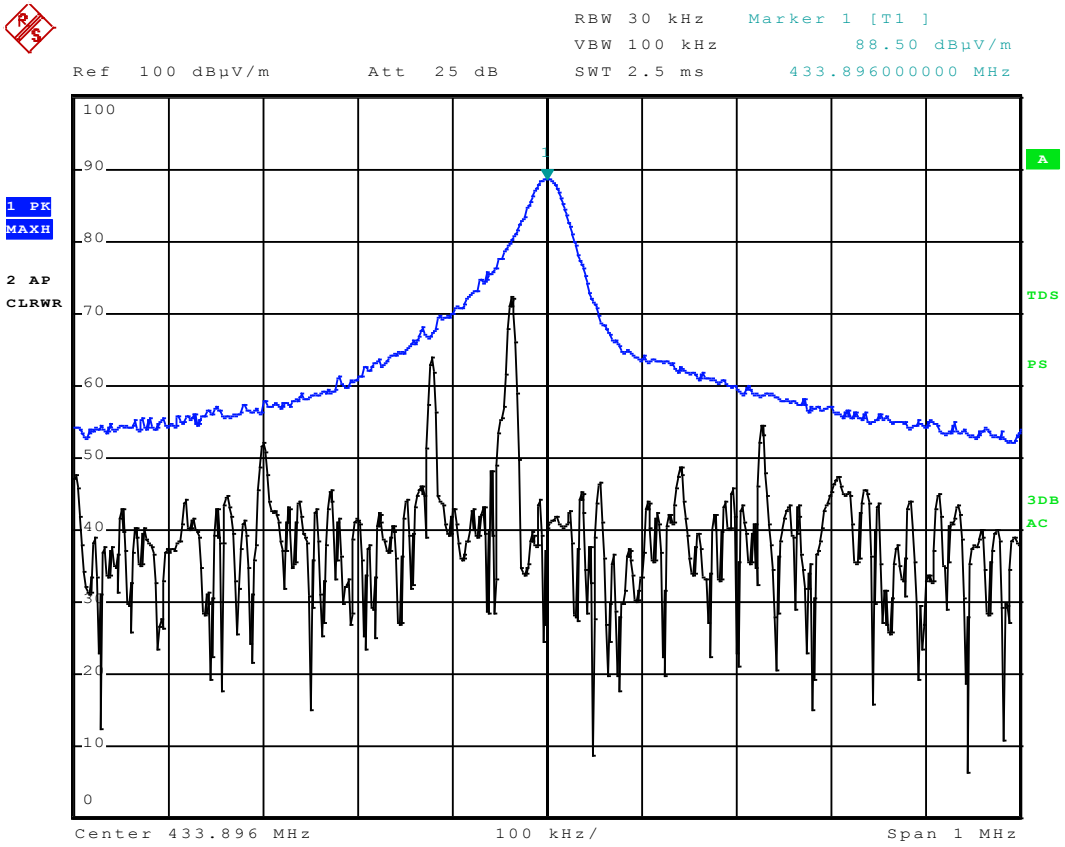
5.6 Radiated output power

Specify:	
Base standard:	FCC 15.231 (b)

Test Requirements:	
RBW / VBW:	200Hz (f < 150kHz) 9kHz (150kHz < f < 30MHz) 120kHz (30MHz < f < 1000MHz) 1MHz (f > 1000MHz)

Test data:	
Output radiated power (3m of distance):	Peak 88.50dBµV/m at distance of 3m

