

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C AND INDUSTRY CANADA RSS 210 REQUIREMENT OF

Product Name: Pendant2 WS
Brand Name: MobileHelp
Model No.: IGPWS-02W, IGPWS-02B
Model Different: IGPWS-02W consist of white color housing
IGPWS-02B consist of black color housing
FCC ID: PXTIGP-02
IC ID: 10876A-IGP202
Report No.: ER/2015/80004
Issue Date: Jul. 24, 2015
FCC Rule Part: §15.231
IC Rule Part: RSS-210 Issue 8 2010

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VERIFICATION OF COMPLIANCE

Applicant: Integrity Tracking LLC, dba MobileHelp
3701 FAU Blvd., Suite 300. Boca Raton FL, 33431

Product Name: Pendant2 WS

Brand Name: MobileHelp

Model No.: IGPWS-02W, IGPWS-02B

Model Different: IGPWS-02W consist of white color housing
IGPWS-02B consist of black color housing

FCC ID: PXTIGP-02

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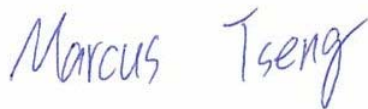
Date of test: Jul. 13, 2015 ~ Jul. 24, 2015

Date of EUT Received: Jul. 13, 2015

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.231 & IC RSS-210.

The test results of this report relate only to the tested sample identified in this report.

Test By:**Date:**

Jul. 24, 2015

Marcus Tseng / Engineer**Prepared By:****Date:**

Jul. 24, 2015

Allen Tsai / Engineer**Approved By:****Date:**

Jul. 24, 2015

Jim Chang / Asst. Manager

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FCC ID: PXTIGP-02
IC : 10876A-IGP202

Report No: ER/2015/80004
Issue Date: Jul. 24, 2015
Page: 3 of 33

Version

Report Number	Revision	Description	Issue Date
ER/2015/80004	Rev.00	Initial creation of document	Jul. 24, 2015

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1. GENERAL INFORMATION

1.1 Product Description

Product Name:	Pendant2 WS	
Brand Name:	MobileHelp	
Model No.	IGPWS-02W, IGPWS-02B	
Model Different:	IGPWS-02W consist of white color housing IGPWS-02B consist of black color housing	
Hardware Version:	R02	
Software Version:	1.04	
Power Supply:	2.8VDC from coin battery	
	Battery:	Model No.: Coin Battery 2032 type Supplier: Maxell

433 MHz:

Operating Frequency	433.92MHz
Transmit Power	<80.79 dBuV/m Max.
Modulation Technique	ASK
Number of Channels	1 Channel
Antenna Type	PCB Antenna

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1.2 Test Methodology

FCC Part 15, Subpart C §15.231

RSS-210 Issue 8 2010

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.
2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.
3. The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63. 10 :2013

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. (TAF code 0513)

FCC Registration Numbers are: 990257

Canada Registration Number: 4620A-5

1.5 Special Accessories

There are no special accessories used while test was conducted.

1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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2.4 Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss 1dB.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

EUT(TX)

Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	N/A					

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3. SUMMARY OF TEST RESULTS

FCC Rules	IC Rules	Description Of Test	Result
§15.207	RSS-Gen § 8.8	Conducted Emission	N/A
§15.231	RSS-210 A1.1	Radiated Emission	Compliant
§15.231(c)	RSS-210 A1.1.3	20dB & 99% Occupied Bandwidth	Compliant
§15.35 (c)	RSS-Gen § 6.10	Duty Cycle Test (Pulse Modulation)	Compliant
§15.231(a)(1)	RSS-210 A1.1.1(b)	Release Time Measurement	Compliant

4. DESCRIPTION OF TEST MODES

4.1 Operated in 433.05 ~ 434.57 MHz Band

1 channel is provided.

CH	FREQUENCY
01	433.920MHZ

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4.2 The Worst Test Modes and Channel Details

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
433 MHz	1	1	GFSK	1	MAIN
RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
433 MHz	1	1	GFSK	1	MAIN

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 433MHz Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
433 MHz	1	1	GFSK	1	MAIN

Note:

Per 15.31 (e) - For battery operated equipment, the equipment tests shall be performed using a new battery. All test items for this report are performed with a new battery.

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 1.55 dB
20dB & 99% Bandwidth	+/- 123.36 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Frequency Separation	+/- 123.36 Hz
Number of hopping frequency	+/- 123.36 Hz
Time of Occupancy	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : Vertical)	9kHz~30MHz: +/-2.3dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : Horizontal)	9kHz~30MHz: +/-2.3dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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6. CONDUCTED EMISSIONS TEST (NOT APPLY IN THE REPORT)

6.1 Standard Applicable

According to 15.207(a) & RSS-Gen §8.8 frequency within 150 kHz to 30MHz shall not exceed the limit table as below.

Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 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.		

6.2 Measurement Equipment Used:

SGS Conducted Emission Test Site No.A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESC17	100760	05/04/2015	05/03/2016
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/15/2015	05/14/2016
LISN	FCC	FCC-LISN-50/250-2 5-2-01	04034	03/13/2015	03/12/2016
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2014	11/25/2015

6.3 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

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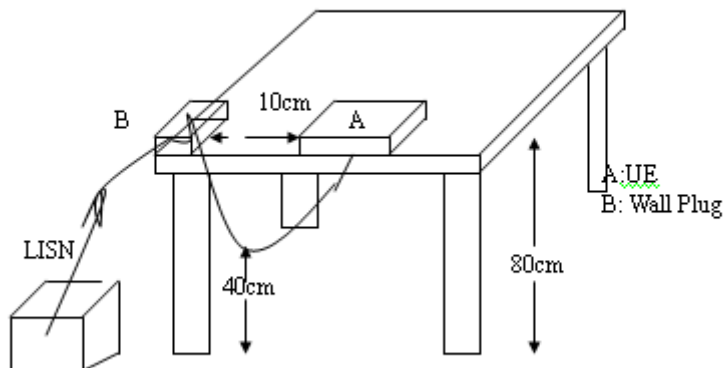
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6.4 Test SET-UP (Block Diagram of Configuration)



6.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

6.6 Measurement Result

N/A; Powered from coin battery.

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7. RADIATED EMISSION TEST

7.1. Standard Applicable:

According to 15.231(b) & RSS 210 A1.1 Table A, the field strength of emissions from Intentional Radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious	
	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)
40.66 - 40.70	67.04	2,250	47	225
70 - 130	61.94	1,250	41.9	125
130 - 174	* 61.94 - 71.48	* 1,250 - 3,750	* 41.9 - 51.48	* 125 to 375
174 - 260	71.48	3,750	51.48	375
260 - 470	* 71.48 - 81.94	* 3,750 - 12,500	* 51.48 - 54	* 375 to 1250
above 470	81.94	12,500	74	1250

- Remark 1. Emission level in dBuV/m=20 log (uV/m)
:
- Measurement was performed at an antenna to the closed point of EUT distance of meters.
 - Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205 & RSS-Gen 8.10.
 - Emission spurious frequency which appearing within the Restricted Bands specified in provision of §15.205 & RSS-Gen 8.10., then the general radiated emission limits in § 15.209 and RSS-Gen 8.9 apply.
 - For the band 130-174MHz, uV/m at 3meters = $56.81818(F) - 6136.3636$; For the band 260-470MHz uV/m at 3meters = $41.6667(F) - 7083.3333$; Where F is the frequency in MHz.
 - $433.92 \text{ MHz limit} = 41.6667 * 433.92 - 7083.3333 = 10996.681134 \text{ uV/m} = 80.8 \text{ dBuV/m}$

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7.2. Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until all frequency of the interest measured were complete.

Auxiliary Procedure (Setting on Spectrum to capture the reading of emission level):

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Test was measured starting from 9kHz to 10th harmonic of the fundamental frequency, and data containing the worst result over 30MHz are shown on the test report.

