

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT OF

Product Name: Integrity Base G1.5

Marketing Name: Integrity Base Station Gen 1.5

Brand Name: MobileHelp

Model No.: IGB-02

Model Different: N/A

FCC ID: PXTIGB-02

Report No.: EF/2012/90001

Issue Date: Nov. 12, 2012

Rule Part: §15.231

Prepared by: Integrity Tracking LLC, dba MobileHelp
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VERIFICATION OF COMPLIANCE

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

Product Name: Integrity Base G1.5

Marketing Name: Integrity Base Station Gen 1.5

Brand Name: MobileHelp

FCC ID: PXTIGB-02

Model No.: IGB-02

Model Difference: N/A

File Number: EF/2012/90001

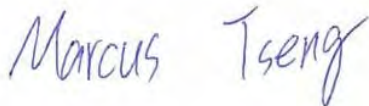
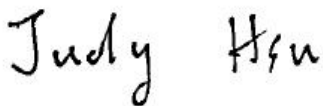
Date of test: Sep. 05, 2012 ~ Nov. 12, 2012

Date of EUT Received: Sep. 05, 2012

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 C63.4 (2009) 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.

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

Test By:		Date:	Nov. 12, 2012
	Marcus Tseng / Engineer		
Prepared By:		Date:	Nov. 12, 2012
	Judy Hsu / Clerk		
Approved By:		Date:	Nov. 12, 2012
	Jim Chang / Supervisor		

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Version

Version No.	Date	Description
00	Nov. 12, 2012	Initial creation of document

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1. GENERAL INFORMATION

1.1 Product Description

Product Name:	Integrity Base G1.5	
Marketing Name:	Integrity Base Station Gen 1.5	
Brand Name:	MobileHelp	
Model No.	IGB-02	
Model Difference:	N/A	
Hardware Version:	R03	
Software Version:	R01	
Data Cable:	Model:JAS27WA006-202; Supplier: JAS	
Power Supply:	9.6Vdc from Li-Ion battery or 12Vdc from adapter.	
	Battery:	Model:AA150F8 Supplier: SHENZHEN B & K ELECTRONICS CO., LTD.
	Adapter:	1.Model:GH-18W12V Supplier: Gee High 2.Model: AD0221-W 120150 Supplier:OEM

433.92 MHz:

Operating Frequency	433.92 MHz
Transmit Power	<80.8 dBuV/m Max.
Modulation Technique	ASK
Number of Channels	1 Channel
Release Time:	91.67ms

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1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: PXTIGB-02 filing to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2009. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 94644.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

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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 (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7.3.1 of ANSI C63.4-2009. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. 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. according to the requirements in Section 8 and 13 and Subclause 8.3.1.2 of ANSI C63.4-2009.

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2.4 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB (uV)	
	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.		

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(2) Radiated Emission

According to 15.231(b), 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 = $20 \log(uV/m)$
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205
 4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of § 15.205, then the general radiated emission limits in § 15.209 apply.
 5. 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.
 6. $433.92 \text{ MHz limit} = 41.6667 * 433.92 - 7083.3333 = 10996.681134 \text{ uV/m}$
= 80.8 dBuV/m

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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	Description Of Test	Result
§15.207	Conducted Emission	Compliant
§15.231	Radiated Emission	Compliant
§15.231(c)	20dB Bandwidth	Compliant
	Duty Cycle Test (Pulse Modulation)	Compliant
§15.231(a)(1)	Release Time Measurement	Compliant

4. Description of test modes

The EUT has been tested under engineering test mode condition. and the EUT staying in continuous transmitting mode. The Frequency 433.92 MHz is chosen for testing.

5. MEASUREMENT UNCERTAINTY FOR FIELD STRENGTH OF SPURIOUS RADIATION

Measurement uncertainty (Polarization : Vertical)	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)	30MHz - 167MHz: 4.22dB
	167MHz -500MHz: 3.44dB
	0.5GHz-1GHz: 3.39dB
	1GHz - 18GHz: 4.08dB
	18GHz - 40GHz: 4.08dB

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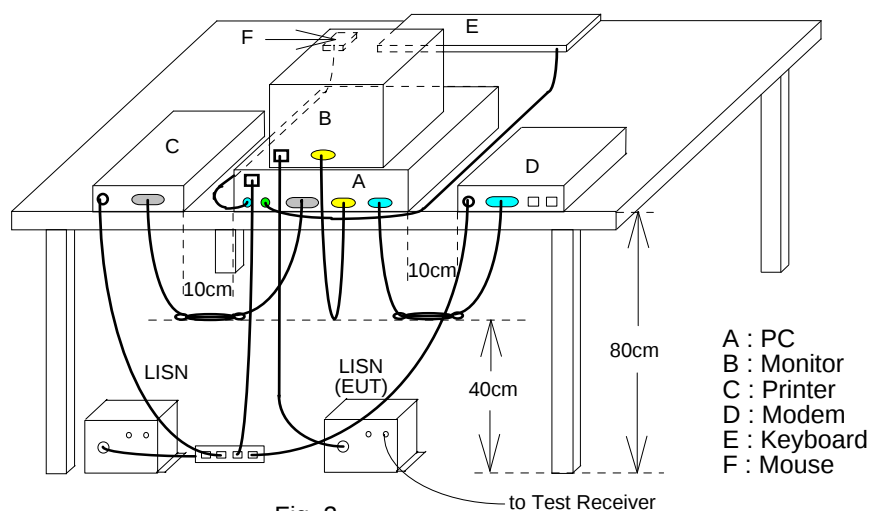
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6. CONDUCTED EMISSIONS TEST (NOT APPLY IN THE REPORT)

6.1 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.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100759	05/20/2011	05/19/2013
EMI Receiver	R&S	ESCS 30	828985/004	09/23/2012	09/22/2013
LISN	Rolf-Heine	NNB-2/16Z	99012	03/23/2012	03/22/2013
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/23/2012	03/22/2013
Coaxial Cables	N/A	WK CE Cable	N/A	01/05/2012	01/04/2013

6.4 Measurement Result:

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Note: Refer to next page for measurement data and plots.