Comments:
Worst case between ON2E/a and ON4E/A



Date: 10.DEC.2012 12:07:32

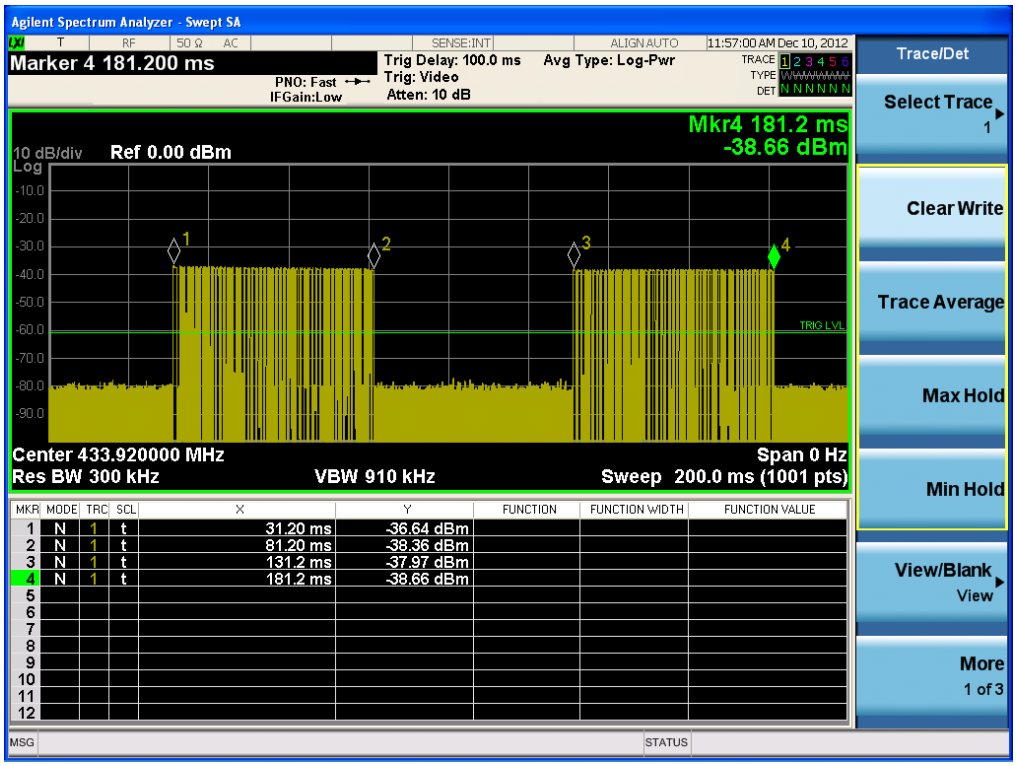
5.7 Typical pulse train of a signal

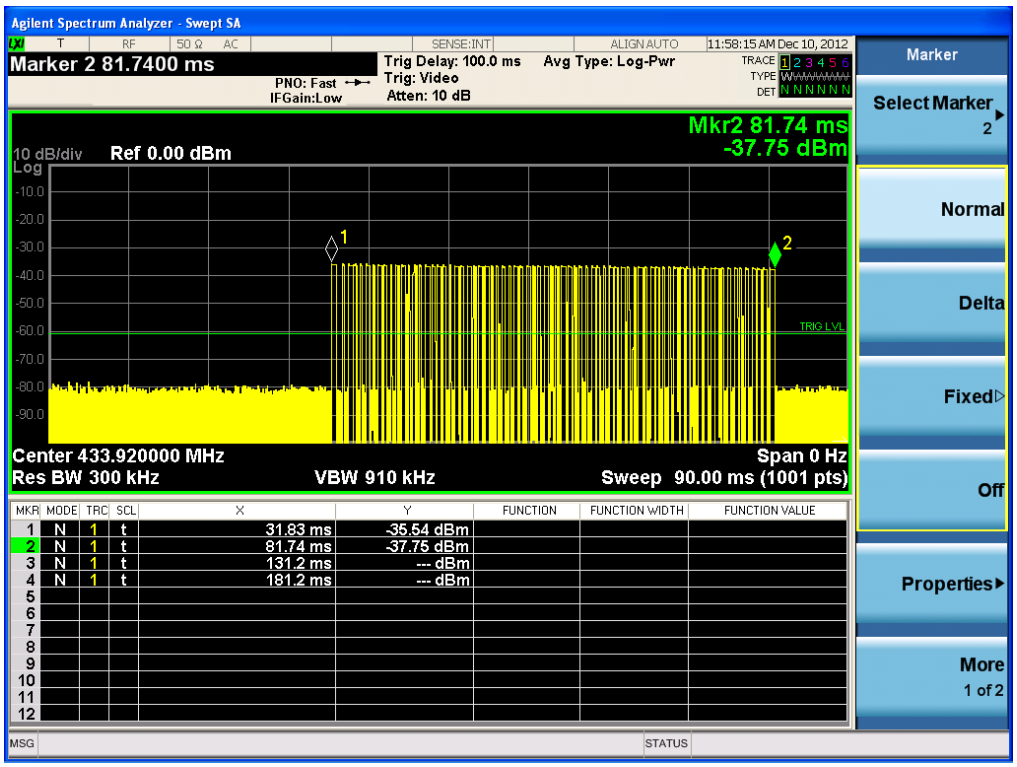
Specify:	
Base standard:	47CFR Part 15 Section 15.231 (a)

Test Setup:	
RBW:	1MHz
VBW:	3MHz

Test Data:	
Duty-cycle	0.33
TX on	33ms
TX off	77ms
Average correction factor (20*log(duty cycle):	20 log (0.33/ 100ms) = -9.62dB

Comments:
Every train of impulse respect the following code: 72 bit + 1 bit start + 1 bit stop Start bit = 0.66ms Stop bit = 0.66ms Bit 1 = 0.44ms on + 0.22ms off Bit 0 = 0.22ms on + 0.44ms off Bit train = (0.66 + 0.66 + 72 x 0.44) = 33ms (worst case with all bit at 1. This is not a real case) In 100ms, in worst case (all bit at 1), the duty cycle is: 33ms/100ms = 0.33 Calculus average correction factor = 20 x log (0.33) = -9.62dB