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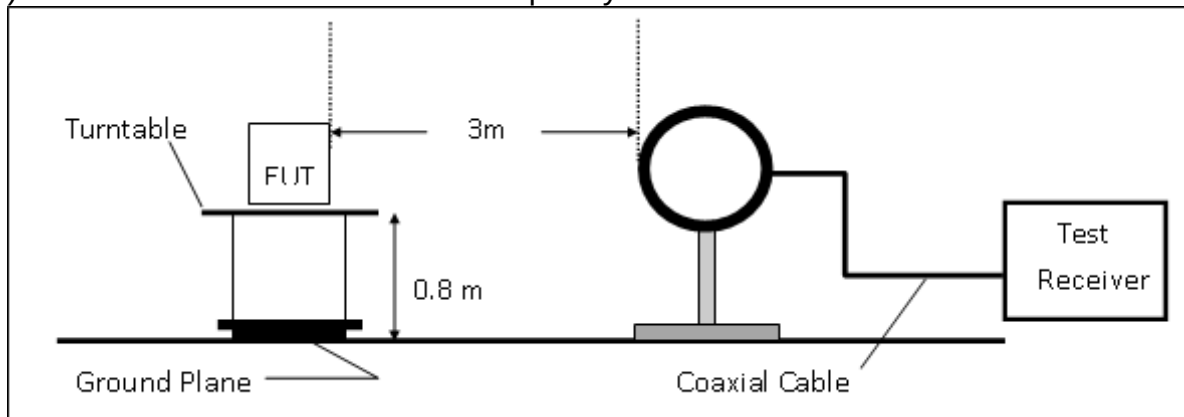
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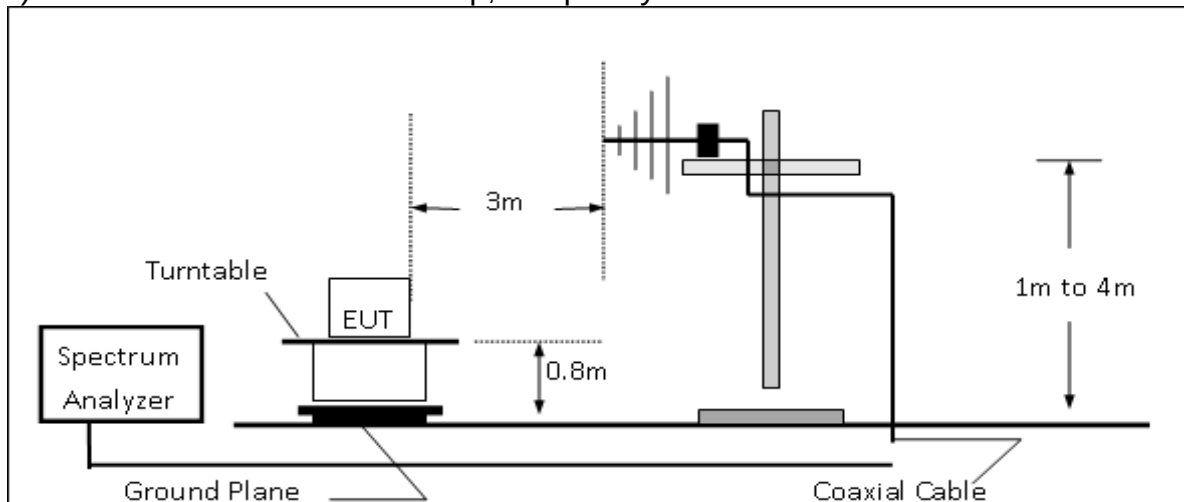
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7.3. Test SET-UP (Block Diagram of Configuration).

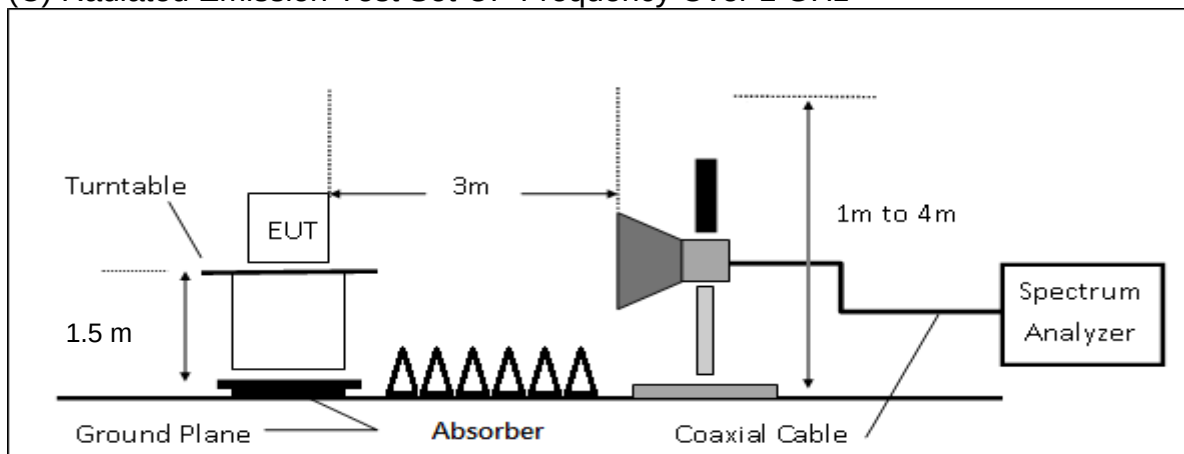
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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7.4. Measurement Equipment Used:

SGS SAC Chamber No.C (FCC)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESC17	100760	05/04/2015	05/03/2016
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	12/22/2014	12/21/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/07/2014	10/06/2015
Loop Antenna	ETS.LINDGREN	6502	00143303	12/9/2014	12/08/2015
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/23/2014	12/22/2015
Horn antenna	ETS.LINDGREN	3117	123995	05/05/2015	05/04/2016
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2014	12/24/2015
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2015	01/01/2016
Pre-Amplifier	Agilent	8449B	3008A00578	01/02/2015	01/01/2016
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2015	01/01/2016
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	004	01/02/2015	01/01/2016
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_Rx	9	01/02/2015	01/01/2016
3m Site NSA	SGS	966 chamber	N/A	07/01/2015	06/30/2016

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7.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Remark:

The limit of the emission level is expressed in dBuV/m, which converts $20 \cdot \log(\mu\text{V/m})$

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note :

“F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

7.5. Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) & RSS-Gen § 6.13 was not reported.