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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation	Test Date:	Sep. 21, 2012
Adapter:	GH-18W12V	Test By:	Marcus



Site: ConductionRoom Phase: **L1** Temperature: 26 °C
 Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 60%
 EUT: Integrity Base G1.5 Distance:
 M/N: IGB-02
 Mode: Operationmode
 Note:

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.3338	44.70	0.21	44.91	59.36	-14.45	QP	
2	*	0.3338	38.50	0.21	38.71	49.36	-10.65	AVG	
3		0.3650	45.20	0.22	45.42	58.61	-13.19	QP	
4		0.3650	35.30	0.22	35.52	48.61	-13.09	AVG	
5		0.8324	39.90	0.22	40.12	56.00	-15.88	QP	
6		0.8324	30.00	0.22	30.22	46.00	-15.78	AVG	
7		3.0571	38.20	0.28	38.48	56.00	-17.52	QP	
8		3.0571	28.00	0.28	28.28	46.00	-17.72	AVG	
9		3.9291	37.80	0.30	38.10	56.00	-17.90	QP	
10		3.9291	27.80	0.30	28.10	46.00	-17.90	AVG	
11		5.0274	38.80	0.33	39.13	60.00	-20.87	QP	
12		5.0274	29.80	0.33	30.13	50.00	-19.87	AVG	

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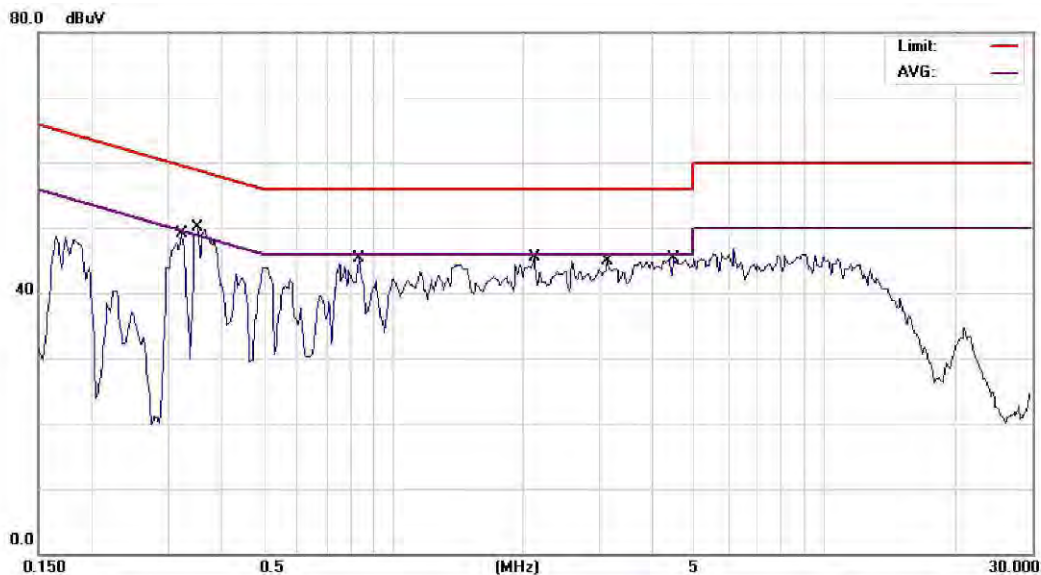
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Site: ConductionRoom

Phase: N

Temperature: 26 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 60%

EUT: Integrity Base G1.5

Distance:

M/N: IGB-02

Mode: Operationmode

Note:

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.3220	45.00	0.32	45.32	59.66	-14.34	QP	
2	*	0.3220	36.40	0.32	36.72	49.66	-12.94	AVG	
3		0.3533	44.50	0.34	44.84	58.88	-14.04	QP	
4		0.3533	34.80	0.34	35.14	48.88	-13.74	AVG	
5		0.8324	40.30	0.32	40.62	56.00	-15.38	QP	
6		0.8324	30.80	0.32	31.12	46.00	-14.88	AVG	
7		2.1227	37.50	0.33	37.83	56.00	-18.17	QP	
8		2.1227	25.70	0.33	26.03	46.00	-19.97	AVG	
9		3.1510	38.10	0.34	38.44	56.00	-17.56	QP	
10		3.1510	27.20	0.34	27.54	46.00	-18.46	AVG	
11		4.4687	35.80	0.36	36.16	56.00	-19.84	QP	
12		4.4687	26.50	0.36	26.86	46.00	-19.14	AVG	