Agilent Spectrum Analyzer - Swept SA
Marker 4 181.200 ms
PNO: Fast
IFGain:Low
Trig Delay: 100.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
11:57:00 AM Dec 10, 2012
Mkr4 181.2 ms
-38.66 dBm
10 dB/div
Ref 0.00 dBm
Log
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 200.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 31.20 ms -36.64 dBm
2 N 1 t 81.20 ms -38.36 dBm
3 N 1 t 131.2 ms -37.97 dBm
4 N 1 t 181.2 ms -38.66 dBm
Trace/Det
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View/Blank View
More 1 of 3
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 2 81.7400 ms
PNO: Fast
IFGain:Low
Trig Delay: 100.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
11:58:15 AM Dec 10, 2012
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10 dB/div
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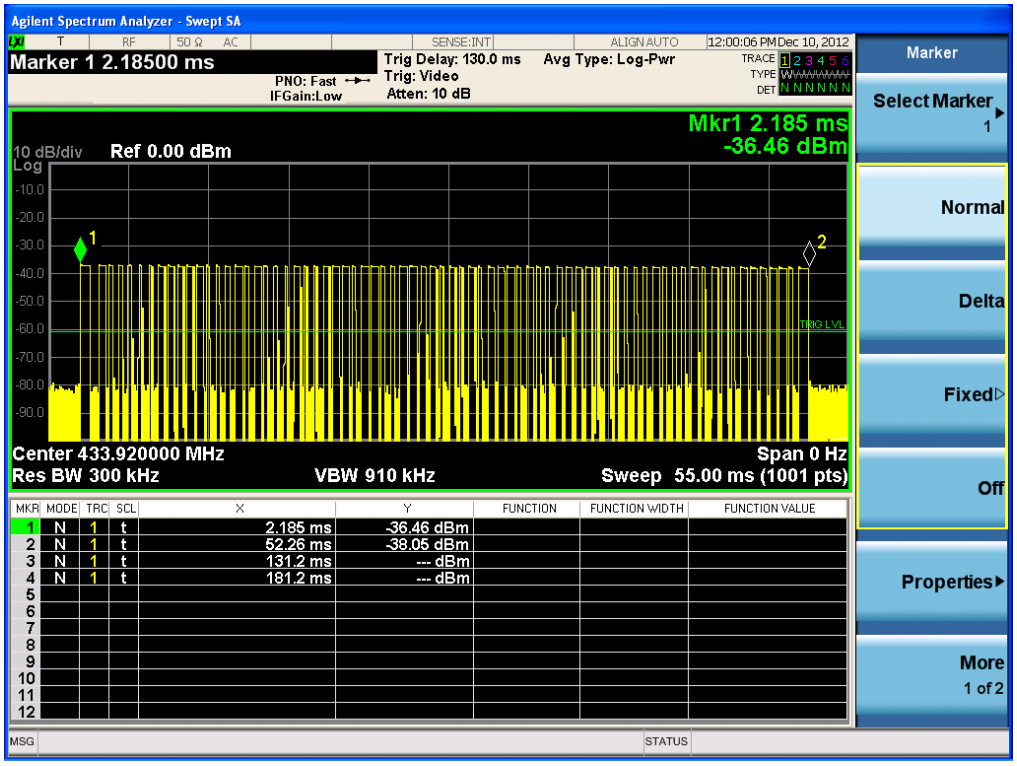
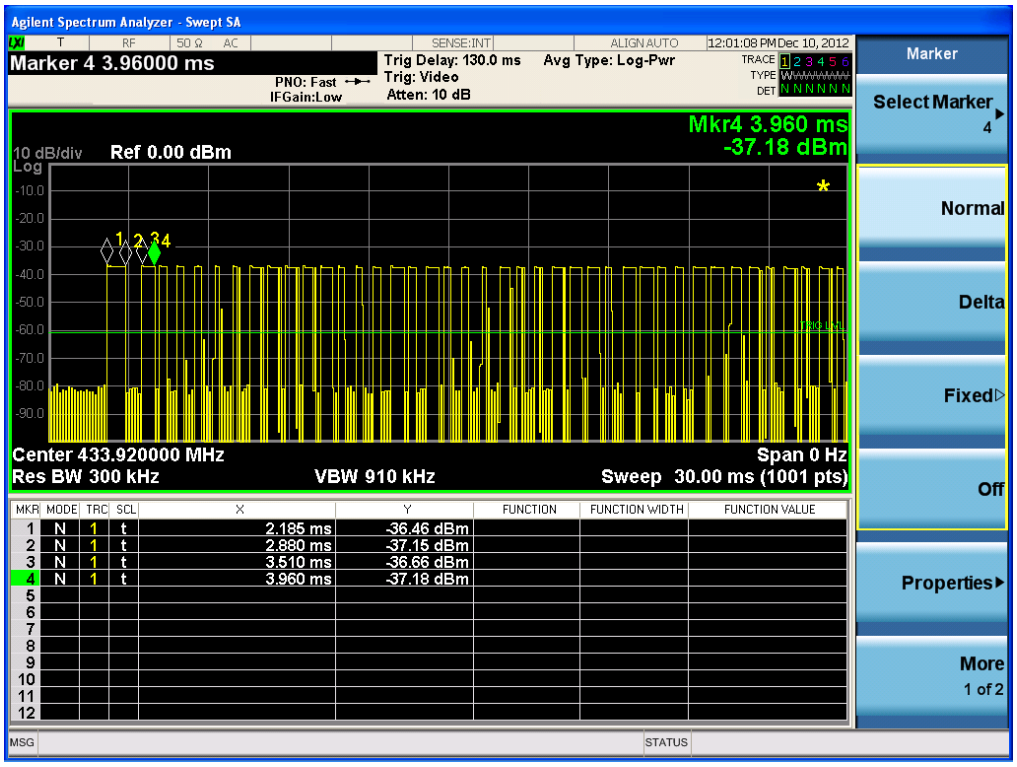
3 N 1 t 131.2 ms --- dBm
4 N 1 t 181.2 ms --- dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.18500 ms
PNO: Fast
IFGain:Low
Trig Delay: 130.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
12:00:06 PM Dec 10, 2012
Mkr1 2.185 ms
-36.46 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 55.00 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 2.185 ms -36.46 dBm
2 N 1 t 52.26 ms -38.05 dBm
3 N 1 t 131.2 ms --- dBm
4 N 1 t 181.2 ms --- dBm
Marker
Select Marker 1
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 4 3.96000 ms
PNO: Fast
IFGain:Low
Trig Delay: 130.0 ms
Trig: Video
Atten: 10 dB
Avg Type: Log-Pwr
12:01:08 PM Dec 10, 2012
Mkr4 3.960 ms
-37.18 dBm
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 300 kHz
VBW 910 kHz
Span 0 Hz
Sweep 30.00 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 2.185 ms -36.46 dBm
2 N 1 t 2.880 ms -37.15 dBm
3 N 1 t 3.510 ms -36.66 dBm
4 N 1 t 3.960 ms -37.18 dBm
Marker
Select Marker 4
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS

5.8 Compliance with the limit of FCC

Specify:	
Base standard:	47CFRF Part 15 Section 15.231 (b)

Test Setup:	
RBW / VBW:	200Hz (f < 150kHz) 9kHz (150kHz < f < 30MHz) 120kHz (30MHz < f < 1000MHz) 1MHz (f > 1000MHz)

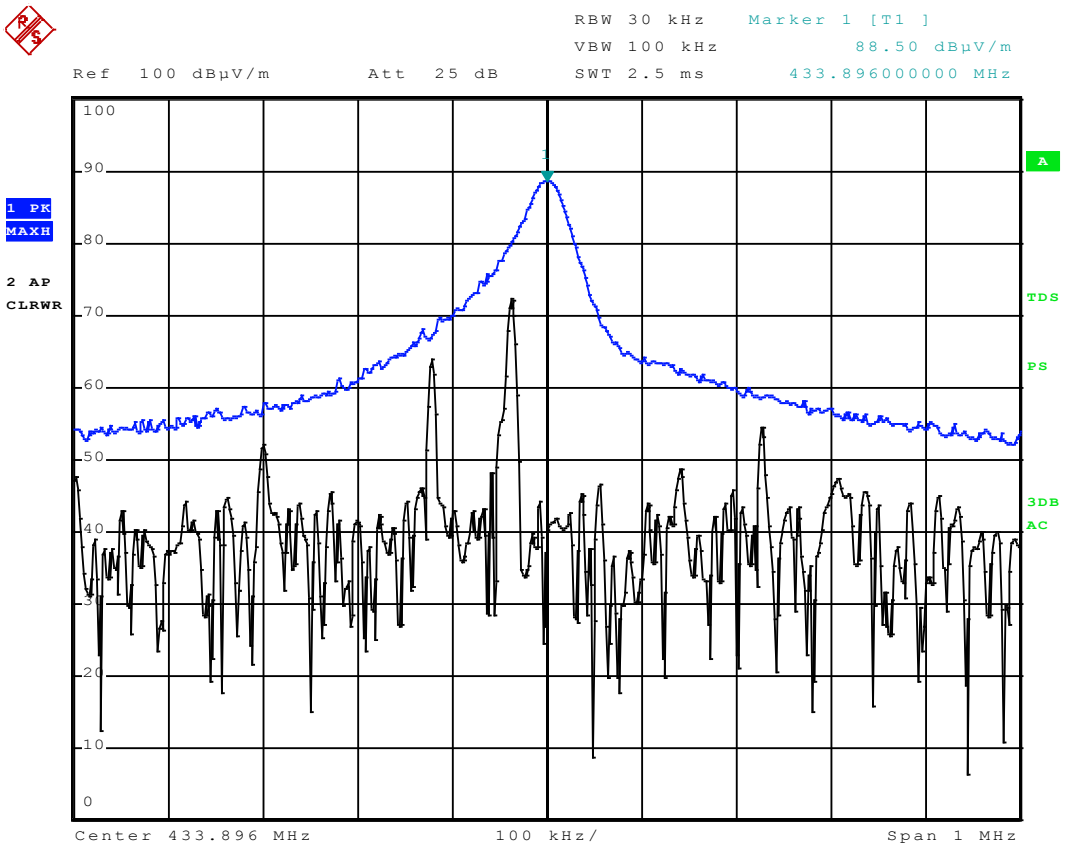
Limits:

Frequency [MHz]	Field Strength of the fundamental	Field Strength of spurious emissions
40,66 – 40,70	2 250µV/m / 67dBµV/m	225µV/m / 47dBµV/m
70 – 130	1 250µV/m / 62dBµV/m	125µV/m / 42dBµV/m
130 - 174	1 250µV/m to 3 750µV/m (1) 62µV/m to 71,5µV/m	125µV/m to 375µV/m (1) 42dBµV/m to 51,5dBµV/m
174 – 260	3 750µV/m / 71,5dBµV/m	375µV/m / 51,5dBµV/m
260 – 470	3 750µV/m to 12 500µV/m (1) 71,5 dBµV/m to 82 dBµV/m	375µV/m to 1 250µV/m (1) 51,5dBµV/m to 62dBµV/m
above 470	12 500µV/m / 82dBµV/m	1 250µV/m / 62dBµV/m

Note: (1) linear interpolations
for 130 to 174MHz the interpolation is: 56,8182*f – 6136,36 (f in MHz)
for 260 to 470MHz the interpolation is: 41,667*f – 7083,33 (f in MHz)

Test Result:	
Frequency:	
Calculated average (3m of distance):	(88.50 – 9.62) dBµV/m = 78.88 dBµV/m

Comments:
-



Date: 10.DEC.2012 12:07:32

5.9 Spurious emission - radiated

Specify:	
Base standard:	47CFR Part 15 Section 15.231 (b)

Test Setup:	
-	-

Limits:

Frequency [MHz]	Field Strength of the fundamental	Field Strength of spurious emissions
40,66 – 40,70	2 250µV/m / 67dBµV/m	225µV/m / 47dBµV/m
70 – 130	1 250µV/m / 62dBµV/m	125µV/m / 42dBµV/m
130 - 174	1 250µV/m to 3 750µV/m (1) 62µV/m to 71,5µV/m	125µV/m to 375µV/m (1) 42dBµV/m to 51,5dBµV/m
174 – 260	3 750µV/m / 71,5dBµV/m	375µV/m / 51,5dBµV/m
260 – 470	3 750µV/m to 12 500µV/m (1) 71,5 dBµV/m to 82 dBµV/m	375µV/m to 1 250µV/m (1) 51,5dBµV/m to 62dBµV/m
above 470	12 500µV/m / 82dBµV/m	1 250µV/m / 62dBµV/m

Note: (1) linear interpolations
for 130 to 174MHz the interpolation is: 56,8182*f – 6136,36 (f in MHz)
for 260 to 470MHz the interpolation is: 41,667*f – 7083,33 (f in MHz)

Test Result:

Frequency [MHz]	Peak Amplitude of emission (dBµV/m)	Average Amplitude of emission (dBµV/m)	Limit maximum allowed emission power	Actual attenuation below frequency of operation (dB)	Results
433.8960	88.50	78.88	80.83dBµV/m	1.95	operating frequency
867.792	48.73	39.10	-20dBc	29.72	complies
1301.688	58.74	49.11	54.0dBµV/m	4.89	complies
1735.584	67.25	57.62	-20dBc	3.20	complies
2169.480	60.98	51.35	-20dBc	9.47	complies
2603.376	56.71	47.08	-20dBc	13.74	complies
3037.272	70.08	60.45	-20dBc	0.37	complies
3471.168	66.97	57.34	-20dBc	3.48	complies
3905.064	63.41	53.78	54.0dBµV/m	0.22	complies
4338.960	56.91	47.28	54.0dBµV/m	6.72	complies

Comments:

-

5.10 Occuped bandwith

Specify:	
Base standard:	47CFR Part 15.231 (c)