7.6. Measurement Result:

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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7.7. Measurement Result

Operation Band	: Main	Test Date	:2015-07-14
Fundamental Frequency	:433.92 MHz	Temp./Humi.	:23 deg_C / 54 RH
Operation Mode	:TX MAIN	Engineer	:Curry
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
433.92	F	Average	---	-10.13	49.04	80.83	-31.79
433.92	F	Peak	65.00	-5.83	59.17	100.83	-41.66

Operation Band	: Main	Test Date	:2015-07-14
Fundamental Frequency	:433.92 MHz	Temp./Humi.	:23 deg_C / 54 RH
Operation Mode	:TX MAIN	Engineer	:Curry
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
433.92	F	Average	---	-10.13	58.35	80.83	-22.48
433.92	F	Peak	74.31	-5.83	68.48	100.83	-32.35

Note: Average Actual = Peak Actual + Average Factor (-10.13)

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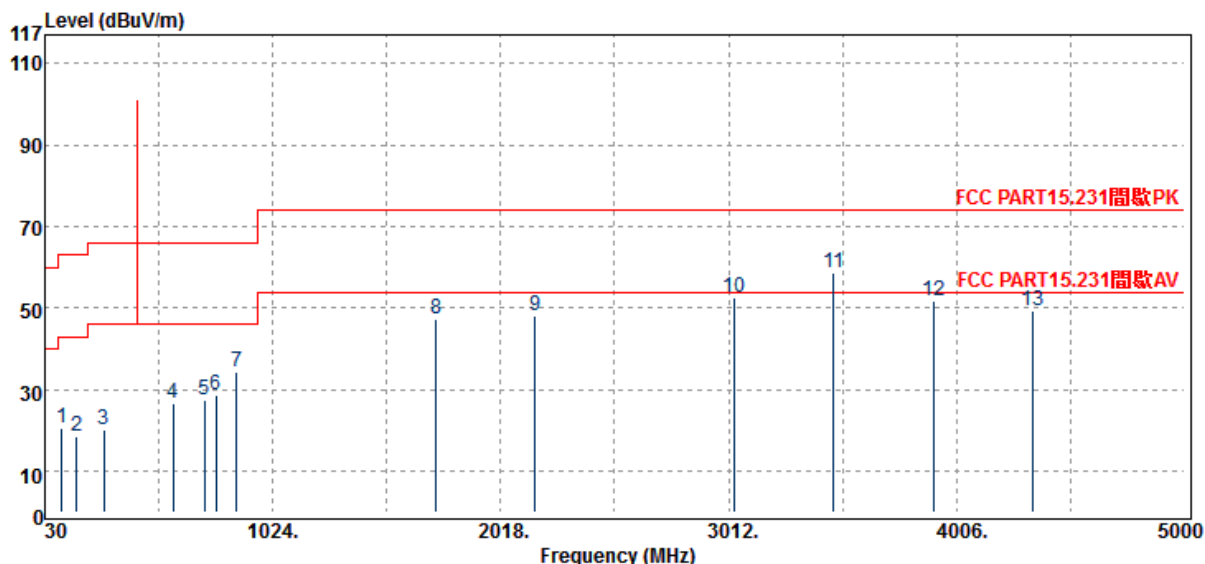
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Operation Band	:433 MHz	Test Date	:2015-07-14
Fundamental Frequency	:433.92 MHz	Temp./Humi.	:23 deg_C / 54 RH
Operation Mode	:TX	Engineer	:Curry
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
103.72	S	Peak	33.95	-13.49	20.46	63.00	-42.54
167.74	S	Peak	27.79	-9.09	18.70	63.00	-44.30
286.08	S	Peak	28.67	-8.26	20.41	66.00	-45.59
590.66	S	Peak	28.33	-1.53	26.80	66.00	-39.20
726.46	S	Peak	28.32	-0.98	27.34	66.00	-38.66
776.90	S	Peak	28.16	0.58	28.74	66.00	-37.26
867.84	H	Average	---	-10.13	24.10	46.00	-21.90
867.84	H	Peak	31.73	2.50	34.23	66.00	-31.77
1735.68	H	Average	---	-10.13	37.26	54.00	-16.74
1735.68	H	Peak	45.39	2.00	47.39	74.00	-26.61
2169.60	H	Average	---	-10.13	37.90	54.00	-16.10
2169.60	H	Peak	43.44	4.59	48.03	74.00	-25.97
3037.44	H	Average	---	-10.13	42.59	54.00	-11.41
3037.44	H	Peak	45.83	6.89	52.72	74.00	-21.28