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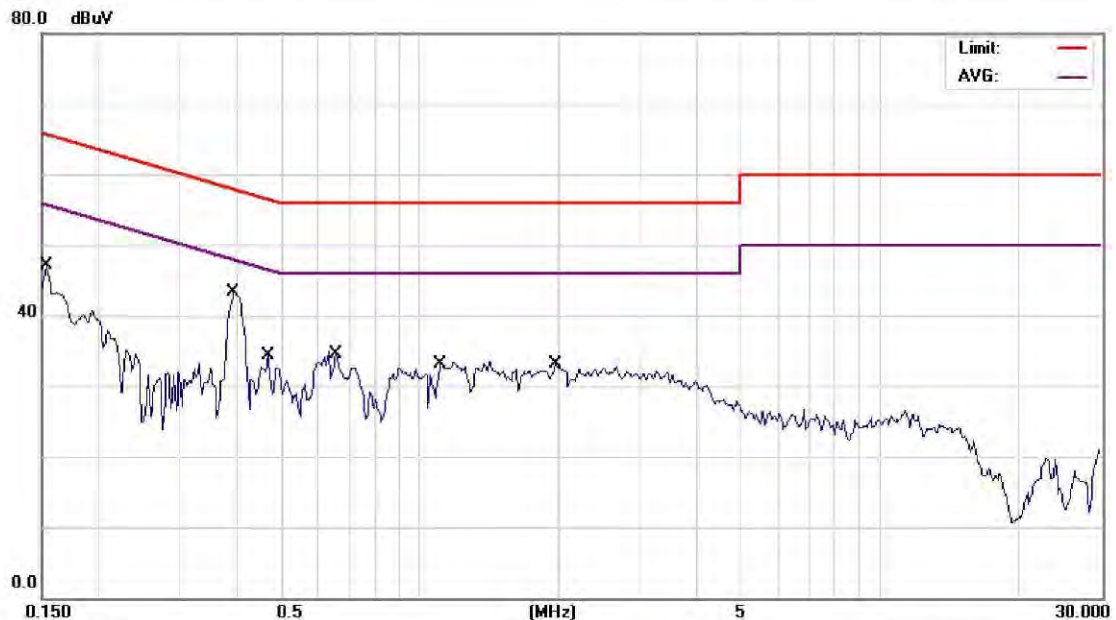
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation	Test Date:	Nov. 07, 2012
Adapter:	AD0221-W 120150	Test By:	Marcus



Site ConductionRoom

Phase: L1

Temperature: 26 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 60%

EUT: Integrity Base G1.5

Distance:

M/N: IGB-02

Mode: Operationmode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBμV	dB	dBμV	dBμV	dB		
1		0.1539	46.85	0.24	47.09	65.79	-18.70	QP	
2	*	0.3924	43.09	0.22	43.31	58.01	-14.70	QP	
3		0.4667	34.14	0.22	34.36	56.57	-22.21	QP	
4		0.6564	34.30	0.22	34.52	56.00	-21.48	QP	
5		1.1100	32.96	0.22	33.18	56.00	-22.82	QP	
6		1.9780	32.78	0.25	33.03	56.00	-22.97	QP	

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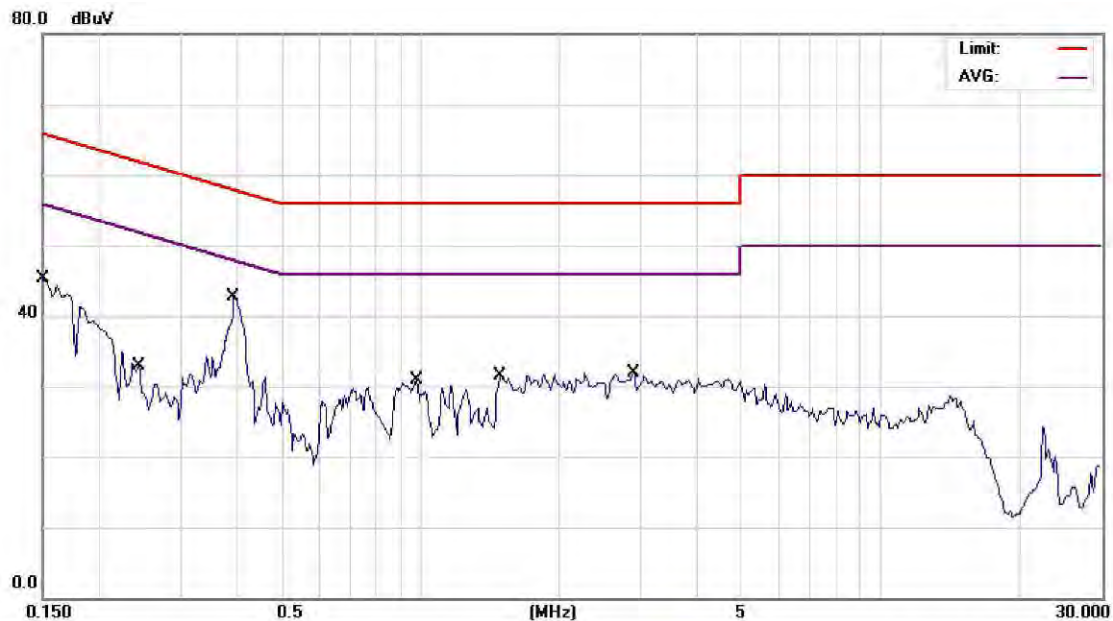
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Site: ConductionRoom