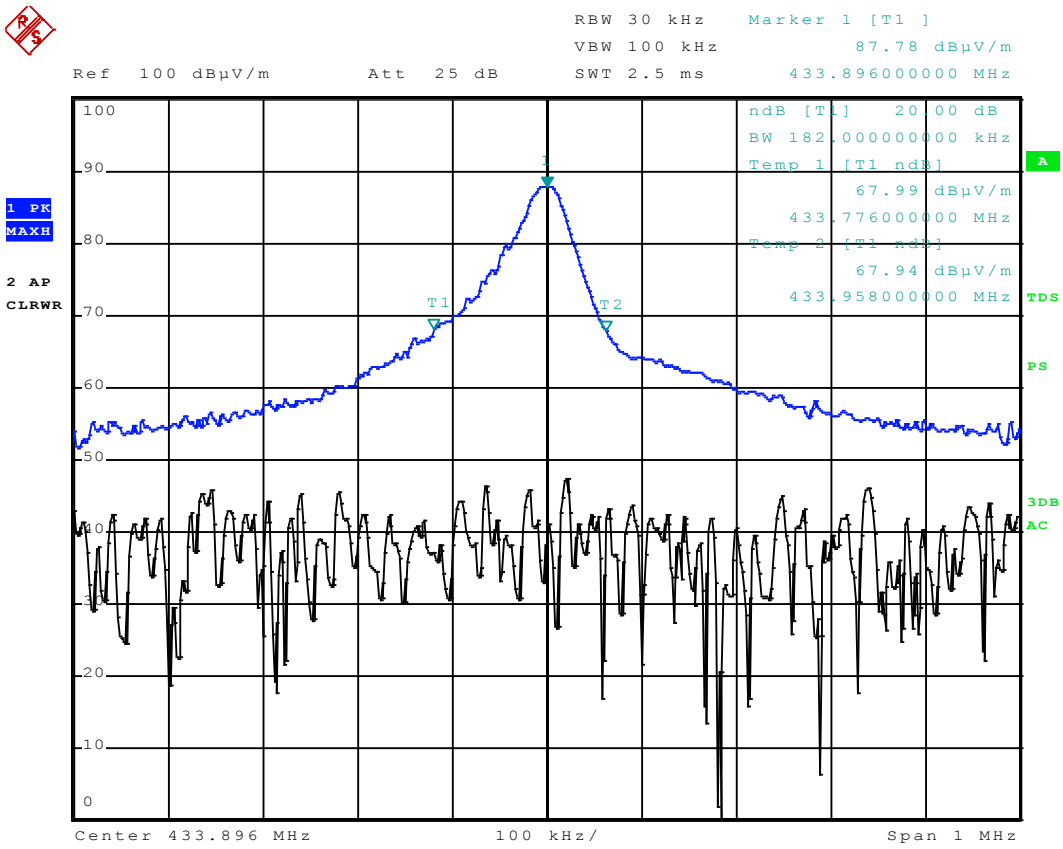
The bandwidth of the emission shall be no wider than 0,25% of the center frequency for devices operating above 70MHz and below 900MHz. For devices operating above 900MHz, the emission shall be no wider than 0,5% of the center frequency. Bandwidth is determined at the points 20dB down from the modulated carrier.

Test Setup:	
RBW:	3kHz
VBW:	3kHz

Limits:
< 0,25% of the centre frequency, here 1,08MHz

Test Data:	
Occupied bandwidth at –20dB:	182kHz < 1.08MHz

Comments:
-



Date: 10.DEC.2012 12:35:51

6
Measurement and Test Equipment instrumentation

Code	nr.	Manufacturer	Model	Serial number	Date of Calibration	Calibration Due
ANA	7	Agilent	N9020A	MY48011101	10/02/2012	10/02/2013
ANA	11	Rohde & Schwarz	FSL3	102362	02/05/2012	02/05/2014
ANT	1	EMCO	3121C DB-4	9312-901		
ANT	3	Schwarzbeck	VULB9160	3180	07/06/2011	07/06/2013
ANT	4	AH System	SAS-571	684	08/06/2011	08/06/2013
ANT	5	AH System	SAS-562B	236	06/06/2011	06/06/2013
ANT	6	AH System	SAS-571	1025	08/06/2011	08/06/2013
ANT	7	Aaronia	BicoLOG 30100	1293	07/06/2011	07/06/2013
ATT	1	-	PE7021-6		21/06/2011	21/06/2013
ATT	2	Tyco Electronics Co.	50WCW	-	22/06/2011	22/06/2013
ATT	5	RADIALL	R414.710.000	-	23/05/2008	23/05/2013
ATT	6	RADIALL	R414.710.000	-	23/05/2008	23/05/2013
ATT	7	RADIALL	R414.720.000	-	23/05/2008	23/05/2013