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3471.36	H	Average	---	-10.13	48.45	54.00	-5.55
3471.36	H	Peak	51.45	7.13	58.58	74.00	-15.42
3905.28	H	Average	---	-10.13	41.73	54.00	-12.27
3905.28	H	Peak	43.89	7.97	51.86	74.00	-22.14
4339.20	H	Average	---	-10.13	39.06	54.00	-14.94
4339.20	H	Peak	40.36	8.83	49.19	74.00	-24.81

Note: Average Actual = Peak Actual + Average Factor (-10.13)

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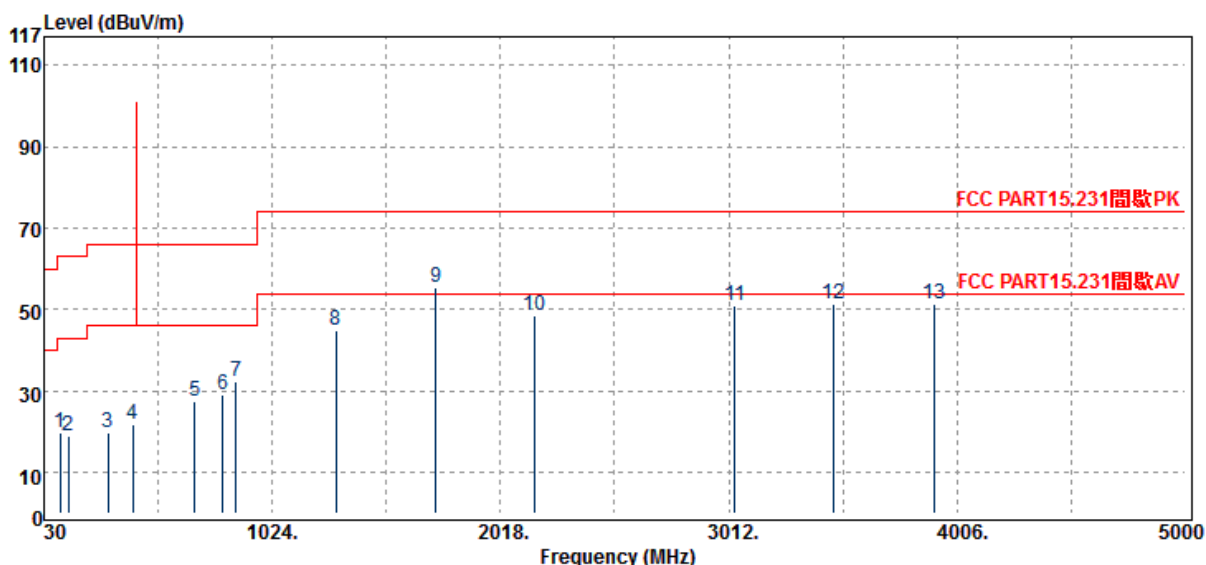
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Operation Band	:433 MHz	Test Date	:2015-07-14
Fundamental Frequency	:433.92 MHz	Temp./Humi.	:23 deg_C / 54 RH
Operation Mode	:TX	Engineer	:Curry
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
99.84	S	Peak	34.34	-14.32	20.02	63.00	-42.98
135.73	S	Peak	29.25	-10.20	19.05	63.00	-43.95
309.36	S	Peak	27.42	-7.67	19.75	66.00	-46.25
417.03	S	Peak	27.51	-5.69	21.82	66.00	-44.18
684.75	S	Peak	28.59	-0.95	27.64	66.00	-38.36
807.94	S	Peak	28.77	0.35	29.12	66.00	-36.88
867.84	H	Average	---	-10.13	22.15	46.00	-23.85
867.84	H	Peak	29.78	2.50	32.28	66.00	-33.72
1301.76	H	Average	---	-10.13	34.69	54.00	-19.31
1301.76	H	Peak	45.08	-0.26	44.82	74.00	-29.18
1735.68	H	Average	---	-10.13	45.27	54.00	-8.73
1735.68	H	Peak	53.40	2.00	55.40	74.00	-18.60
2169.60	H	Average	---	-10.13	38.45	54.00	-15.55
2169.60	H	Peak	43.99	4.59	48.58	74.00	-25.42

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3037.44	H	Average	---	-10.13	40.83	54.00	-13.17
3037.44	H	Peak	44.07	6.89	50.96	74.00	-23.04
3471.36	H	Average	---	-10.13	41.46	54.00	-12.54
3471.36	H	Peak	44.46	7.13	51.59	74.00	-22.41
3905.28	H	Average	---	-10.13	41.26	54.00	-12.74
3905.28	H	Peak	43.42	7.97	51.39	74.00	-22.61

Note: Average Actual = Peak Actual + Average Factor (-10.13)