Phase: N

Temperature: 26 °C

Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 60%

EUT: Integrity Base G1.5

Distance:

M/N: IGB-02

Mode: Operationmode

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1516	44.75	0.34	45.09	65.91	-20.82	QP	
2		0.2438	32.59	0.31	32.90	61.97	-29.07	QP	
3	*	0.3924	42.27	0.34	42.61	58.01	-15.40	QP	
4		0.9809	30.54	0.31	30.85	56.00	-25.15	QP	
5		1.4931	31.18	0.31	31.49	56.00	-24.51	QP	
6		2.9125	31.55	0.34	31.89	56.00	-24.11	QP	

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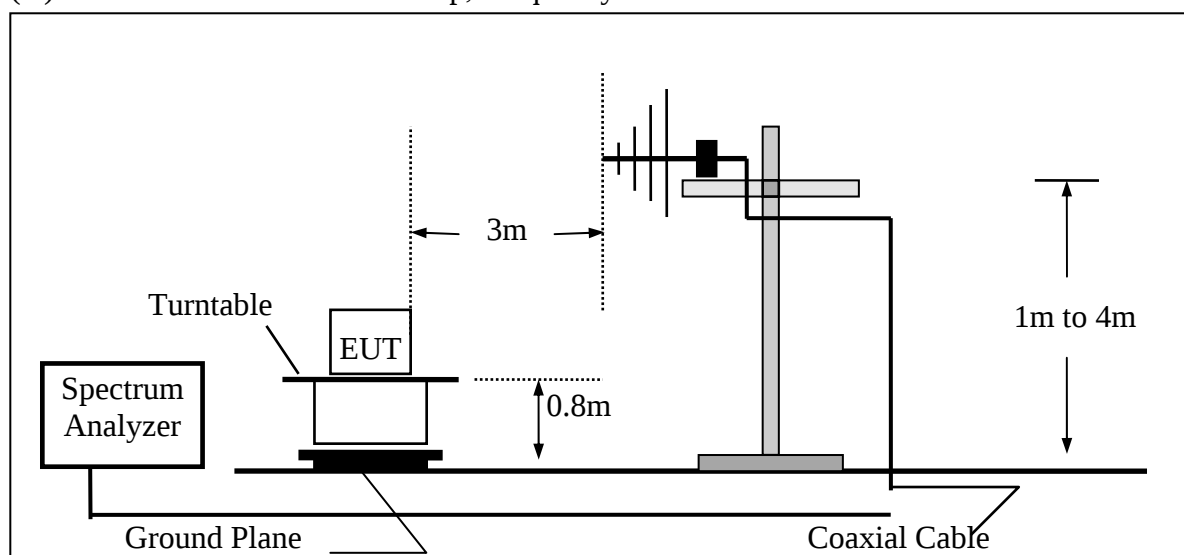
7. RADIATED EMISSION TEST

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

7.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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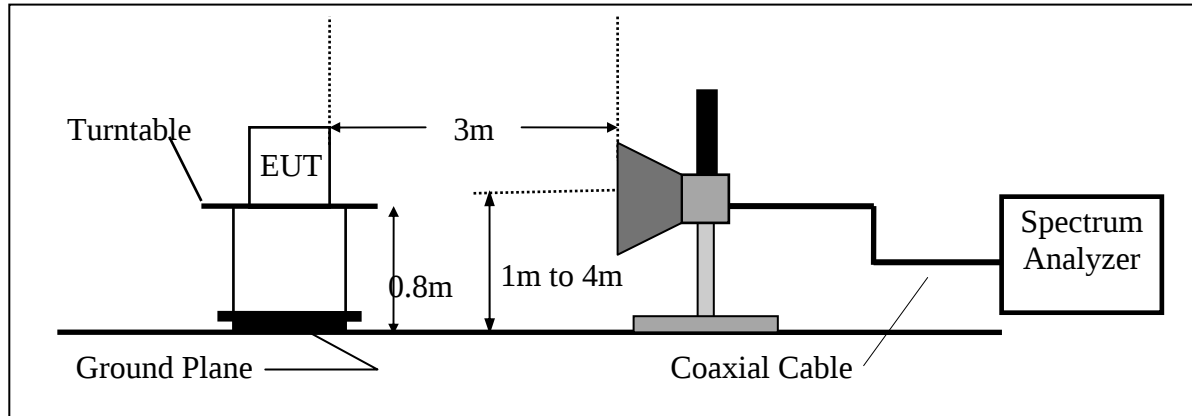
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(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



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7.3 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100759	05/20/2011	05/19/2013
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/15/2011	04/14/2013
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	02/15/2011	02/14/2013
Spectrum Analyzer	R&S	FSV-30	101398	10/18/2011	10/17/2013
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/10/2012	01/09/2014
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2011	05/18/2013
Horn Antenna	Schwarzbeck	BBHA9170	185	07/11/2011	07/10/2013
Pre-Amplifier	Agilent	8447D	2944A07676	01/04/2012	01/03/2013
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/04/2012	01/03/2013
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	02/28/2012	02/28/2013
Attenuator	Mini-Circuit	BW-S10W2+	004	02/28/2012	02/27/2013
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	01/04/2012	01/03/2013
3m Site NSA	SGS	966 chamber	N/A	07/15/2012	07/14/2013

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:

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

Average Value = Peak Value + 20 Log (Ton/Tp) Pulse Modulation

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

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7.5 Measurement Result

Operation Band	:433 MHz	Test Date	:2012-10-04
Fundamental Frequency	:433 MHz	Temp./Humi.	:27.5deg_C/67RH
Operation Mode	:TX MAIN	Engineer	:Marcus
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:VERTICAL

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.