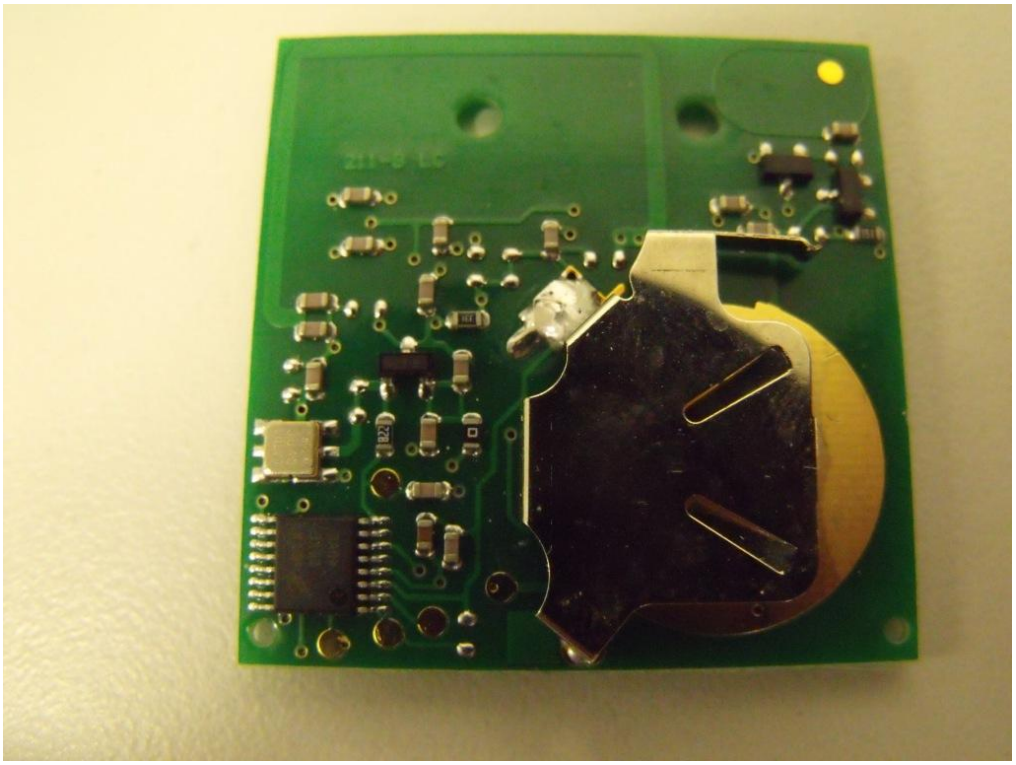
Code	nr.	Manufacturer	Model	Serial number	Date of Calibration	Calibration Due
CAV	1	Rohde & Schwarz	HFU2-Z5	-	22/06/2011	22/06/2013
CAV	2	Rohde & Schwarz	HFU2-Z4	-	22/06/2011	22/06/2013
CAV	3	TESEO	CAVO A	-	22/06/2011	22/06/2013
CAV	4	TESEO	CAVO B	-	22/06/2011	22/06/2013
CAV	5	TESEO	CAVO C	-	22/06/2011	22/06/2013
CAV	6	TESEO	CAVO D	-	22/06/2011	22/06/2013
CAV	7	TESEO	CAVO E	-	22/06/2011	22/06/2013
CAV	13	TESEO	CAVO G	-	22/06/2011	22/06/2013
CAV	14	TESEO	CAVO H	-	22/06/2011	22/06/2013
CAV	15	TESEO	CAVO I	-	22/06/2011	22/06/2013
CAV	16	Rohde & Schwarz	9111505/200 (CAVO J)	5995-12-161-6890	22/06/2011	22/06/2013
CAV	17	Nice	CAVO K	-	22/06/2011	22/06/2013