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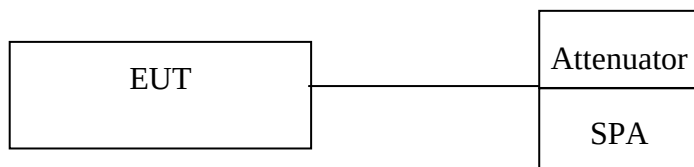
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8. 20DB & 99% OCCUPIED BANDWIDTH

8.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10KHz, Span =100KHz.
4. Set SPA -20dB Occupied bandwidth.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Equipment Used:

SGS Conducted Emission Test Site No.A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2495A	1005007	12/20/2014	12/19/2015
Power Sensor	Anritsu	MA2411B	917032	12/20/2014	12/19/2015
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/02/2015	01/01/2016
Spectrum Analyzer	Agilent	E4440A	MY45304525	05/05/2015	05/04/2016
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016

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8.4 Measurement Results

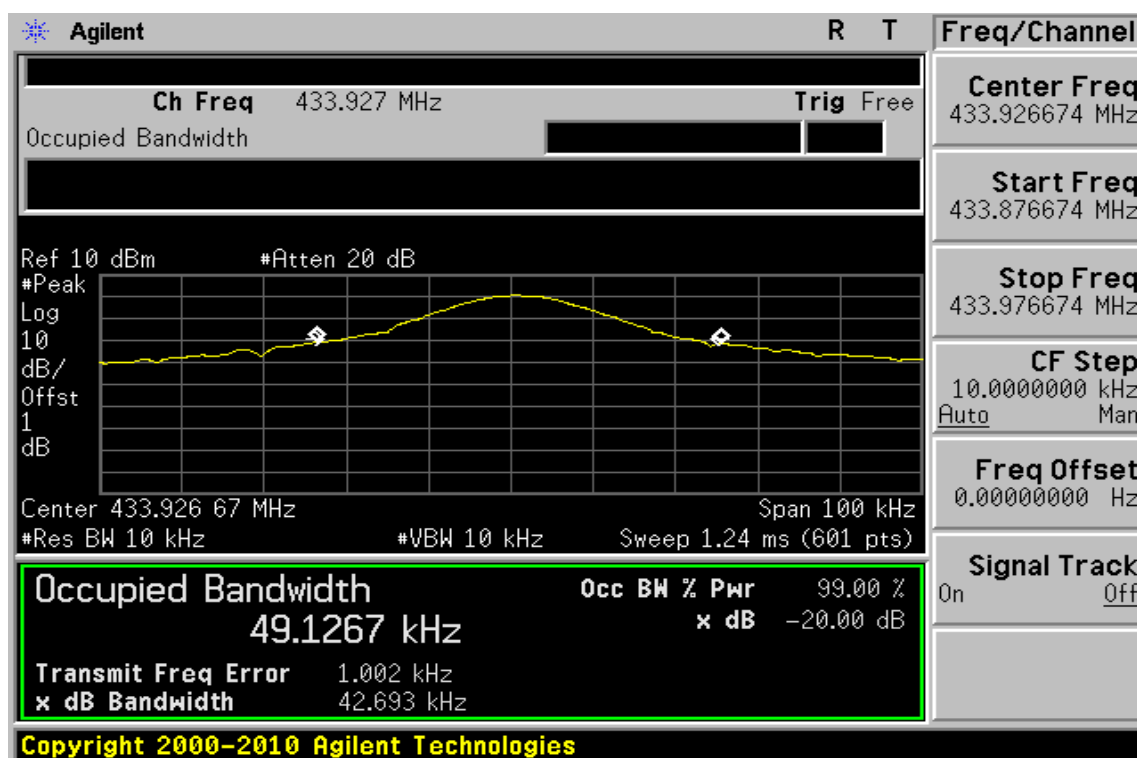
The center frequency f_c is **433.92MHz**, according to the Rules, section 15.231(C) & RSS-210 A1.1.3, the Bandwidth of Center Frequency at-20dB should be calculated as following:

$$433.92 \times 0.0025 = 1.0848 \text{ (MHz)}$$

Operation frequency (MHz)	-20dB Bandwidth (MHz)	Limit (MHz)	Result
433.92	0.043	1.0848	pass

Operation frequency (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
433.92	0.049	1.0848	pass