“---” : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
433.92	F	Average	78.17	-10.35	67.82	80.80	-12.98
433.92	F	Peak	80.15	-10.35	69.80	100.80	-31.00

Operation Band	:433 MHz	Test Date	:2012-10-04
Fundamental Frequency	:433 MHz	Temp./Humi.	:27.5deg_C/67RH
Operation Mode	:TX MAIN	Engineer	:Marcus
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:HORIZONTAL

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.

“---” : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
433.92	F	Average	90.07	-10.35	79.72	80.80	-1.08
433.92	F	Peak	92.05	-10.35	81.70	100.80	-19.10

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Operation Band	:433 MHz	Test Date	:2012-10-04
Fundamental Frequency	:433 MHz	Temp./Humi.	:27.5deg_C/67RH
Operation Mode	:TX	Engineer	:Marcus
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:VERTICAL

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.

“---” : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
41.64	S	Peak	47.17	-13.56	33.61	40.00	-6.39
112.45	S	Peak	40.89	-15.45	25.44	43.00	-17.56
191.99	S	Peak	40.63	-15.76	24.87	43.00	-18.13
325.85	S	Peak	36.03	-11.98	24.05	46.00	-21.95
542.16	S	Peak	32.39	-8.74	23.65	46.00	-22.35
650.80	S	Peak	40.70	-6.57	34.13	46.00	-11.87
867.84	H	Average	47.51	-3.41	44.10	60.80	-16.70
867.84	H	Peak	49.49	-3.41	46.08	80.80	-34.72
1301.76	H	Average	38.85	-0.30	38.55	54.00	-15.45
1301.76	H	Peak	40.76	-0.30	40.46	74.00	-33.54
1735.68	H	Average	34.22	1.88	36.10	60.80	-24.70
1735.68	H	Peak	35.91	1.88	37.79	80.80	-43.01
2169.60	H	Average	38.77	4.00	42.77	60.80	-18.03
2169.60	H	Peak	40.80	4.00	44.80	80.80	-36.00
2603.52	H	Average	44.22	5.75	49.97	60.80	-10.83
2603.52	H	Peak	46.16	5.75	51.91	80.80	-28.89
3037.44	H	Average	42.18	6.15	48.33	60.80	-12.47
3037.44	H	Peak	44.28	6.15	50.43	80.80	-30.37
3471.36	H	Average	35.15	7.43	42.58	60.80	-18.22
3471.36	H	Peak	37.03	7.43	44.46	80.80	-36.34
3905.28	H	---					
4339.20	H	---					

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Operation Band	:433 MHz	Test Date	:2012-10-04
Fundamental Frequency	:433 MHz	Temp./Humi.	:27.5deg_C/67RH
Operation Mode	:TX	Engineer	:Marcus
EUT Pol.	:E2 PLAN	Measurement Antenna Pol.	:HORIZONTAL

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.

“---” : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
41.64	S	Peak	48.86	-13.56	35.30	40.00	-4.70
112.45	S	Peak	46.05	-15.45	30.60	43.00	-12.40
288.02	S	Peak	42.16	-12.86	29.30	46.00	-16.70
325.85	S	Peak	44.08	-11.98	32.10	46.00	-13.90
542.16	S	Peak	34.90	-8.74	26.16	46.00	-19.84
650.80	S	Peak	47.95	-6.57	41.38	46.00	-4.62
867.84	H	Average	62.15	-3.41	58.74	60.80	-2.06
867.84	H	Peak	64.13	-3.41	60.72	80.80	-20.08
1301.76	H	Average	42.14	-0.88	41.26	54.00	-12.74
1301.76	H	Peak	43.55	-0.88	42.67	74.00	-31.33
1735.68	H	Average	38.55	2.84	41.39	60.80	-19.41
1735.68	H	Peak	40.21	2.84	43.05	80.80	-37.75
2169.60	H	Average	39.96	3.72	43.68	60.80	-17.12
2169.60	H	Peak	41.40	3.72	45.12	80.80	-35.68
2603.52	H	Average	43.97	6.05	50.02	60.80	-10.78
2603.52	H	Peak	45.45	6.05	51.50	80.80	-29.30
3037.44	H	Average	42.66	6.45	49.11	60.80	-11.69
3037.44	H	Peak	43.98	6.45	50.43	80.80	-30.37
3471.36	H	Average	35.67	7.20	42.87	60.80	-17.93
3471.36	H	Peak	37.15	7.20	44.35	80.80	-36.45
3905.28	H	---					
4339.20	H	---					

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8. 20DB 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 Max hold. Mark peak, -20dB.

8.2 Test SET-UP (Block Diagram of Configuration)

Same as 7.3 Radiated Emission Measurement.

8.3 Measurement Equipment Used:

Same as 7.3 Radiated Emission Measurement.

8.4 Measurement Results

Refer to attached data chart.