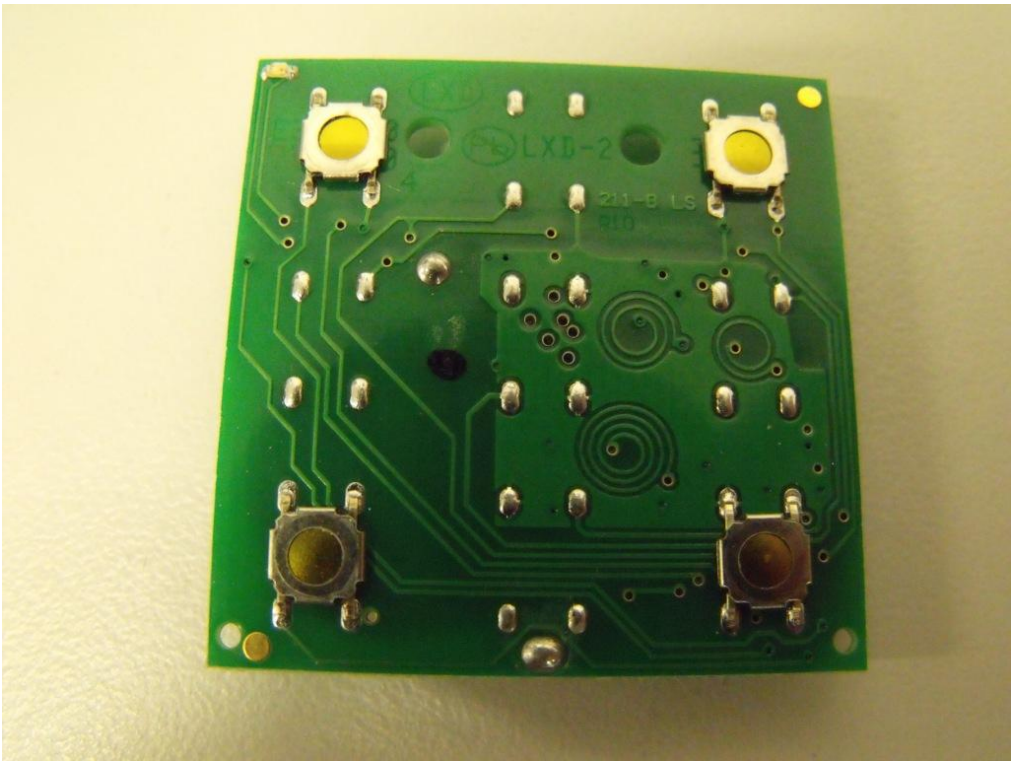
Code	nr.	Manufacturer	Model	Serial number	Date of Calibration	Calibration Due
CAV	18	Nice	CAVO L	-	22/06/2011	22/06/2013
CAV	19	Nice	Cavo M	-	22/06/2011	22/06/2013
CAV	20	Nice	Cavo N	-	22/06/2011	22/06/2013
CAV	21	Nice	Cavo P	-	22/06/2011	22/06/2013
CDN	1	FCC	FCC 801-M2-16A-SPJ	5024	09/06/2011	09/06/2013
CDN	2	FCC	FCC 801-M3-16A-S	5032	09/06/2011	09/06/2013
CDN	3	FCC	FCC801-150-50 CDN	05031 & 05032		
CDN	4	FCC	FCC 801-M1-16A	7035	09/06/2011	09/06/2013
CDN	5	FCC	FCC 801-150-50-CDN	07113 & 07114		
CDN	6	FCC	FCC 801-M4-16A	100726	24/01/2012	24/01/2014
CDN	7	FCC	FCC-801-M5-16A	100727	24/01/2012	24/01/2014
CSA	1	TESEO	EN 55022 EN 610004-3	NSA	04/09/2012	04/09/2013
				CISPR 16-1-4	14/04/2009	14/04/2014
				EN 61000-4-3	10/08/2010	04/09/2013
ECL	1	FCC	F-203I-23	466	09/06/2011	09/06/2013
ECL	2	FCC	F-203I-CF-23MM	445		

Code	nr.	Manufacturer	Model	Serial number	Date of Calibration	Calibration Due
GEN	7	Rohde & Schwarz	SML 03	102178	25/01/2012	25/01/2014
GEN	8	Agilent	N5182A	MY48180288	11/09/2012	11/09/2013
LIS	2	Rohde & Schwarz	ESH2-Z5	100183	09/06/2011	09/06/2013
PAS	1	FCC	F-202	197	29/05/2009	29/05/2013
POW	1	Rohde & Schwarz	NRVD	101221	18/06/2012	18/06/2014
POW	2	Rohde & Schwarz	NRV-Z5	100314	20/06/2012	20/06/2014
POW	3	Rohde & Schwarz	NRV-Z5	100315	20/06/2012	20/06/2014
PRE	2	Schwarzbeck	BBV 9718	9718-178	13/04/2012	13/04/2014
RIC	1	Rohde & Schwarz	ESCI	100140	25/01/2012	25/01/2013
SCO	7	FCC	F-51	454	09/06/2011	07/06/2013
SCO	8	Teseo	EQ-51-1	D047	07/06/2011	07/06/2013
SCO	9	FCC	F-33-4	63	09/06/2011	09/06/2013
SOF	1	Rohde & Schwarz	EMC32	V8.53.0		

7
Photographic Documentation

8.1 EUT Identification




LXD-2


FDK
LITHIUM BATTERY
3V


2012.251/1


2012.2542


Nice MODELS:
ON2E/A, ON4E/A,
3V⎓ Battery CR2032
FCC ID: PML433ONA

8.2 Test Set-up