20dB Band Width Test Data



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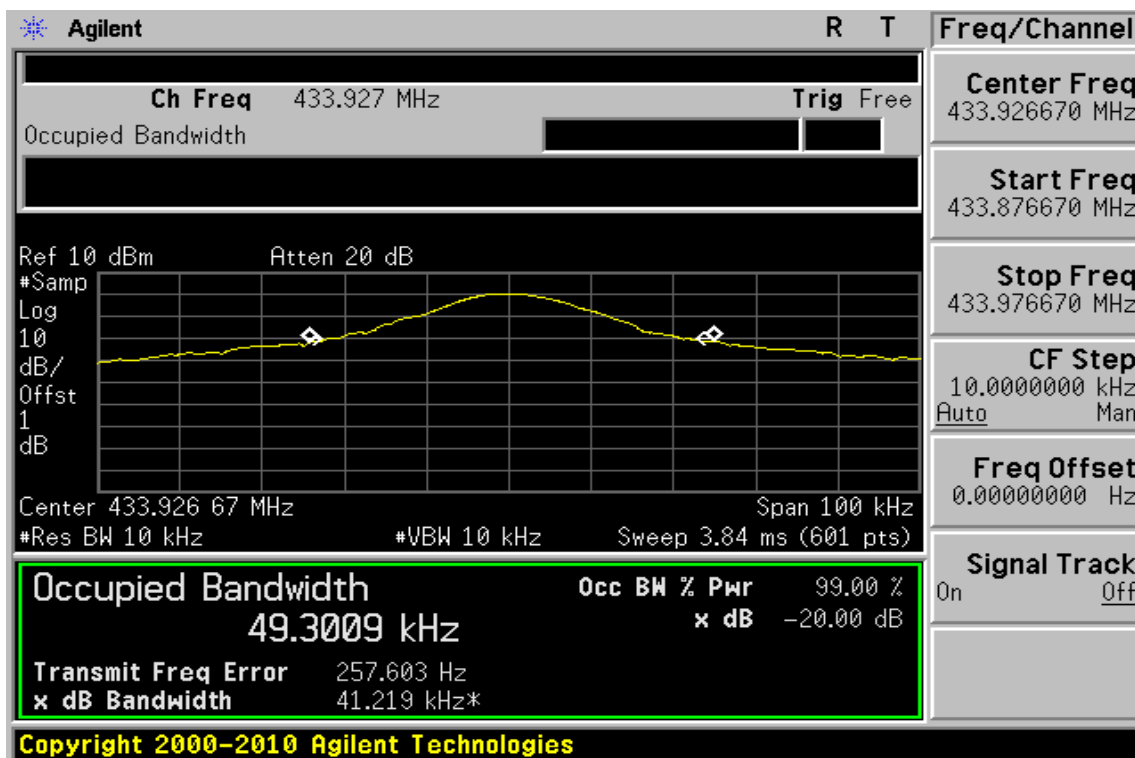
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99% Band Width Test Data



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9. DUTY CYCLE MEASUREMENT

9.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 100kHz, Span =0 Hz. Adjacent sweep.
4. Set SPA View. Mark delta.

9.2 Test SET-UP (Block Diagram of Configuration)

Same as 8.3 Radiated Emission Measurement.

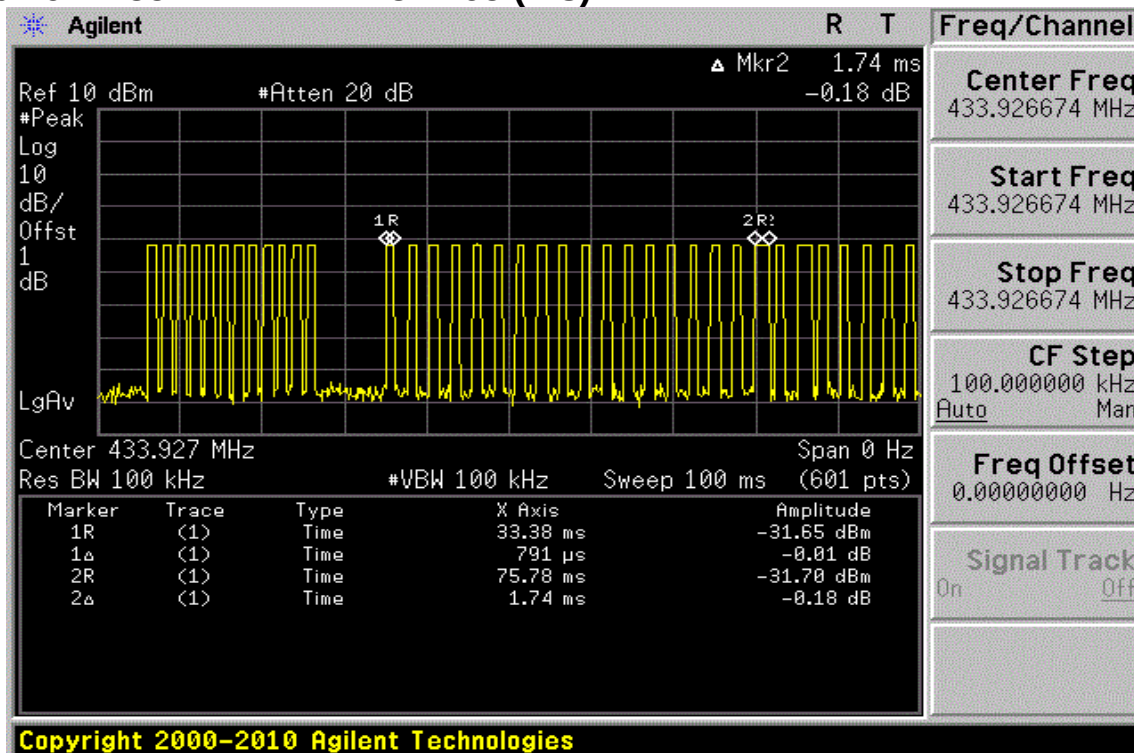
9.3 Measurement Equipment Used:

Same as 8.3 Radiated Emission Measurement.

9.4 Measurement Results:

T on	TP = (T on + T off)	Avg correct = 20log(Ton/TP)
31.165 ms	100 ms	-10.13 dB

$$T_{on} = 0.791 \times 35 + 1.74 \times 2 = 31.165 \text{ (ms)}$$



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10. RELEASE TIME MEASUREMENT:

15.231 (a) (1) & RSS-210 A1.1.1 (b) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

10.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set SPA Center Frequency = fundamental frequency, RBW=100KHz, VBW= 100KHz, Span =0Hz. Sweep Time= 5s.
3. Set EUT as normal operation and press Transmitter bottom for 2 s approximately,
4. Set SPA Max hold. Delta Mark.

10.2 Test SET-UP (Block Diagram of Configuration)

Same as 8.3 Radiated Emission Measurement.

10.3 Measurement Equipment Used:

Same as 8.3 Radiated Emission Measurement.

10.4 Measurement Results

The release time is less than 5 s.

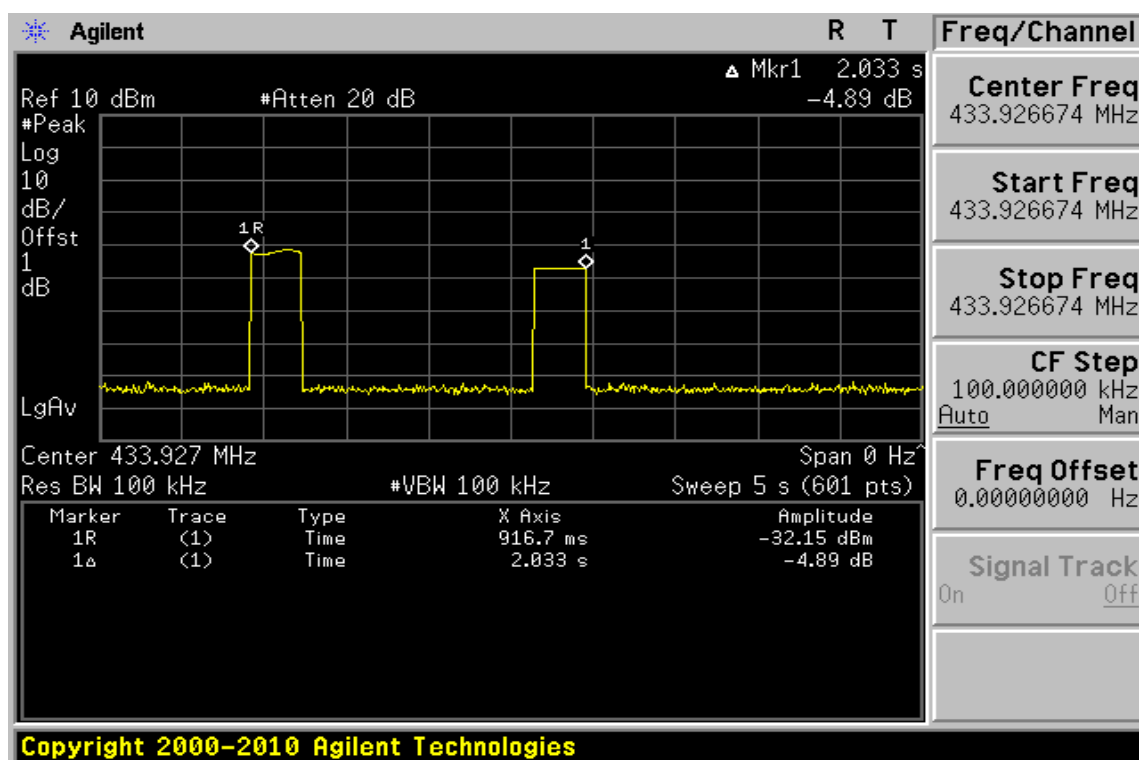
Refer to attached data chart.

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