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

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

So, the Uper/Lower frequencies limit should be specified as:

$$f_{(U)} = f_c + \Delta f/2 = 433.92 + 0.5424 = 434.46 (\text{MHz})$$

$$f_{(L)} = f_c - \Delta f/2 = 433.92 - 0.5424 = 433.377 (\text{MHz})$$

Measurement Result:

-20dB bandwidth =27.798 kHz which within allowed frequency range.

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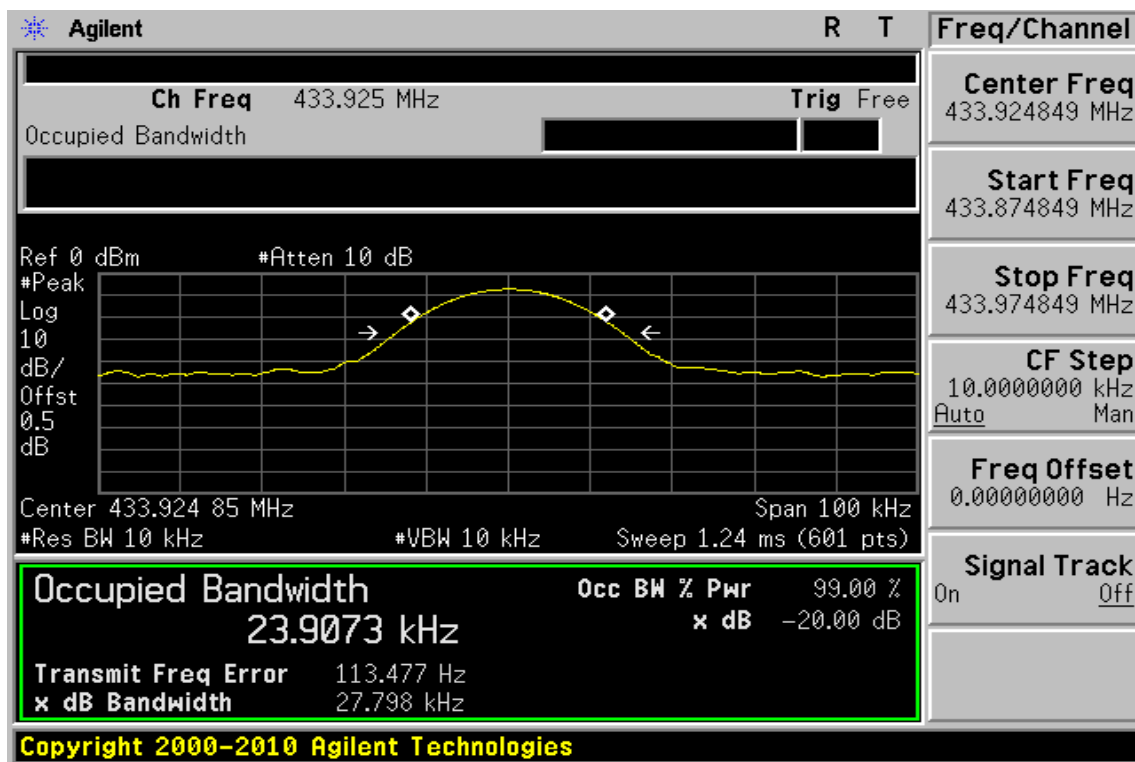
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20dB Band Width Test Data



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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 7.3 Radiated Emission Measurement.

9.3 Measurement Equipment Used:

Same as 7.3 Radiated Emission Measurement.

9.4 Measurement Results:

$$T_{on} = 2.45(\text{ms}) * 17 + 1.4(\text{ms}) * 25 = 76.65(\text{ms})$$

$$T_p = 96.25(\text{ms}),$$

$$\begin{aligned} \text{Average Correction Factory} &= 20\log(T_{on}/T_p) = 20\log(76.65/96.25) \\ &= -1.98 \text{ dB} \end{aligned}$$

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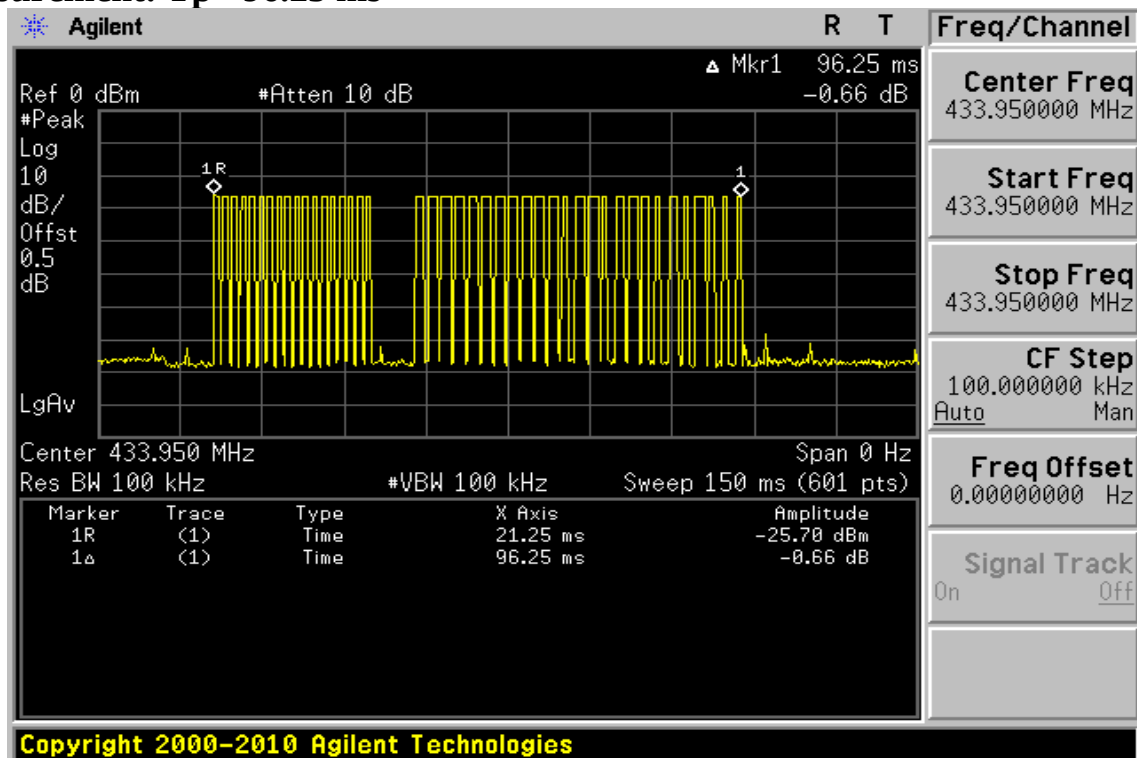
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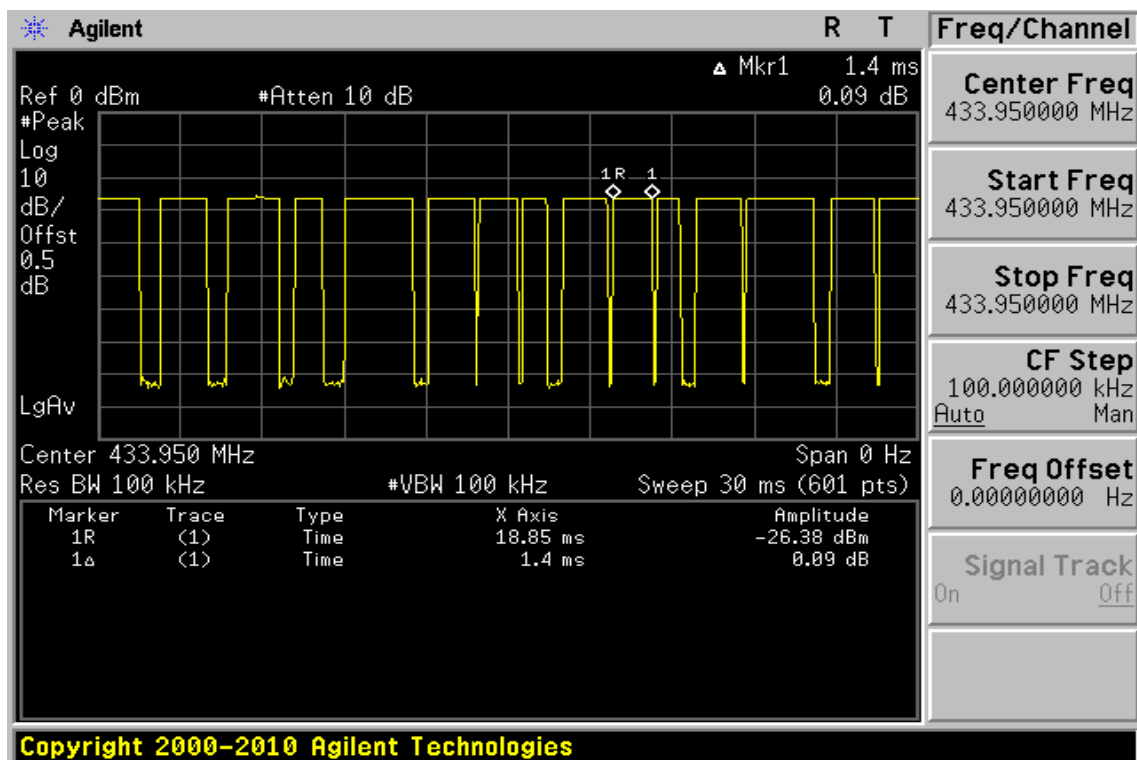
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Measurement: Tp =96.25 ms



TO 1



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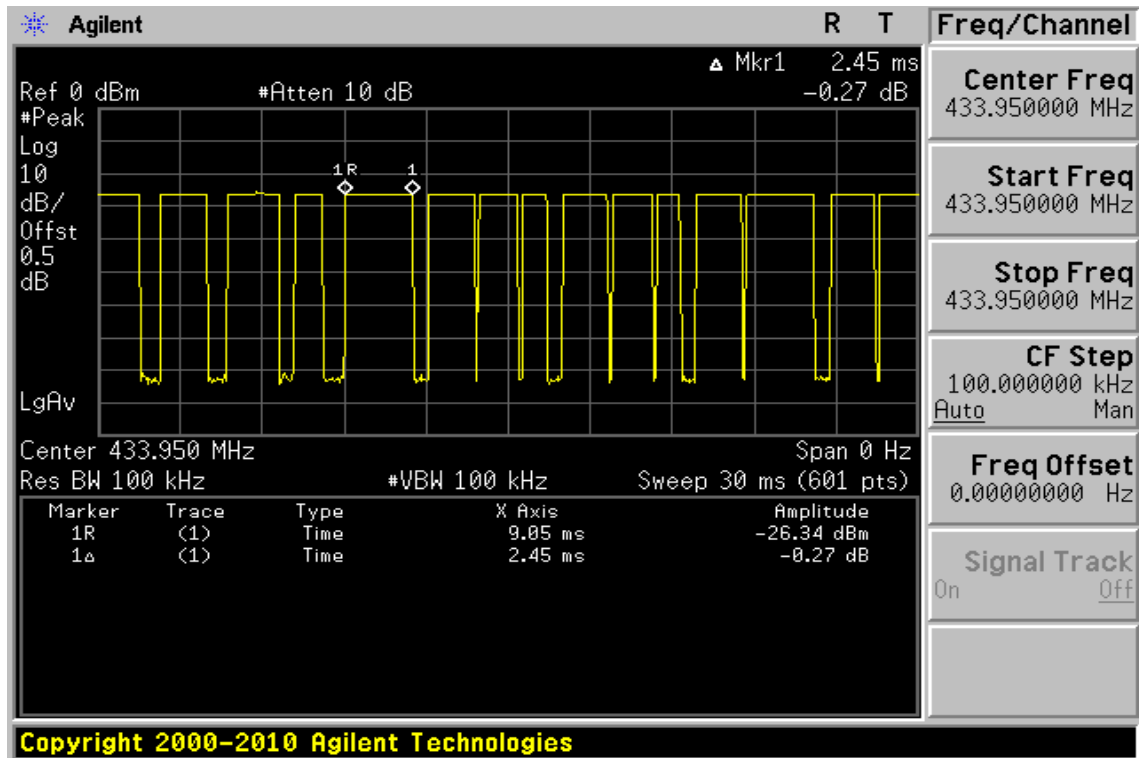
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TO 2



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10. RELEASE TIME MEASUREMENT:

15.231 (a) (1) 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, VBW= 100 KHz, Span =0Hz. Sweep Time= 5s.
3. Set EUT as normal operation and press Transmitter bottom for 2 s,
4. Set SPA Max hold. Delta Mark.

10.2 Test SET-UP (Block Diagram of Configuration)

Same as 7.3 Radiated Emission Measurement.

10.3 Measurement Equipment Used:

Same as 7.3 Radiated Emission Measurement.

10.4 Measurement Results

The release time less than 5 s.

Refer to attached data chart.

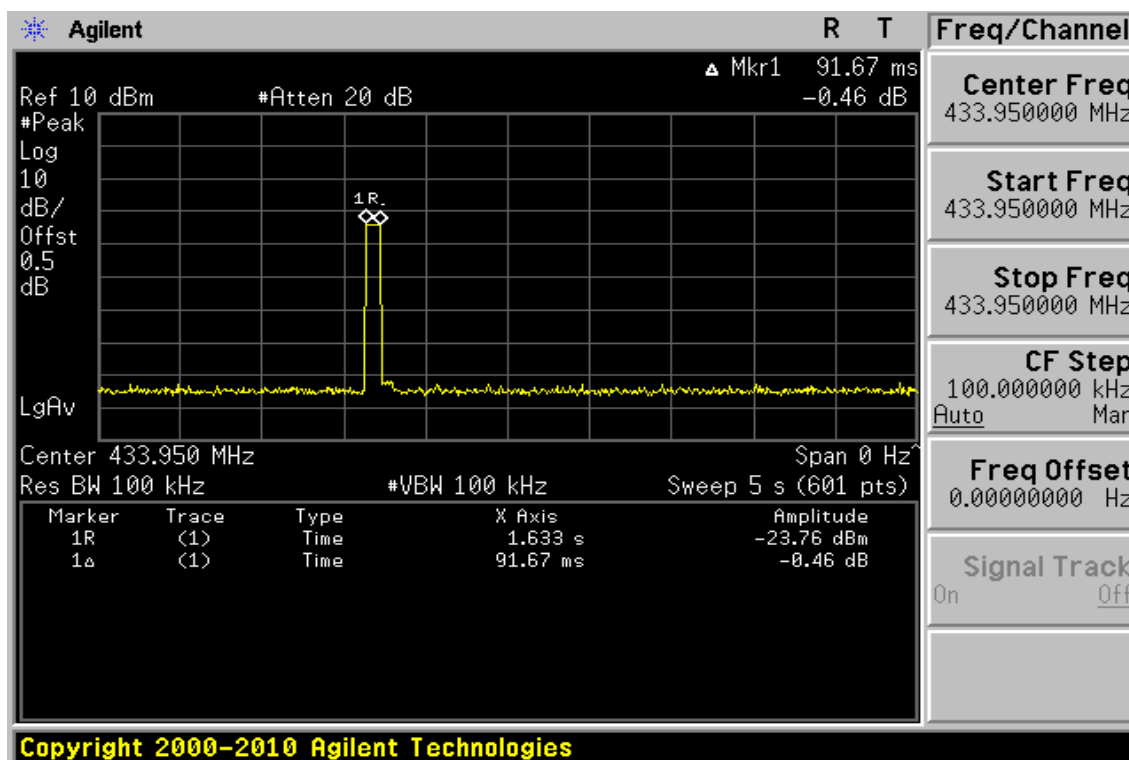
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